bc: Mark Stoll/ 'Cambridge

Superfund Records Center
SITE: Wells G&H
BREAK: 11.9
OTHER: 466901

SDMS DocID 466901

JAN 12 1984

Emerson & Cuming
Dewey and Almy Chemical Division
W. R. Grace & Co.
Canton, Mass. 02021

(617) 828-3300

January 10, 1984

Mr. Wayne T. Grandin
Chief Engineer of Industrial Waste
Metropolitan District Commission
Sewage Division
20 Somerset Street
Boston, MA 02108

Subject: Permit No. 10-005724

Dear Sir:

Enclosed you will find an analysis of our microballoon washing process effluent. Per a November 15 conversation that I had with a Ms. O'Shea from your office, our past sampling technique had been incorrect. Per Ms. O'Shea our sample should be representative of our microballoon washing process only. It should be free of any uncontaminated water and/or sanitary waste.

The organic solvents detected in our July sample, and referred to in your September 26 letter, were a result of sampling the total effluent stream. At the point where we originally sampled, the effluent was a combination of our total sewer effluent as well as an upstream neighbor (reference my August 22 letter to MDC). Although taken incorrectly, the sample did indicate the presence of organic solvents. Through some further sampling, we feel the source of these contaminants was the upstream user.

Other than the microballoon washing process, the only other discharges from our facility are sanitary.

Sincerely,
EMERSON & CUMING

Robert R. Marshall

Robert R. Marshall
Plant Manager

RRM:pg

Arnold Greene Testing Laboratories Incorporated

East Natick Industrial Park
6 Huron Drive • Natick, MA 01760
(617) 235-7330, 653-5950
Telex 948459 GREENELAB NTIK

Nondestructive • Chemical • Pollution • Metallurgical
Inspection • Evaluation • Analysis
Research • Development

Branch Laboratories:
Springfield, Mass. 01104
(413) 734-6548

Auburn, Mass. 01501
(617) 832-5500

To: Emerson & Cuming, Inc.
Div. of W.R. & Co.
869 Washington Street

Canton, MA 02184

Attn:

Date: 12/22/83

Job No. 43013-1

Lab No. 0579

Order No. 1-48164

Material: Water sample

Heat No. None

Specifications: None

Sample ID: 1 Water sample

Date received 12/14/83

pH	1.9
Total Suspended Solids (mg/l)	479
Total Solids (mg/l)	9,257
Settleable Solids, (ml/l/hr)	1.1
Total Cyanide, (mg/l)	<0.02
Cyanide, Amen to Cl (mg/l)	<0.02
Silver (mg/l)	0.03
Total Kjeldahl-Nitrogen (mg/l)	2.45
Ammonia (mg/l)	1.6

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
22nd DAY OF DECEMBER 1983
ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril

James J. Baril, Manager

UNLESS STIPULATED IN WRITING BY YOU, ALL SAMPLES WILL BE RETAINED FOR 30 DAYS AND THEN DISPOSED OF.
THIS REPORT IS RENDERED UPON THE CONDITION THAT IT IS NOT TO BE REPRODUCED WHOLLY OR IN PART FOR ADVERTISING AND/OR OTHER PURPOSES OVER OUR SIGNATURE OR IN CONNECTION WITH OUR NAME WITHOUT OUR SPECIAL PERMISSION IN WRITING.

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Auburn, Mass. 01501
(617) 832-5500

To: Emerson & Cuming, Inc.
Div. of W.R. Grace & Co.
869 Washington Street

Canton, MA 02184

Attn:

Date 12/30/83

Job No.43013-1

Lab No. 0579

Order No. 1-48164

Material:

Heat No. None

Specifications: None

Purpose: To determine the concentration of Dioctyl-phthalate.

Method: Extraction with methylene chloride and the analysis of that extract by Gas Chromatography/Mass Spectrometer.

Results: <0.05 mg/l.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
30th DAY OF DECEMBER 1983
ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril, Manager

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(413) 734-6548

Auburn, Mass. 01501
(617) 832-5500

): Emerson & Cuming, Inc. Div. of W.R. Grace & Co. 869 Washington Street	Date 12/30/83	Material:
	Job No.43013-1	Heat No. None
Canton, MA 02184	Lab No. 0579	Specifications: None
ttn:	Order No. 1-48164	

Purpose: To determine the concentration of any Volatile Organic Comtaminants present in one water sample submitted in a non-approved sampling container.

Method: Method 624

Results:

	ug/l
Trichloroethane	27.4
Toluene	12.7
Methylene Chloride	7.0

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
30th DAY OF DECEMBER 1983
ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril /DBB

James J. Baril, Manager

RECEIVED
JAN - 3 1984
EMERSON & CUMING
CANTON, MASS. 02021

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OCT 6 1983

GRACE MEMO

to: Al Jeroma, Brooks Adhesives

date: October 5, 1983

from: Bob Marshall, Emerson & Cuming

cc:

subject: Our Telephone Conversation October 3

To confirm our telephone conversations of October 3, we will be sampling our sewer effluent on Friday, October 7. Due to our inability to obtain a discreet sample representing Emerson & Cuming's discharge without including Brooks Adhesives's discharge, we will be sampling your effluent at the point that it enters our sewer main and also sampling the combined flows further downstream prior to the point where the combined flows enter the MDC system.

We plan on presenting the two samples to the MDC with the argument that our contribution to the combined effluent is the difference between the two.

Respectfully,
EMERSON & CUMING

Robert Marshall

Robert R. Marshall
Plant Manager

RRM:pg

bcc: W. A. Mischel
M. Stoler (Cambridge)
G. F. Winterson

PLANT I - CANTON, MASSACHUSETTS

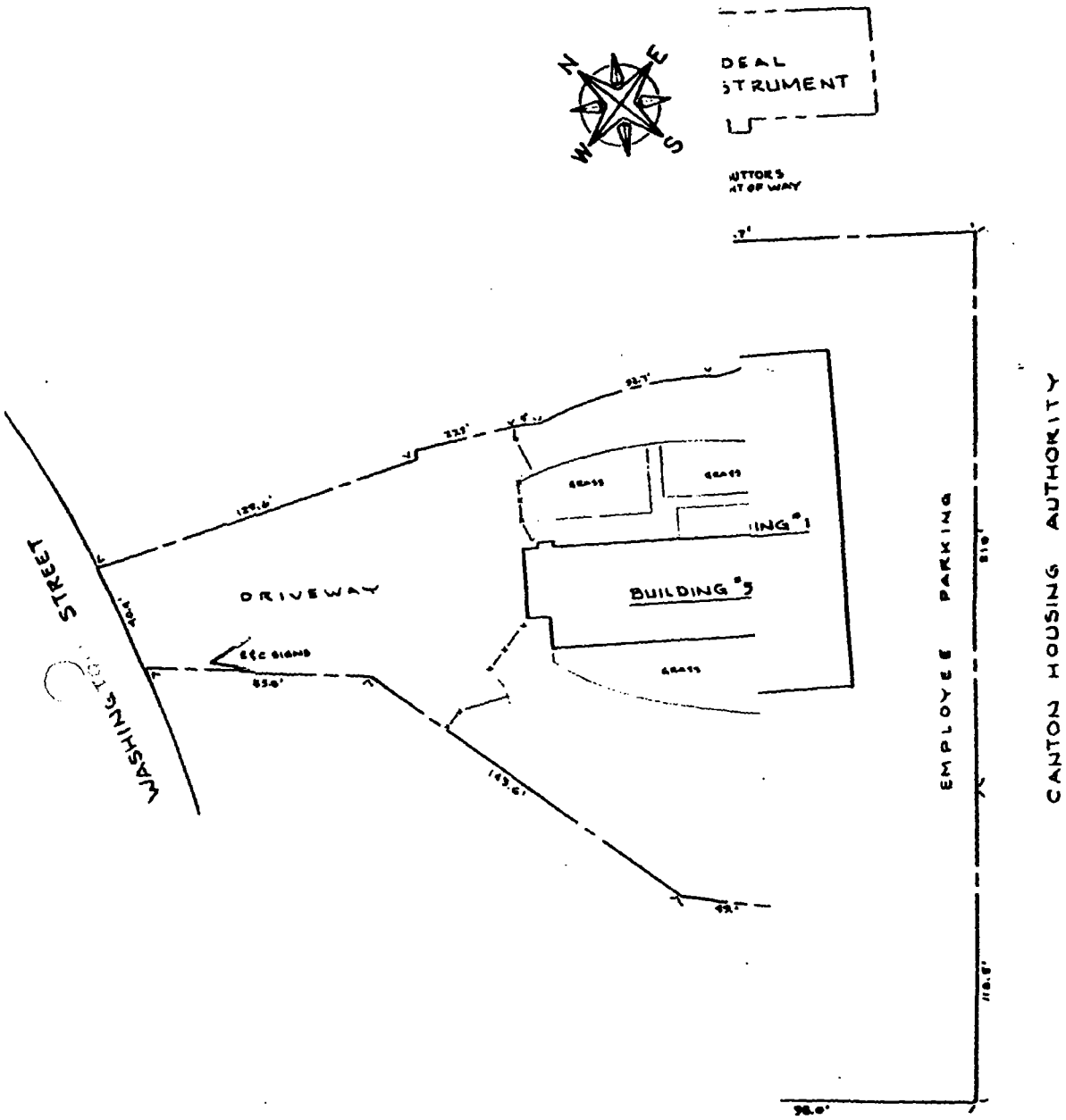
EMERSON & CUMING, INC.
FACILITIES DATA
PLANT I

LINE NO.	PLANT I	(1) PRODUCTS MANUFACTURED	(2) INS. APPRAISAL[a] REPRODUCTION COST	(3) SITE SIZE IN ACRES	(4) PROPERTY PURCHASE DATE	(5) BUILDING CONSTRUCTION DATE	(6) TOTAL BLDG. FLOOR SPACE (SQ. FT.)	(7) NUMBER OF STORIES	(8) BLDG. GROUND FLOOR SPACE (SQ. FT.)	(9) BLDG. SPACE UTILIZATION (SQ. FT.)
(01) (02) (03) (04)	865 Washington St. Canton, Mass. Building 1	Resin Based Eccostock Eccoshield Eccosorb-(HLD)	$ 239,600	1	1952	1880's	12,500	1 + part basement	7,500 first floor	Mfg. - 5,000 Maint. - 5,600 Storage - 1,000 Lab - 900
(05) (06) (07) (08)	Building 2	Eccospheres	224,200		1955	1880's	11,400	1 + basement	5,700	Mfg. - 2,900 Storage - 2,800 Labs - 4,200 Office - 1,500
(09) (10) (11)	Building 3	Resin Based	359,100		1955	1880's	16,800	3 + basement	4,200	Mfg. - 6,300 Storage - 8,400 Ship/Rec - 2,100
(12)	Building 4	Eccospheres	7,400		1955	1965	1,200	1 + basement	600	Mfg. - 1,200
(13) (14) (15) (16)	Building 5	Eccoshield	404,300		1961	1948	15,300	2 + basement	5,600	Mfg. - 800 Storage - 5,600 Lab - 1,200 Office - 7,700
(17)	Building 6	Eccospheres	153,900		1961	1900's	5,200	1-3	2,500	Mfg. - 5,200
(18) (19) (20) (21) (22)	Totals Plant I		$1,388,500	3.3	N.A.	N.A.	62,400	N.A.	26,100	Mfg. - 21,400 Maint. - 5,600 Storage - 17,800 Office/Lab - 15,50 Ship/Rec - 2,100

(a) Appraisal by Marshall & Stevens Inc. in August, 1974 adjusted to reflect subsequent inflation.

Checked by: RSH
Date: 10/27/77

PLOT PLAN
EMERSON & CUMING, INC. PLANT I
CANTON, MASSACHUSETTS



Checked By: BLG

Date: 10/28/77

The Plant I property is approximately one mile from the center of Canton, Massachusetts, a town located twenty-five miles south of Boston. Contained on this site is an irregular shaped, multi-storied building consisting of plant buildings 1 through 5, and a separate irregular storied building (#6).

This property was the first purchased by E&C, with the various buildings being acquired over a nine year period. With the exception of buildings 4 & 5, a major portion of this facility predates the early 1900's and is of a wood and timber structure with rubble stone footings and foundations. Buildings 4 & 5 are concrete block structure on poured concrete footings and foundations.

Fire protection for this facility, with the exception of buildings 4 & 6, is provided by an automatic sprinkler system; and the heating, lighting and plumbing facilities appear to be in adequate repair. This facility has an unrestricted access for truck traffic, but, as with all E&C plants, does not have railroad facilities.

This facility appears to be structurally sound and has been maintained in an adequate condition. However, due to the age of several buildings, there is a need for upgrading its interior and exterior appearance, its electrical facilities, its restroom facilities and the site parking facilities. The RCA projections include incremental expenses averaging $45,000 (pre-tax) per year to improve the condition of this plant. Also, the capital forecast (Section VI-G) includes $285,000 over the five year period 1978-1982 for plant improvements.

The following two pages present the facilities data and plot plan for Plant II in Canton, Massachusetts.

(See Table and Plot Plan on the Following Pages)

VI. MANUFACTURING

A. EMERSON & CUMING MANUFACTURING PROCESSES

Emerson & Cuming (E&C) presently has available for sale a miniumum of 300 standard products. This number dramatically increases when specially formulated products are taken into account. However, these products can be grouped by method of manufacture, resulting in the following nine manufacturing process descriptions.

DIELECTRIC MATERIALS

- Resin Based Products and Catalysts
- ECCOSORB High-Loss Dielectric Absorbers
- ECCOSHIELD
- ECCOSPHERES (Micro and Macroballoons)
- Molding Powders
- Plastic Rod & Sheet Stock

MICROWAVE PRODUCTS

- ECCOSORB Free Space Absorbers
- Lenses and Reflectors

FLOTATION PRODUCTS

- Riser Pipe Modules & General Oceanographic

1. Dielectric Materials

a) Resin Based Products and Catalysts

Those products classified as resin-based materials include: casting resins (STYCAST), surface coatings (ECCOCOAT), adhesives and sealants (ECCOBOND), impregnating resins (ECCOSEAL), ceramic dielectrics (ECCOCERAM), silicone resins (ECCOSIL), and plastic and ceramic foams (ECCOFOAM).

The manufacture of an individual resin-based product is essentially a formulated mixing operation. Pre-weighed amounts of from four to twelve different raw materials are loaded into a mixing vessel, ranging in size from a gallon container to a two-hundred-fifty gallon kettle; the most frequent size being a fifty-five gallon drum. The materials are mixed utilizing a drill press and adjusted to final product specifications, primarily viscosity, based on quality control testing. E&C is presently using approximately two-hundred-fifty different raw materials in their resin-based material formulations. However, the primary base ingredients for these products consist of liquid epoxy resins, silicone resins, and powdered fillers; such as, aluminum, silica, iron, zinc, and titanium.

Following manufacture, the material is packaged into containers ranging in size from one-ounce tubes to gallon cans; the most common size being quart cans. Within this product grouping there are two types of materials: one component products; and two component products, which require the addition of a catalyst or the mixing of two components prior to use in the field.

The catalysts are used as curing agents with various E&C epoxy formulations reacting with those products and forming thermosetting solids or foams.

The manufacture of catalysts consists of mixing two to four different raw materials utilizing a drill press. The mixing vessel can range in size from a quart container to a fifty-five gallon drum, with a five-gallon pail being used most frequently. Following the mixing process, the catalyst is packaged into containers ranging in size from two-ounce jars to quart cans, with the most common size being four-ounce jars. In addition to manufacturing catalyst products, E&C also purchases standard epoxy catalysts and repackages those materials under their own label.

b) ECCOSORB

The ECCOSORB name is applied to both "free space" microwave absorbers and "high-loss dielectric" microwave absorbers. Described here is the manufacturing procedure for "high-loss dielectrics" which are produced and sold as casting resins, flexible sheets, and machinable bar and rod stock.

Rod and bar stock are manufactured by mixing epoxy resins, fillers, and iron particles in a gallon container using a drill press. The material is deaerated, poured into a mold, and oven cured. Following curing, the mold is disassembled and the material is machined to final customer specifications. Sheet stock is manufactured by mixing iron or graphite particles with resins and fillers in a small container utilizing a drill press. These products cure at room temperature and, after being deaerated, are formed into sheets by passing the material between an adjustable roller and a flat surface. Casting resins are manufactured utilizing the identical process as resin-based products.

c) ECCOSHIELD

The ECCOSHIELD product line is composed of conductive plastic materials available in the form of sheets, gaskets, liquid adhesives, lacquers, and pressure sensitive tapes. The manufacturing of all ECCOCHIELD products involves pre-mixing formulated amounts of silver particles, resins, fillers, and, in some cases, catalysts. The pre-mix solution is formed into sheets by passing the material between an adjustable roller and a flat surface, followed by air or oven drying. Gaskets are punched from the sheets using a die specially constructed to customer specifications. Pressure sensitive tape is produced by passing the pre-mixed material through an extruder.

d) ECCOSPHERES

E&C manufactures three basic types of ECCOSPHERES: hollow glass and ceramic spheres, referred to as microballoons; and plastic spheres, referred to as macroballoons.

The hollow glass microballoons are manufactured from either a purchased feedstock manufactured to E&C specifications or from feedstock which E&C manufactures themselves. The feedstock is manufactured by producing a slurry using silicate, boric acid, and a blowing agent (UREA), which is then metered into a spray dryer; the dried material is collected and packaged utilizing cyclones. E&C is presently increasing their in-house spray dryer capacity which will eliminate the need to purchase manufactured feedstock.

The feedstock is later added to a blender/feeder which dispenses it into gas furnaces where the particle passes across an open gas flame to form the microballoons which are subsequently collected by the use

of a cyclone. Certain types of microballoon products are packaged directly from the cyclone and sold. Other types of microballoons are treated in order to upgrade their performance characteristics.

The treating of glass microballoons is accomplished through successive washings and steamings of the balloons in one of seven 700-gallon mixing vessels. During this process, depending on the desired type of treated balloon, chemicals are added periodically during the washing process to increase the strength of the microballoon. The repeated washings also eliminate those balloons which are not complete spheres, since they sink to the bottom of the tank. Following the washing cycles, the microballoons are centrifuged, dried, and packaged for sale or for internal use in the manufacture of resin-based materials, or Flotation Products.

Ceramic microballons are manufactured from fly ash purchased from England. The particular type of fly ash used, a by-product of coal burning, is available from only one location in England due to the type of coke used at that power facility. The fly ash is in the form of a hollow sphere when purchased. A batch size of approximately 1100 pounds is loaded into one of two 350°F gas-fired tumbling drying ovens for a drying period of five hours and is then packaged into shipping containers.

Macroballoons are manufactured by expanding purchased polystyrene beads using steam. The beads are then placed in tumblers where they receive up to fourteen coats of an epoxy resin and glass fiber slurry in order to create a specific bead density and crush strength. Following quality control testing for density and crush strength, the beads are screened to eliminate agglomerates and packaged for shipping, or stored for later use in the manufacture of Flotation Products.

e) Molding Powders

E&C molding powders (ECCOMOLD) are manufactured utilizing silica, resins, and catalysts. The first step involves the treating of purchased silica with a material which activates the silica surface providing increased adhesion to resins. Purchased resin is granulated into a fine powder and, together with the treated silica, is added to a blender along with other materials, depending upon the product to be manufactured. This blended material is fed into a twin screw helical extruder; the operation of which is time and temperature controlled. Extruded material is discharged onto cooling rolls and subsequently granulated into a fine powder. Following a screening operation and the removal of metal particles utilizing magnets, the material is packaged into bags for sale.

f) Plastic Rod and Sheet Stock

Plastic rod and sheet stock products (ECCOSTOCK) are manufactured from purchased fillers and resins which are mixed in gallon and five-gallon containers utilizing small drill presses. The mixture is deaerated and poured into a mold of any shape. The mold is then oven cured with cycle times of one to three days at 100°F to 380°F. Following curing the material is removed from the mold and machined to final customer specifications.

2. Microwave Products

a) ECCOSORB Free Space Absorbers

There are four different manufacturing processes used in the manufacture of microwave absorbers as described below.

VHP's and WG's

These solid, pyramidal (VHP) and wedge-shaped (WG) absorbers are manufactured from purchased polyether foam buns to heights of from 4" to 150". The buns are band-sawed into blocks, into which pyramids are cut using a hot wire cutter. Each block is compressed, submerged, and then expanded in a tank containing a solution mainly consisting of carbon black, water, and latex; thereby distributing the solution throughout the piece. They are removed from the tank, compressed again to remove excess solution, and placed in a drying oven for two days at 220°F. If a fire retardant absorber is desired, the blocks are dipped for a second time in a fire retardant solution, air-dried for twenty hours, and oven dried for three days. Following drying the absorbers are trimmed, painted with a waterbase paint, checked for weight, and boxed for shipping.

HPY's

These hollow, pyramidal absorbers are manufactured in heights of 12" to 80" from purchased sheets of polyester foam. The sheets are passed through a roller dip tank containing a carbon black, latex and water solution and are air or oven dried. If a fire retardant absorbent is being produced, the sheets are then dipped and dried for a second time. The sheets are cut to a particular length (depending upon product being manufactured), sprayed on one side with an adhesive, and two sheets are hand laminated. The laminated sheets, now called blankets, are joined along the edges with either one or two more blankets, depending upon the height of absorber being produced. For those absorbers larger than 40" in height, the blanket is laminated with styrofoam for increased strength, prior to grooving. These blankets

are either cut into a circle and placed on a circular grooving machine, or are cut on their diagonal and placed on a special grooving machine. Grooves are cut into the blankets to permit later folding, and the blankets are cut completely through along every fourth groove, forming a triangle. The bottom edges are trimmed square. This triangular shaped blanket is then hand formed into a pyramid and from one to sixteen pyramids (depending on size) are attached to a pre-cut polyester foam base. The absorber is spray painted and, if weatherproofing is desired, will be sprayed with an adhesive then covered with a special cloth.

CV's

These solid, convoluted absorbers are manufactured from purchased polyester buns to heights up to 6". The polyester buns are cut into slabs on a horizontal slicer and passed through a convoluter which imparts the tapered shape of the absorber to the foam. The convoluted slabs are then passed through a roller dip tank containing a carbon black, water and latex solution. Following this impregnation step the slabs are oven dried and trimmed to final size. If weatherproofing is desired, a carbon impregnated absorber will be mated to a convoluted piece of raw foam and covered with special cloth. Both the weatherproofed and non-weatherproofed absorbers are spray painted with a waterbase paint and packaged for shipping.

AN's and LS's

These multi-layered absorber sheets (AN's) and single-layer absorber sheets (LS's) are manufactured from either purchased polyester foam sheets, or from pieces trimmed from purchased polyester buns. As in HPY manufacturing, these sheets, or pieces, are passed through a

roller dip tank containing a carbon black solution and are subsequently dried. The sheets, or pieces, are cut into squares and checked for performance. Based on the thickness and the performance, the sheets are inventoried for later use as AN absorbers.

AN absorbers are composed of multi-layered stacks of sheets which have been glued and pressed together, tested for reflectivity, weatherproofed if desired, and painted for identification.

b) Lenses/Reflectors

Spherical lenses and reflectors are manufactured to any nominal diameter size in the range of three to forty-eight inches.

Purchased polystyrene beads are expanded through the use of heaters and are screened and separated, according to size. Density is determined and the beads are placed into the female portion of a hollow semi-spherical mold, in a formulated density mixture. The mold is closed, live steam is injected for a period of twenty minutes, thus creating a permanent bond amongst the beads. The shells, now approximately one-half inch thick, are removed, dried overnight, and lightly sanded. Shells of different diameters are hand assembled in layers building up to the final lens or reflector diameter. Following anechoic chamber testing, the lenses are packaged and the reflectors are fitted with a reflecting cap. The reflector is then encapsulated in a steam cured epoxy coating which provides physical protection. Following additional anechoic chamber testing, the reflector is then packaged.

3. Flotation Products

ECCOFLOAT - Riser Pipe Modules

Since each riser pipe is of a different configuration, prior to commencing the manufacture of buoyancy modules, it is necessary to design and construct two-piece molds to be used to form the desired buoyancy module. E&C has historically manufactured the frames for these molds and contracted the interior construction to a professional mold maker. The average mold costs between $3,000 to $5,000, and the number purchased would depend upon the particular module order size.

Mold preparation includes the stapling together of pre-cut glass cloth and mat, which is then cemented to the interior surface of both the male and female section of the mold. The two sections are clamped together, hoisted into a vertical position on a vibrating table, and filled with macroballoons while the mold is being vibrated.

Next, the mold is placed into a vacuum tank and filled, under vacuum, with a solution of resin, microballoons, diluent, and a curing agent which is added to the resin solution immediately prior to the vacuuming operation.

Once filled, the molds are removed from the tanks and are either air-cured, or oven-cured, at 200°F. The mold is opened, the riser module is removed, trimmed, sand-blasted, patched, and painted. Buoyancy and core sample checks are periodically performed. The modules are stenciled, weighed and crated for shipping.

Utilizing similar manufacturing procedures, E&C manufactures Flotation Products in a wide variety of shapes and performance ranges, with each application requiring a different material formulation.

VI-B PROPERTY AND FACILITIES

E&C has seven manufacturing facilities: two in Canton, Massachusetts, which also house their central administrative and research facilities; and one each in Gardena, California; Northbrook, Illinois; Oevel, Belgium; Scunthorpe, England; and Hokkaido, Japan. In addition, they also own a two-story facility in London, England, which is utilized as European headquarters, and an office area is leased in Yokahama, Japan, housing Japanese headquarters. Also, several small sales office facilities are being rented throughout the world at the following locations: Silver Spring, Maryland; Philadelphia, Pennsylvania; Richardson, Texas; Paris, France; Cologne, Germany; and Milan, Italy.

The following pages describe each of the manufacturing facilities, including a summary table of pertinent data and a plot plan on each one. The first facility discussed is Plant I in Canton, Massachusetts.

(See Table and Plot Plan on the Following Pages)

VI-E EMERSON & CUMING - PURCHASING/RAW MATERIALS

Emerson & Cuming (E&C) utilizes a minimum of 380 different raw materials in the manufacture of their 300 standard products, with 90% being used in the manufacture of dielectric materials. As a general practice, E&C purchases most individual raw materials from a single source, primarily because of the low volumes used, number of different materials required, and technical time necessary to qualify additional sources. However, the majority of these raw materials are available from other suppliers who could be qualified in the event that E&C's primary source was unable to supply. Further, Dewey and Almy already has excellent relationships with most of E&C's suppliers.

The following discussion includes charts detailing the major raw materials used by E&C by product group, accounting for a minimum of 65% of the total E&C raw material purchase costs. The charts include only those materials whose procurement significantly affect a total product group and whose costs/volume warrants inclusion. In addition, E&C management maintains that the effects of an inability to procure those other raw materials could be minimized through reformulating the products, whereas an inability to procure materials on these charts would have a more significant effect on E&C's business.

The table on the following page shows key raw materials data for E&C's Dielectric Materials business and is followed by a discussion of the data.

(See table on following page)

EMERSON & CUMING
RAW MATERIAL DATA

DIELECTRIC MATERIALS

Line No.	Material	Primary Suppliers	(1) 1977 Quantity Purchased	(2) 1977 Price/Unit	(3) 1977 Total ($000)	(4) 1975-1977 Price Incr. Avg. Annual Inc./(Dec.
	Epoxy Resins	Shell -				
(01)		U. S.	365,000 lbs.	$ .72	$262.8	9.5%
(02)		Europe	160,000 lbs.	.92	147.2	3.4
(03)		Japan	15,000 lbs.	1.05	15.8	(0.2)
		Ciba-Geigy -				
(04)		U. S.	67,000 lbs.	.75	50.3	9.1
(05)		Japan	29,000 lbs.	1.10	31.9	1.6
		Dow -				
(06)		Europe	21,000 lbs.	1.12	23.5	0.6
(07)	Silver Silflake 135	Handy-Harmon	65,000 Tr.Oz.	5.27	342.6	(1.1)
(08)		Others	4,200 Tr.Oz.	6.29	26.4	(4.5)
(09)	Tabula Alumina	Alcoa	275,000 lbs.	.30	82.5	5.4
(10)	Carbonyl Iron Powder	GAF	40,000 lbs.	1.57	62.8	5.4
(11)	Silicone Resins	Stauffer	35,000 lbs.	3.85	134.8	2.7
(12)		Gen. Elec.	3,900 lbs.	3.85	15.0	2.7
(13)	PMDA	DuPont	7,000 lbs.	7.50	52.5	-
(14)	Polyglycol Diamine	Union Carbide	21,000 lbs.	3.02	63.4	1.9
(15)	TEPA	Union Carbide	53,000 lbs.	1.16	61.5	10.5
(16)		Bayer	19,000 lbs.	1.23	23.4	(11.9)
(17)	Pleogein 4050	Amer. Petrochem.	19,000 lbs.	1.15	21.9	7.2
(18)	BGE	Ciba-Geigy	22,000 lbs.	1.19	26.2	9.9

Checked By: JBN
Date: 11/4/77

Since most of the dielectric materials are specially formulated, there are many raw materials which are important in the formulation of a particular product, but whose cost and quantity used is quite small and, therefore, do not appear on the chart. However, we have not attempted to research the availability and possibility of substituting for such materials since inability to procure such an item would not dramatically affect a total product group.

Epoxy Resins

As will also be discussed in the Flotation Products section, the types of epoxy resins used by E&C are readily available from many sources, with at least two sources of supply expanding their liquid epoxy capacities.

Silver Silflake 135

This flaked 99% silver material is used throughout the ECCOSHIELD and ECCOBOND product lines. E&C U. S. is presently purchasing 100% of their requirements from Handy and Harmon Company in Canton, Massachusetts. The European and Japanese divisions purchase their silver requirements from local suppliers.

In the event that Handy and Harmon were no longer able to supply this product, other flaked silver manufacturers in the U. S., such as Alcoa, would be available. This situation is unlikely based on discussions with Handy and Harmon personnel who presently offer this material for delivery within twenty-four hours of order placement.

Tabula Alumina

This low iron content, 325 mesh, aluminum powder is used as a filler in the manufacture of STYCAST and ECCOBOND products to enhance their thermal conductivity. E&C presently purchases this material from Alcoa, who is the only world supplier of this type of aluminum. Other higher iron content, harder mesh aluminum powders are available from Kaiser and Alcoa and could be utilized in these dielectric material formulations in the event that this particular type was not available.

Carbonyl Iron Powder

This 99.9% pure iron powder is formulated into ECCOSHIELD and ECCOSORB products providing those items with specific microwave properties. E&C presently purchases this material from GAF, the existing sole source of supply. However, identical material is available from specialty formulators such as Belmont Metals, Inc. in New York.

Silicone Resins

E&C presently uses three different types of silicone resins in their dielectric material formulations, purchasing 90% from Stauffer and 10% from General Electric. These low viscosity, unfilled resins become the formulation building blocks for the ECCOSIL product line. Substitute materials are available from Dow Corning in addition to General Electric and Stauffer. In fact, Stauffer is the smallest manufacturer of the three available suppliers. E&C is not a large user of silicone resins and no future supply problems are anticipated.

PMDA

PMDA (pyromelliticdianhydride) is available in the United States only from DuPont Chemical and is a component used in the manufacture of two E&C catalysts. This material can be obtained in Europe from Merck and Veba Chemie AG; however, the quantities used by E&C are such that alternate sources should not be necessary in the foreseeable future.

Polyglycol Diamine

This material, used in the manufacture of one E&C catalyst, is purchased from Union Carbide, which is the only known source of supply for this material. However, in the event this material was unavailable from Union Carbide, a replacement could be formulated using readily available amines.

TEPA

TEPA (tetraethylenepentamine) is an epoxy resin catalyst sold as a catalyst by E&C. This material is purchased in the U. S. from Union Carbide and in Europe from Bayer Chemical. In addition, two English sources of supply are also available for this material.

Pleogein 4050

This low water content polyester resin is used as a coreactant in the manufacture of ECCOFOAM, a urethane foam. E&C purchases this material from Mor Rez Division of American Petrochemical Co.

BGE

BGE (butylglycidol ether) is an epoxy resin diluent used in the manufacture of STYCAST products. E&C presently purchases this material from Ciba-Geigy, however, other similar epoxy resin diluents are available from Shell Chemical and Reichhold Chemical.

The following table shows key raw materials data for E&C's Microwave Products business and is followed by a discussion of the data.

EMERSON & CUMING
RAW MATERIAL DATA

MICROWAVE PRODUCTS

Line No.	Material	Primary Suppliers	(1) 1977 Quantity Purchased	(2) 1977 Price/Unit	(3) 1977 Total ($000)	(4) 1975-19 Price In Avg. Annu Inc./(De
(01)	Pliobond 2014	Goodyear	12,000 gal.	$ 6.55	$ 78.6	13.67
	Neoprene Latex	DuPont-				
(02)		U. S.	75,000 lbs.	.57	42.8	17.9
(03)		Europe	35,000 lbs.	.52	18.2	-
(04)		Japan	30,000 lbs.	.73	21.9	-
(05)	Oncor 23-A	N.L. Industries	9,500 lbs.	1.60	15.2	(1.7)
(06)	Vulcan XC-72 Pellets	Cabot Corp.	20,000 lbs.	.40	8.0	4.0
(07)	Polyurethane Foam	General Felt	340 pcs.	135.00	45.9	6.0
(08)		United Foam	2,450 rolls	11.00	27.0	N.A.
(09)		Alleluia Cushion	78,000 lbs.	.90	70.2	N.A.
(10)		PRB - Europe	27,000 lbs.	1.17	31.7	4.9
(11)		Bridgestone KK	54 pcs.	168.50	9.1	-
(12)		Japan	1,600 rolls	15.69	25.1	-

(a) While neoprene latex has increased 17.9% per year during the three year period 1975-1977, the price has been stable during the past two years.

Microwave Products

Pliobond 2014

Pliobond is an adhesive, manufactured by Goodyear Tire & Rubber Co., used throughout the microwave absorber manufacturing process for such things as; bonding polyester foam sheets together in the HPY manufacturing process, bonding finished absorbers to their bases, and bonding weatherproofing cloth to absorbers. Goodyear is the only available supplier for this material; however, similar types of adhesives are available from Goodyear and other manufacturers, such as Goodrich.

Neoprene Latex 400

This latex is one material used in the carbon black dipping solution for impregnating microwave absorbers. DuPont is the sole source of supply for this material however, E&C is a relatively small consumer and DuPont does not anticipate any future supply problem.

Oncor 23-A

Oncor is a fire retardant used in the dipping solution for impregnating fire retardant microwave absorbers. This material is a combination of antimony oxide and inert silica which imparts a flame resistance to the foam. N. L. Industries is the only known source for this material; however, in the event that Oncor 23-A was unavailable, E&C could accomplish the same purpose using antimony trioxide, a readily available substitute.

Vulcan XC-72 Pellets

These conductive carbon black pellets are one of the components used in the microwave absorber dipping solution and are presently being purchased from Cabot Corporation. Other similar types of carbon black are readily available from suppliers such as Cities Service.

Polyurethane Foam

E&C presently purchases polyester and polyether foam in the form of rolls or buns at a specific foam density. The rolls are converted into hollow microwave absorbers (HPY's) and the buns into solid microwave absorbers (VHP's). E&C presently has several foam sources available at the three microwave manufacturing locations. These sources include General Felt Co., United Foam, Alleluia Cushion, and PRB. There are several other sources who supply these types of foam and the utilization of a new source would only require the establishment of mutually agreeable quality control procedures to insure a continuing supply of foam at a proper density.

The following table shows key raw materials data for E&C's Flotation Products business and is followed by a discussion of the data.

EMERSON & CUMING
RAW MATERIAL DATA

FLOTATION PRODUCTS			(1)	(2)	(3)	(4)
Line No.	Material	Primary Suppliers	1977 Quantity Purchased	1977 Price/Unit	1977 Total ($000)	1975-1977 Price Incr Avg. Annual Inc./(Dec
	Epoxy Resins	Shell -				
(01)		U. S.	390,000 lbs.	$ .72	$280.8	9.5%
(02)		Europe	331,000 lbs.	.92	304.5	3.4
		Ciba-Geigy -				
(03)		U. S.	60,000 lbs.	.75	45.0	9.1
(04)	Versamid 140	General Mills	180,000 lbs.	1.00	180.0	-
(05)		Union Camp	10,000 lbs.	1.00	10.0	-
(06)	Epoxide 8	Proctor & Gamble	70,000 lbs.	.94	65.8	5.2
(07)	Milled Fibers	Ferro Div. Reichhold	188,000 lbs.	.53	99.6	4.0
(08)	Microballoons B-23/500	3M	182,000 lbs.	.95	172.9	5.7
(09)	KFP-524	Arco Polymers	38,000 lbs.	.78	29.6	2.0
(10)	Enkamat	American Enka	115,000 sq ft.	.23	26.5	(12.4)
(11)	Glass Cloth	Owens Corning	24,000 lbs.	.75	18.0	8.3

Flotation Products

Epoxy Resins

By far, the most important large volume raw materials used by E&C are the epoxy resins. E&C is presently purchasing four similar types of epoxy resin from Shell Chemical (90%) and from Ciba-Geigy (10%). These resins are used in virtually all the dielectric and flotation products formulations.

In addition to Shell and Ciba-Geigy, similar types of epoxy resins are available from Dow Chemical, Celanese, General Mills, and Reichhold Chemical. At the present time, Reichhold is actively pursuing a portion of E&C's epoxy resin re-

130 million pounds per year. In addition, Shell Chemical presently has plans to double their liquid epoxy capacity from 52 million pounds per year to 100 million pounds per year by the second quarter of 1978. It is also rumored that Ciba-Geigy is planning an expansion providing an additional 26 million pounds per year. No future supply problems are anticipated and if the two expansions do take place, there is a possibility of an overcapacity situation.

Versamid 140

This polymerized amine is used in flotation riser module formulations as an epoxy curing agent. While E&C presently procures 95% of their requirements from General Mills, substitute materials are available from several customers such as Union Camp, Ciba-Geigy, Reichhold, and Humko Chemical. In addition, Reichhold is actively pursuing a portion of E&C's polyamid business.

Epoxide 8

This epoxy diluent is used in the formulation of flotation products. Procter & Gamble (P&G) is the only known source of supply for the Epoxide 8 material; however, other epoxy diluents could be used in the event that P&G was unable to supply this material.

Milled Fibers

These 1/32" long fiberglass fibers are used in the coating of expanded polystyrene beads which are then formulated into flotation products. E&C purchases these fibers from the Ferro Division of Reichhold Chemical. Reichhold has indicated that the Ferro manufacturing capacity for these fibers will be expanded in the future and no supply problems are anticipated. In addition,

similar acceptable fibers could be obtained from Henry and Frick, a distributor for Owens Corning.

Microballoons B-23/500

These microballoons, purchased exclusively from 3M, are used in the formulation of riser pipe modules intended to operate at a depth of 2,000 feet or less. E&C presently manufactures microballoons used in riser module formulations for applications at depths greater than 2,000 feet. 3M is presently the only source of supply for this particular type of microballoon. However, if necessary, E&C could use their own microballoon in place of the 3M microballoons in the riser module formulation. However, E&C has found that it is economically advantageous to purchase this type of microballoon for the particular module application, as opposed to manufacturing a substitute.

KFP-524

This gasoline resistant polystyrene bead is purchased exclusively from Arco Chemicals. These beads are expanded and coated with milled fibers to be used in flotation product formulations. Arco is the only manufacturer of a polystyrene bead which will expand to approximately 3/8" diameter when subjected to steam. Discussions with Arco reveal that E&C is a small consumer of these beads and continued supply should not be a problem. Foster Grant and BASF manufacture polystyrene beads, however, these beads are a smaller size and reformulation of E&C's flotation product would be required to utilize these beads.

Enkamat

This spongy nylon material is used to line the riser module molds prior to their filling with a resin, microballoon, and polystyrene bead formulation. After

filling and curing, the enkamat becomes a protective integral exterior layer of the riser module providing a physical separation between the seawater and the microballoon components contained within a riser module. The American Enka Company is the sole source of supply for this material which is manufactured in Europe. In the event this material would be unavailable, E&C management feels that substitutes are available.

Glass Cloth

This fiberglass cloth material is also used to line the riser module molds prior to their filling with a resin, microballoon, and polystyrene bead formulation. After filling and curing the fiberglass cloth also becomes a protective exterior layer of the riser module. This material is presently purchased from Henry and Frick, a distributor for Owens Corning Co. and acceptable substitutes can be purchased from Owens Illinois.

The table on the following page shows the key raw materials used in the manufacture of E&C's Microballoons and is followed by a discussion.

(See table on following page)

EMERSON & CUMING
RAW MATERIAL DATA

MICROBALLOONS

Line No.	Material	Primary Suppliers	(1) 1977 Quantity Purchased	(2) 1977 Price/Unit	(3) 1977 Total ($000)	(4) 1975-1977 Price Incr Avg. Annual Inc./(Dec.
(01)	Sodium Silicate	Diamond Shamrock	500,000 lbs.	$ .03	$ 15.0	13.0%
(02)	Boric Acid	New England Chem.	48,000 lbs.	.24	11.5	22.5
(03)	Urea	New England Chem.	5,300 lbs.	.14	.7	24.7
(04)	Cenospheres	Hargraves	450,000 lbs.	.015	6.8	-

Microballoon Products

As discussed in the Manufacturing Process section, E&C manufactures their microballoon feedstock, using a spray dryer, in Canton, as well as utilizing Custom Processing, Inc. in New Jersey to manufacture about 50% of their feedstock. E&C has recently increased their spray drying capacity and anticipates manufacturing 100% of their microballoon feedstock at their Canton, Mass., facility. In the event that the E&C spray drying manufacturing operation is taken out of operation, the total feedstock requirements can be manufactured by Custom Processing, insuring a continuing feedstock source of supply.

Sodium Silicate

This raw material used in the manufacture of microballoon feedstock is presently being purchased almost exclusively (95%) from Diamond Shamrock. Several other sources of supply are available for this material, such as Allied Chemical, DuPont, Philadelphia Quartz, the Davison Division of W. R. Grace & Co.

Available industry capacity is such that no future supply problems are anticipated.

Boric Acid

This component of microballoon feedstock is a borate derivative purchased almost exclusively from New England Chemical. Other sources of supply are available, such as Kerr McGee, Stauffer, and U. S. Borax. The present supply for borates, and hence boric acid, is quite tight; however, based on E&C quantities used, no future supply problems are anticipated.

Urea

This third component of microballoon feedstock is also being purchased almost exclusively from New England Chemical. Many other sources of supply are available with the E&C quantities used being miniscule in comparison to the urea availability.

Cenospheres

As discussed in the Microballoon Manufacturing Process section, this material is converted into ceramic microballoons by E&C through a drying operation. The material is a microballoon purchased from Hargraves in London, England. This material is fly ash, a by-product of coal burning, and is available from only one location in England due to the type of coke used at that power facility. Discussion with Hargraves by E&C management has revealed that there exists an abundance of this fly-ash at this location ensuring a continuing supply for at least 10 years.

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Listing to Schedule
to Section 7.36

LISTING OF MATERIAL SAFETY DATA SHEETS AND OTHER PERTINENT INFORMATION.

ECCOSPHERES FA-A	Radiobiology Laboratory, University of Calif. Davis 95616, Report of possible Mutagenic properties.
ECCOSORB	Material Safety Data Sheets.
STYCAST	Material Safety Data Sheets.
ECCOSHIELD	Material Safety Data Sheets.
ECCOCOAT	Material Safety Data Sheets.
ECCOSPHERES, EPOXY RESIN-	Material Safety Data Sheets.
ECCOSPHERES, GLASS	Material Safety Data Sheets.
CATALYSTS	Material Safety Data Sheets.
ECCOFOAM	Material Safety Data Sheets.
ECCOSIL	Material Safety Data Sheets.
ECCOMOLD	Material Safety Data Sheets.
ECCOBOND	Material Safety Data Sheets.

Mutagenicity of Filtrates from Respirable Coal Fly Ash

Abstract. *Incubation of histidine-requiring auxotrophs of the bacterium* Salmonella typhimurium *with cyclohexane-, saline-, and serum-soluble surface components of respirable fly ash particles produced an increased number of revertants in two frameshift tester strains. The results are consistent with the hypothesis that both organic and inorganic mutagens are present in coal fly ash.*

Coal combustion for electric power generation is predicted to increase dramatically throughout the remainder of this century. It can be estimated that in 1974 a total of 2.4×10^6 metric tons of fly ash was released to the atmosphere from all coal-burning facilities in the United States (*1*). As part of our studies of the potential health impacts of electrical energy-producing coal combustion technologies, we evaluated the mutagenicity of soluble components of respirable coal fly ash. Recent studies have shown a high positive correlation between carcinogenicity of substances for animals or man and mutagenic activity in a bacterial test system (*2*).

Kilogram quantities of size-fractionated fly ash were collected downstream of the electrostatic precipitator from the smokestack breeching of a large modern power plant burning pulverized low sulfur, high ash coal (*3*). Of the four sized fractions obtained, the finest fraction, with a mass median diameter (MMD) of 2.2 μm and geometric standard deviation (σ_g) of 1.8, is the most biologically important since particles of this size have the longest atmospheric residence time, are most efficiently deposited in deep lung, and are least efficiently removed (*4*). Five strains of histidine-requiring (his$^-$) auxotrophs of the bacterium *Salmonella typhimurium* (supplied by B. N. Ames) were used. The testing methods and mutations involved have been described (*2*). Briefly, strains TA100 and TA1535 have been used to detect base-pair substitution mutagens; TA1537, TA1538, and TA98 are strains that are susceptible to frameshift mutagens. Strains TA98 and TA100 have an ampicillin-resistant R factor not present in the other strains. Sufficient histidine was added to agar plates to allow the histidine-requiring bacteria to replicate several times in the presence of the test substance. After incubation, the histidine-synthesizing (his$^+$ revertant) bacteria colonies were counted.

Two media were selected for mutagenicity studies with fly ash. Dulbecco's phosphate-buffered saline was used because it has the *p*H and tonicity of physiological fluids, and horse serum was used because serum has a chemical constituency similar to lung alveolar fluid and forms soluble complexes with some carcinogenic heavy metals (*5*). Fly ash samples were incubated separately with each of these media for 2 weeks at 37°C. After incubation, the fly ash mixtures were centrifuged at 35,000*g*, and the supernatants were passed through a 0.45-μm membrane filter to remove particulate matter. Media controls of serum or saline were treated in the same fashion as the fly ash mixtures. Filtrates were added to filter paper disks in the standard spot test and also added to soft, top agar pour plates. No mutagenic activity was found with the spot test, but revertants were seen with the plate technique. This was evidence that the mutagen or mutagens did not diffuse into the media from the paper disks. Of the five strains tested, TA98 and TA1538 showed his$^+$ revertants, whereas TA1535, TA1537, and TA100 did not. Because strain TA1538 showed two to three times the number of revertants as TA98, TA1538 was used in subsequent tests with varying concentrations of fly ash. Serum filtrate had approximately tenfold greater activity than the saline filtrate (Fig. 1). Solubility of substances responsible for mutagenic activity in saline, a polar solvent, suggested the presence of polar organic or inorganic mutagens. Although these tests confirmed the presence of direct mutagens, many mutagens require metabolic conversion by cellular microsomal enzymes to active mutagens (*2*). In further experiments, addition of optimal concentrations of rat liver homogenates from rats treated with polychlorinated biphenyl (Arochlor 1254) (*2*) did not significantly increase the number of revertants in either the saline or serum filtrate (Table 1).

Further work was designed to evaluate the chemical nature of the active fly ash components. Fly ash was extracted directly with cyclohexane, a nonpolar, nonmutagenic organic solvent. The extract was evaporated to dryness and reconstituted with dimethyl sulfoxide, and this mixture was tested for mutagenicity. About 40 percent of the mutagenic activity of the serum filtrate was present, and metabolic activation increased the number of revertants 2.2-fold (Table 1). At least a portion of the activity thus can probably be attributed to mutagenic nonpolar organic compounds. In contrast, after extraction of the saline filtrate with cyclohexane, mutagenic activity was found only in the aqueous fraction. This confirmed the polar nature of the activity of the saline-soluble fraction and suggested the presence of at least two mutagenic compounds.

To further assess the chemical speciation of the mutagenic activity in the serum filtrate, 2 m*M* disodium ethylenediaminetetraacetic acid (EDTA), a metal chelator, was added to serum filtrate. The number of his$^+$ revertants was increased by about 60 percent compared to the untreated filtrate (Table 2). In order to test the hypothesis that EDTA had chelated mutagenic metals complexed with serum proteins, EDTA-treated and untreated serum filtrates were fractionated on a Sephadex PD-10 column with a cutoff at 25,000 daltons. EDTA (2 m*M*) was added to one portion of serum filtrate and stirred overnight at 4°C before elution on the column. A second portion was prepared in the same manner without prior treatment with EDTA. Each of these two filtrates was eluted with three void volumes of double-distilled water. The first fraction contained more than 95 percent of the total serum protein. The second had the remaining protein and a

Table 1. Number of TA1538 His$^+$ revertants per plate with and without metabolic activation. The concentration of fly ash incubated with serum and saline before filtration was 78 mg/ml; the cyclohexane extract was evaporated under nitrogen and reconstituted with dimethyl sulfoxide to the equivalent of 78 mg/ml. All controls were treated in a manner analogous to the test materials. Spot tests were positive with 4-nitro-quinoline-*N*-oxide without S-9 (the supernatant fraction of rat liver homogenate, centrifuged at 9000*g*) and with 2-aminofluorene and S-9 added. Mean values ± the standard error of the mean (S.E.M.) were for three replicate determinations. The number of spontaneous revertants per plate was 7 ± 1. The number of revertants with addition of S-9 alone was 20 ± 1.

Test media	S-9 not added		S-9 added	
	Fly ash	Control	Fly ash	Control
Serum filtrate*	154 ± 32	10 ± 2	202 ± 18	12 ± 5
Saline filtrate*	17 ± 3	4 ± 1	40 ± 9	16 ± 2
Cyclohexane extract	62 ± 2	5 ± 2	151 ± 8	27 ± 5

*The mutagenic activity of serum and saline filtrates in these studies was somewhat less than that observed in the earlier dose-response experiments (Fig. 1).

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small amount of low-molecular-weight compounds, while the third fraction contained only low-molecular-weight components. Each of the three fractions was lyophilized and reconstituted with double-distilled water before testing. Regardless of prior treatment with EDTA, the total mutagenic activity in the fractions was lower than that in the original filtrate (Table 2). Of the total net activity after subtraction of background revertants (5.0 ± 1.0 percent), 79, 18, and 3 percent were present in the first, second, and third untreated fractions, respectively. Of the total net activity after subtraction of appropriate control values (Table 2) 83, 0, and 17 percent were found in the three EDTA-treated fractions, respectively. The significant increase ($P < .001$) in the activity of the low-molecular-weight fraction of the EDTA-treated serum filtrate lends credence to the hypothesis that EDTA acted by chelating mutagenic metals from serum proteins. The mutagenic activity was predominantly associated with the fraction of higher molecular weight, with or without EDTA treatment. This activity may be due to organic compounds postulated, as a result of the cyclohexane extraction studies, to be present on fly ash surfaces. Mutagenic organic compounds—for example, polynuclear aromatic hydrocarbons—have been shown to bind to proteins (6). Additional explanations for the relative enhancement of the mutagenicity of the serum filtrates compared to the saline filtrates include the possible presence of (i) enzymes in serum capable of converting promutagens to mutagens or (ii) protein-mutagen complexes that are more available to the bacterial cells.

We have studied the trace element composition of the fractionated fly ash. The respirable fly ash fraction, relative to the other sized fractions, has the highest concentration of many elements (7) that in some chemical forms have been reported to be mutagenic (8–13) or carcinogenic (14). In order of decreasing concentration enhancement, relative to the coarsest fraction (MMD = 20 μm; σ_g = 1.9), the following elemental concentrations (micrograms per gram) for some mutagenic or carcinogenic metals analyzed by instrumental neutron activation analysis or atomic absorption spectrophotometry (15) in the finest fraction have been determined: Cd(4.6), Se(198), As(132), Sb(20.6), Mo(50), Pb(278), Co(21), Cu(137), Be(10.3), Ni(40), Mn(309), and Fe(32,000). The inverse dependence of concentration on particle size has been explained, for the most part, as being due to condensation of volatile metals and their oxides on the surface of fly ash particles (16). Therefore, although average concentrations of potentially toxic materials on the surface of these aluminosilicate spheres (17) may be on the order of tens or hundreds of micrograms per gram, surface concentrations may be as high as 1 to 5 percent (18). Of the metals found in fly ash, a number have been demonstrated to be mutagenic in the *Salmonella* reversion assay (8). These include compounds of chromium (10, 11), iron (12), manganese (13), and selenium (10). Sirover and Loeb have suggested that the mechanism of damage by many mutagenic and carcinogenic metals is due to decreased fidelity of DNA synthesis (19). Sodium bisulfite, which may be present on the surface of fly ash (20), has also been shown to be mutagenic (21).

Table 2. Effect of EDTA treatment and serum fractionation on the number of TA1538 His⁺ revertants per plate. The concentrations of fly ash incubated with serum was 78 mg/ml (as in Table 1). The mean values ± S.E.M. were for five determinations. The number of spontaneous revertants per plate was 5 ± 1. Controls were serum samples with EDTA added and treated in a manner analogous to the test materials. Abbreviation: UF, unfractionated.

Serum filtrate fraction	Fly ash	Fly ash + EDTA	Control
UF	162 ± 18	261 ± 25	8 ± 2
Fraction 1	79 ± 11	94 ± 10	7 ± 1
Fraction 2	21 ± 4	11 ± 4	11 ± 2
Fraction 3	7 ± 2	22 ± 3	4 ± 1

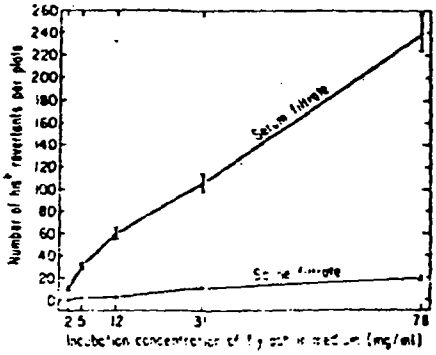

Fig. 1. Dose response curves for mutagenicity of fly ash filtrates with strain TA1538. The number of his⁺ revertants per plate is the mean of 5 to 20 replicate determinations minus the mean of the appropriate background revertants (serum or saline). The background reversion was defined as the group mean of the spontaneous revertants and the appropriate media control after it was determined that the number of his⁺ revertants in all negative controls was not significantly different from that of spontaneous revertants. The means (± S.E.M.) of the background revertants were 5.8 (±0.4), 6.9 (±0.9), 4.0 (±0.6) for the spontaneous revertants, serum controls, and saline controls, respectively. Filtrate (100 μl) was added to 2 ml of soft top agar before plating. Plates were incubated for 2 days at 37°C. The vertical bars are 1 S.E.M.

Although we have not analyzed for organic compounds, they (particularly polynuclear aromatic hydrocarbons) have been reported to be present on the surface of fly ash (22). Studies of suspended particulates in urban aerosol have also resulted in the identification of polynuclear aromatic hydrocarbons, as well as oxidized species, including polycyclic quinones (23). Although most polynuclear aromatic hydrocarbons require metabolic activation, some of the oxides do not (24). It has been postulated (25) that, in addition to polynuclear aromatic hydrocarbons, urban aerosols contain other extractable organic components that are mutagenic in the Ames test system. Since our fly ash samples were collected at 100°C from the power plant smokestack, concentrations of organic compounds were probably lower than would be present if the fly ash were cooled rapidly to ambient temperatures as occurs in the smokestack plume; however, the organic compounds may be altered by interaction with effluent gases or light and other environmental constituents (22).

In summary, evidence has been presented that filtrates from a respirable fraction of coal fly ash collected from a power plant over a 30-day period contain substances that cause frameshift mutations in a bacterial strain lacking normal excision repair. These substances apparently include both organic and inorganic compounds. Increased mutagenicity of the serum filtrate compared to the other filtrates may indicate that extraction with serum increases the sensitivity of the Ames technique for detecting mutagenicity of complex mixtures. It may be expected that substances on the surface of fly ash deposited in the deep lung should be similarly soluble in alveolar fluid. The prospect of a large increase in the amount of coal burned for energy production warrants specific identification of these mutagenic substances and a careful assessment of the possible carcinogenic properties of respirable fly ash.

C. E. CHRISP
G. L. FISHER, J. E. LAMMERT
Radiobiology Laboratory, University of California, Davis 95616

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26. Supported by the U.S. Energy Research and Development Administration. We thank Lloyd Dawes and David Silberman for technical assistance, Dr. Marvin Goldman for advice and encouragement, Dr. Leon Rosenblatt for statistical support, and Drs. S. Book, O. Raabe, M. Shifrine, and F. Wilson and Mr. J. Azevedo for critical reading of this manuscript.

17 June 1977; revised 15 August 1977

Pierce's Disease of Grapevines: Isolation of the Causal Bacterium

Abstract. *A Gram-negative, rod-shaped bacterium has been consistently isolated from grapevines with Pierce's disease. Grapevines inoculated with the bacterium developed Pierce's disease, and the bacterium was reisolated from the plants. The bacterium was serologically and ultrastructurally indistinguishable from the one in naturally infected plants, and also indistinguishable from a bacterium isolated from almonds with almond leaf scorch disease.*

The etiological agent of Pierce's disease (PD), an important and often devastating disease of grapevines (*Vitis vinifera* L.) (*1*), is also considered to cause alfalfa dwarf (*2*) and almond leaf scorch diseases (*3*). Prior to 1971, PD was considered to be a viral disease (*4*), but chemotherapy, thermotherapy, and electron microscopy subsequently implicated the "rickettsia-like" organism seen in the xylem vessels of diseased grapevines as the etiological agent (*2, 5, 6*). Many investigators have reported failure to isolate the PD pathogen from diseased plants using artificial media (*2, 6, 7*). Similar insect-vectored bacteria have recently been associated with a number of other plant diseases, and although determination of their pathogenicity and taxonomic position has been delayed by the inability of investigators to culture these bacteria, they apparently constitute a new group of plant pathogenic bacteria (*8*).

Recently, a Gram-positive, catalase-negative bacterium that could be isolated from infectious leafhopper vectors but not from diseased plants was reported to be the etiological agent of PD (*7*). However, this bacterium did not infect healthy plants following direct inoculation, and contradictory evidence as to its causal role has been reported (*9*).

We now report the consistent culture of a Gram-negative, catalase-positive bacterium from grapevines with PD, and evidence that this bacterium causes PD.

A rod-shaped, Gram-negative bacterium was first isolated on our JD-1 medium (Table 1) from grapevines experimentally inoculated by the leafhopper vector, *Homalodisca coagulata* (Baker). Initially, the inoculum was collected by centrifugation of sap from surface-sterilized petioles; in later isolations, inoculum was obtained by expressing sap from petioles with forceps. The inoculum was blotted directly from the petioles onto the media. Colonies on the JD-1 medium appeared after 2 to 3 weeks of aerobic incubation at 28°C. Progressive refinements in the culture medium shortened the necessary incubation period. On the JD-3 medium (Table 1), small but distinct colonies are visible without magnification within 6 days. Colonies are circular with entire margins, white, smooth, and convex, and reach a diameter up to 1.0 mm within 2 weeks.

We have consistently isolated the PD bacterium from diseased grapevines. In one isolation experiment, single petioles from 195 rooted cuttings of eight European grapevine varieties (Pinot Noir, Mission, Ruby Cabernet, Flora, Cabernet Sauvignon, White Riesling, Barbera, and Thompson Seedless) were used. Pierce's disease had been transmitted with leafhopper vectors to 116 plants. Of the 79 remaining plants categorized as healthy, 52 had been subjected to feeding by leafhoppers but did not develop PD, and 27 were noninoculated controls. Positive isolations on the JD-2 medium (Table 1) of the PD bacterium determined on the basis of colony characteristics were obtained from 97.4 percent (111/116) of the diseased plants. Only one plant in each group of healthy plants, or a total of 2.5 percent (2/79), yielded bacteria with colonies resembling those of the PD bacterium. Other bacteria were rarely isolated from diseased or healthy plants.

The pathogenicity of the PD bacterium was tested by inoculating green stem cuttings of the grapevine varieties Pinot Noir, Mission, and Ruby Cabernet. The upper end of each two- or three-node cutting with leaves intact was attached to a vacuum pump, and 0.1 to 0.2 ml of a turbid suspension of the PD bacterium (approximately 5×10^8 bacteria per milliliter) in sterile tap water was drawn into each cutting. Controls consisted of noninoculated cuttings and cuttings inoculated with sterile tap water alone, or with suspensions of *Erwinia amylovora* (8×10^8 bacteria per milliliter). After inoculation, the cuttings were rooted on a heated bench under intermittent mist for 14 days and transplanted. Typical PD symptoms (*1*) developed in 86 percent (43/50) of the cuttings inoculated with the PD bacterium within 2 to 4 months, and many of these plants died within 5 months. All 47 of the control plants remained healthy throughout the study. Colonies characteristic of the PD bacterium were reisolated from 35 of 36 in-

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Listing to Schedule
to Section 7.36

Listing of Raw Materials used by Emerson & Cuming, Inc.

7.36

JD CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA	R/M
20 00 00	SILFLAKE 135	LB	49.500	78.000	78.000			8/31/77		1		
20 00 00	SILFLAKE 135	LB	49.500	78.000	78.000			8/31/77		4		
20 00 00	SILFLAKE 135	LB	49.500	78.000	78.000			8/31/77		0		
20 00 00	SILFLAKE 135	LB	49.500	78.000	78.000			8/31/77		8		
1 00 00	SILFLAKE METZ #7	GM	.109	.185	.172			8/31/77		1		
3 00 00	ACCELERATOR 062 (BDMA)	LB	5.840	5.840	.000				C	6		
3 00 00	ACCELERATOR 062 (BDMA)	LB	5.840	5.840	.000			10/31/76	C	0		
5 00 00	ACTIVATOR 23	LB	5.040	5.040	.000				C			
5 00 00	ACTIVATOR - 23	LB	5.040	5.040	.000							
5 00 00	ADHESIVE 401 HOT MELT	LB	3.250	3.250	.000					4		
0 00 00	4 X MICA	LB	.040	.058	.048			8/31/77		6		
0 00 00	4 X MICA	LB	.040	.058	.048			8/31/77		5		
0 00 00	4 X MICA	LB	.040	.058	.048			8/31/77		0		
0 00 00	4X MICA	LB	.040	.058	.048			8/31/77				
0 00 00	A BUTON A 500	LB	.190	.195	.000					6		
0 00 00	ABUTON A 500	LB	.190	.195	.000				C	2		
0 00 00	ACCELERATOR C 5100	LB	1.210	1.210	.000				C	6		
0 00 00	ACCELERATOR C 5100	LB	1.210	1.210	.000					0		
0 00 00	ACCELERATOR C5100	LB	1.210	1.210	.000							
5 00 00	ACETONE	LB	.130	.310	.000			10/24/77	C	6		
5 00 00	ACETONE	LB	.130	.310	.235			6/08/77	C	4		
5 00 00	ACETONE	LB	.130	.310	.235			6/08/77				
5 00 00	ACETONE	LB	.130	.310	.235			6/08/77				
5 00 00	ACETONE	LB	.130	.310	.235			6/08/77				
0 00 00	ACHESON 39	LB	.190	.368	.330			8/31/77		6		
0 00 00	ACHESON 39	LB	.190	.368	.000			10/24/77		6		
0 00 00	ACHESON 39	LB	.190	.368	.330			12/20/76		5		
0 00 00	ACHESON 39	LB	.190	.368	.330			12/20/76		0		
0 00 00	ACHESON 39	LB	.190	.368	.330			12/20/76	C			
0 00 00	ACRYLOID B 7	LB	.540	.540	.000				C	6		
0 00 00	ACRYLOID B-7	LB	.540	.540	.000							
0 00 00	ACRYLOID B 7	LB	.540	.540	.000							
00 00	ACRYLOID B 44	LB	.310	.525	.000			10/24/77	C	6		
00 00	ACRYLOID B 44	LB	.310	.525	.420			12/20/76	C	4		
00 00	ADIPRENE L 167	LB	1.120	1.320	.000					6		
00 00	ADIPRENE L 167	LB	1.120	1.320	.000				C	6		
00 00	ADIPRENE L 167	LB	1.120	1.320	.000							
00 00	ADX 52	LB	.940	2.000	.000							
00 00	ADIPRENE LW-520	LB	1.370	2.160	1.730			6/08/77				
00 00	ADIPRENE LW520	LB	1.370	2.160	1.730			6/08/77		6		

Pages 1-36

ID CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA STA	USER R/M
54 00 00	ADIPRENE LW 520	LB	1.370	2.160	1.730			6/08/77		0	
65 00 00	AO X 80	LB	2.880	4.000	3.400			6/08/77			
76 00 00	AGERITE RESIN D	LB	1.060	1.160	.000			8/31/77		0	
76 00 00	AGERITE RESIN D	LB	1.060	1.160	1.060			4/14/77		1	
00 00 00	ALSILATE W	LB	.060	.065	.000				C	6	
00 00 00	ALSILATE W	LB	.060	.065	.000						
00 00 00	ALSILATE W	LB	.060	.065	.000						
44 00 00	AMMONIUM CHLORIDE	LB	.090	.205	.189			6/08/77		2	
50 00 00	ALUMINUM FOIL .0015X36	LB	.730	.730	.000					2	
50 00 00	ALUMINUM FOIL .0015X36	LB	.730	.730	.000			4/14/77		0	
50 00 00	ALUMINUM FOIL .0015X36	LB	.730	.730	.000					0	
51 00 00	ALUMINUM FOIL 50"	LB	.500	.790	1.500			8/31/77		0	
60 00 00	ALUMINUM POWDER 101	LB	.440	.660	.000			10/24/77		6	
60 00 00	ALUMINUM POWDER 101	LB	.440	.660	.590			12/20/76		4	
60 00 00	ALUMINUM POWDER 101	LB	.440	.660	.590			12/20/76		0	
60 00 00	ALUMINUM POWDER 101	LB	.440	.660	.590			12/20/76	C		
70 00 00	ALUMINUM POWDER 422	LBS	1.510	1.510	.000			10/31/76		0	
70 00 00	ALUMINUM POWDER 422	LB	1.510	1.510	.000			10/24/77		6	
70 00 00	ALUMINUM POWDER 422	LB	1.510	1.510	.000					4	
70 00 00	ALUMINUM POWDER 422	LB	1.510	1.510	.000				C	0	
70 00 00	ALUMINUM POWDER 422	LB	1.510	1.510	.000						
82 00 00	AMERCOAT PRIMER 86	GAL	4.880	4.880	.000				C		
20 00 00	ANTIFOAM A	LB	3.690	7.900	5.930			8/31/77		6	
20 00 00	ANTIFOAM A	LB	3.690	7.900	5.930			12/20/76	C	6	
20 00 00	ANTIFOAM A	LB	3.690	7.900	5.930			12/20/76		0	
20 00 00	ANTIFOAM A	LB	3.690	7.900	5.930			12/20/76			
21 00 00	ANTIFOAM 74 4 OZ.	LB	2.250	2.250	.000			10/31/76		0	
45 00 00	AQUA WA-0	LB	.240	.380	.000						
55 00 00	ARALDITE 506 -EPON 815-	LB	.430	.585	.000						
60 00 00	ARALDITE 507	LB	.450	.880	.000			10/24/77		6	
60 00 00	ARALDITE 507	LB	.450	.880	.880			2/25/77		4	
60 00 00	ARALDITE 507	LB	.450	.880	.880			2/25/77		0	
60 00 00	ARALDITE 507	LB	.450	.880	.880			2/25/77		5	
70 00 00	ARALDITE 9381 -6005-	GAL	3.780	7.190	6.790			6/08/77		6	
70 00 00	ARALDITE 9381 - 6005	GAL	3.780	7.190	.000			10/24/77		4	
70 00 00	ARALDITE 9381 -6005-	GAL	3.780	7.190	6.790			6/08/77		1	
70 00 00	ARALDITE 9381 -6005-	GAL	3.780	7.190	6.790			6/08/77		0	
70 00 00	ARALDITE 9381 -6005-	GAL	3.780	7.190	6.790			6/08/77		0	
70 00 00	ARALDITE 9381 -6005-	GAL	3.780	7.190	6.790			6/08/77		4	

) CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA	R/M
) 00 00	ARALDITE 9382 -6010-	GAL	3.780	6.980	6.490			6/08/77		6		
) 00 00	ARALDITE 9382 -6010-	GAL	3.780	6.980	6.490			6/08/77		4		
) 00 00	ARALDITE 9382 -6010-	GAL	3.780	6.980	6.490			6/08/77		0		
) 00 00	ARALDITE 9382 -6010-	GAL	3.780	6.980	6.490			6/08/77		4		
1 00 00	LEKUTHERM X50	LB	1.550	1.650	.000			8/31/77		0		
) 00 00	ARALDITE 6020	LB	.450	.795	.795			2/25/77		6		
) 00 00	ARALDITE 6020	LB	.450	.795	.795			2/25/77		6		
) 00 00	ARALDITE 6020	LB	.450	.795	.795			2/25/77		0		
) 00 00	ARALDITE 6020	LB	.450	.795	.795			2/25/77		4		
) 00 00	ARALDITE RD 1 - BGE	LB	.660	1.115	.000			10/24/77		6		
) 00 00	ARALDITE RD 1 -BGE-	LB	.660	1.115	1.115			2/25/77		4		
) 00 00	ARALDITE RD1 -BGE-	LB	.660	1.115	1.115			2/25/77				
) 00 00	ARALDITE RD 1 -BGE-	LB	.660	1.115	1.115			2/25/77		0		
) 00 00	ARALDITE RD 1 -BGE-	LB	.660	1.115	1.115			2/25/77		4		
5 00 00	ASBURY GRAPHITE #6322	LB.	.470	.470	.000					6		
) 00 00	ASBURY GRAPHITE #6322	LBS	.470	.470	.000			10/31/76		0		
1 00 00	AMORPHOUS GRAPHITE	LBS	.470	.470	.000			10/31/76		0		
0 00 00	ASBESTOS 1422-7-T-S	LB	.050	.056	.000				C	6		
0 00 00	ATOMITE	LB	.020	.047	.000			8/31/77		0		
0 00 00	ATOMITE	LB	.020	.047	.000			10/24/77		6		
0 00 00	ATOMITE	LB	.020	.047	.000					5		
0 00 00	ATOMITE	LB	.020	.047	.000			8/31/77		0		
0 00 00	ATOMITE	LB	.020	.047	.000			4/04/77		0		
5 00 00	BAYOL 35	GAL	.870	.870	.000				C	4		
5 00 00	BAYOL 35	GAL	.870	.870	.000			10/24/77	C	6		
0 00 00	BTDA MESH FINE	LB	2.300	3.000	3.000			8/31/77		6		
0 00 00	BTDA MESH FINE	LB	2.300	3.000	3.000			8/31/77		0		
5 00 00	BARIUM NITRATE	LB	.280	.400	.000					2		
5 00 00	BAGS 21X6X50 W/POLYLINERS	EACH	.470	.470	.000					2		
0 00 00	BEETLE 216 8	LB	.550	.570	.000					6		
0 00 00	BEETLE 216-8	LB	.550	.570	.000				C			
0 00 00	BEETLE 216 8	LB	.550	.570	.000							
0 00 00	BENTONE 38	LB	.750	1.053	.000			6/08/77	C	6		
0 00 00	BENTONE 38	LB	.750	1.053	.000			6/08/77				
0 00 00	BMDA	LB	5.840	5.840	.000					6		
0 00 00	BMDA	LB	5.840	5.840	.000							
0 00 00	BF 3 COMPLEX	LB	2.600	3.800	2.900			6/08/77		5		
0 00 00	BF 3 COMPLEX	LB	2.600	3.800	.000			10/24/77		6		
0 00 00	BF 3 COMPLEX	LB	2.600	3.800	2.900			6/08/77		0		

ID CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
00 00 00	BF 3 COMPLEX	LB	2.600	3.800	2.900			6/08/77	C		
35 00 00	BLASTING SAND NO 1	LB	.011	.011	.000				C	6	
00 00 00	BLUE WHITENER PEROX 3-B	LB	10.210	10.210	.000				C		
00 00 00	BORAX	LB	.120	✓.117	.160			8/31/77	C	0	
1 00 00	BORAX POWDER	LB	.106	.152	.000			5/18/77		1	
5 00 00	BORIC ACID	LB	.120	.210	.160			6/08/77		2	
5 00 00	BORIC ACID	LB	.120	.210	.160			6/08/77		1	
5 00 00	BORIC ACID	LB	.120	.210	.160			6/08/77			
5 00 00	BOXES LITHO-FAA	EA	.595	.625	.000			10/06/76		0	
0 00 00	BRIJ 35	LB	.570	1.065	.775			12/20/76		1	
00 00 00	BROMINEX 160P	LB	1.800	2.000	.000					6	
0 00 00	BRP 5538	LB	.655	.655	.000						
00 00 00	BUSAN 11 M1	LB	.365	.365	.000				C	6	
00 00 00	BUSAN 11 M1	LB	.365	.365	.000					0	
1 00 00	BUTVAR B76	LB	1.240	1.240	.000						
5 00 00	BUTYL ACETATE	LB	.210	.390	.000			10/24/77		6	
5 00 00	BUTYL ACETATE	LB	.210	.390	.000			10/24/77		4	
5 00 00	BUTYL ACETATE	LB	.210	.390	.340			6/08/77		1	
5 00 00	BUTYL ACETATE	LB	.210	.390	.340			6/08/77			
5 00 00	BUTYL ACETATE	LB	.210	.390	.340			6/08/77	C		
0 00 00	BUTYL CELLOSOLVE ACETATE	LB	.240	.245	.000				C	4	
0 00 00	BUTYL CELLOSOLVE ACETATE	LB	.240	.245	.000			10/24/77	C	6	
0 00 00	BUTYL CELLOSOLVE ACETATE	LB	.240	.245	.000					0	
0 00 00	BUTYL CELLOSOLVE ACETATE	LB	.240	.245	.000						
5 00 00	CABOLITE P4	LB	.020	.073	.054			8/31/77		5	
5 00 00	CABOLITE P4	LB	.020	.073	.054			8/31/77		6	
5 00 00	CABOLITE P4	LB	.020	.073	.054			8/31/77			
5 00 00	CABOLITE P4	LB	.020	.073	.054			8/31/77			
6 00 00	CABOLITE C-6	LB	.020	.034	.000						
6 00 00	CABOLITE C-6	LB	.020	.034	.000						
0 00 00	CABOSIL M5	LB	1.300	1.650	2.000			8/31/77			
0 00 00	CABOSIL M5	LB	1.300	1.650	2.000			8/31/77		6	
0 00 00	CABOSIL M5	LB	1.300	1.650	1.650			8/31/77		5	
0 00 00	CABOSIL M5	LB	1.300	1.650	2.000			12/20/76			
0 00 00	CABOSIL M5	LB	1.300	1.650	2.000			12/20/76		1	
0 00 00	CABOSIL M5	LB	1.300	1.650	2.000			12/20/76		0	
0 00 00	CABOSIL M5	LB	1.300	1.650	1.650			8/31/77		9	
0 00 00	CABOSIL M5	LB	1.300	1.650	1.650			8/31/77			

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA STA	USER R/M
3 00 00	CALCIUM CARBONATE WHITE	LB	.020	.044	.033			8/31/77		6	
5 00 00	CALICO ORANGE	LBS	2.650	2.650	.000			10/31/76		0	
6 00 00	CALICO RED N1700	LB	4.350	4.350	.000					6	
6 00 00	CALICO RED N1700	LB	4.350	4.350	.000						
6 00 00	CALICO RED N1700	LB	4.350	4.350	.000				C		
0 00 00	CANS LITH 5 GALLONS	EACH	1.440	1.790	1.691			8/31/77		4	
0 00 00	CANS LITH 5 GALLONS	EACH	1.440	1.790	1.691			8/31/77		0	
0 00 00	CANS LITH 5 GALLONS	EACH	1.440	1.790	1.691			8/31/77			
0 00 00	CANS LITH 5 GALLONS	EACH	1.440	1.790	1.691			8/31/77		2	
0 00 00	CANS LITH 5 GALLONS	EACH	1.440	1.790	1.691			8/31/77		0	
0 00 00	CANS LITH 5 GALLONS	EACH	1.440	1.790	1.691			8/31/77			
0 00 00	CANS LITH GALLONS	EACH	.290	.580	.497			6/08/77		4	
0 00 00	CANS LITH GALLONS	EACH	.290	.580	.497			6/08/77			
0 00 00	CANS LITH GALLONS	EACH	.290	.580	.497			6/08/77		2	
0 00 00	CANS LITH GALLONS	EACH	.290	.580	.497			6/08/77		0	
0 00 00	CANS LITH GALLONS	EACH	.290	.580	.497			6/08/77			
0 01 00	CANS LITH GALLONS 13LB	EACH	.032	.045	.000			9/22/77		4	
0 02 00	CANS LITH GALLONS 8LB	EACH	.051	.073	.000			9/22/77		4	
0 03 00	CANS LITH GALLONS 18LB	EACH	.022	.032	.000			9/22/77		4	
5 00 00	CANS 1/2 GAL LITH	EACH	.240	.558	.322			8/31/77		4	
5 00 00	CANS 1/2 GAL LITH	EACH	.240	.558	.322			8/31/77			
0 00 00	CANS QUART LITH	EACH	.120	.255	.000			10/24/77		6	
0 00 00	CANS QUART LITH	EACH	.120	.255	.155			6/08/77		4	
0 00 00	CANS QUART LITH	EACH	.120	.255	.155			6/08/77			
0 00 00	CANS QUART LITH	EACH	.120	.255	.155			6/08/77		0	
0 00 00	CANS QUART LITH	EACH	.120	.255	.155			6/08/77			
1 00 00	CANS PINT LITH	EACH	.100	.190	.127			8/31/77		6	
1 00 00	CANS PINT LITH	EACH	.100	.190	.127			8/31/77		4	
1 00 00	CANS PINT LITH	EACH	.100	.190	.127			8/31/77		0	
1 00 00	CANS PINT LITH	EACH	.100	.190	.127			8/31/77			
1 00 00	CANS PINT LITH	EACH	.100	.190	.127			8/31/77			
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77		0	
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77		6	
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77			
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77		0	
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77		0	
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77		5	
0 00 00	CARDURA E	LB	.450	.800	.000					4	
0 00 00	CARDURA E	LB	.450	.800	.000						
0 00 00	CARDURA E	LB	.450	.800	.000						
0 00 00	CARNAUBA WAX	LB	.950	2.200	.000				C	5	

00 CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA STA	USER R/M
20 00 00	CARNAUBA WAX	LB	.950	2.200	.000						
30 00 00	CASEIN AC230	LB	.740	.825	.945			10/06/76		1	
0 00 00	CAUSTIC SODA	LB	.100	.105	.000					3	
0 00 00	CELITE 270	LB	.220	.420	.380			8/31/77		6	
0 00 00	CELITE 270	LB	.220	.420	.380			8/31/77		5	
0 00 00	CELITE 270	LB	.220	.420	.380			8/31/77	C	4	
0 00 00	CELITE 270	LB	.220	.420	.380			8/31/77			
1 00 00	KORSIL 48X64X172	SHT	5.550	14.960	5.550			4/14/77		0	
0 00 00	CELLOFLEX FR 2	LB	.850	.850	.000					6	
0 00 00	CELLOFLEX FR2	LB	.850	.850	.000				C	5	
0 00 00	CELLOFLEX FR 2	LB	.850	.850	.000						
5 00 00	CELOGEN	LB	1.950	1.950	.000				C	5	
0 00 00	CHEM O SIL BLACK R 1152	LB	.640	1.100	.900			6/08/77		6	
0 00 00	CHEM O SIL BLACK R 1152	LB	.640	1.100	.900			6/08/77		4	
0 00 00	CHEM O SIL BLACK R 1152	LB	.640	1.100	.900			6/08/77		0	
0 00 00	CHEM O SIL BLACK R 1152	LB	.640	1.100	.900			6/08/77	C		
0 00 00	CHEM-O-SIL R-6813 UNPIG	LB	.660	.660	.000				C	6	
4 00 00	CHEMOSOL UNPIG R8029	LB	.640	1.000	.000					4	
4 00 00	CHEMOSOL UNPIG R8029	LB	.640	1.000	.000			10/24/77		6	
5 00 00	CHEMOSOL X5495 GRAY	LB	.850	.850	.000			10/24/77	C	6	
5 00 00	CHEMOSOL X5495 GRAY	LB	.850	.850	.000				C	4	
1 02 00	STYCAST 2651	LB	.292	.470	.000			10/24/77		7	
0 00 00	CHLORENDIC ANHYDRIDE	LB	.650	.650	.000						
0 00 00	CLSE	LB	.167	.380	.000					6	
0 00 00	CLSE	LB	.167	.380	.000					0	
0 01 00	CLSE SOLUTION 5%	LB	.180	.440	.000			9/23/76		1	
0 02 00	CLSE SOLUTION 6%	LB	.187	.430	.000			9/23/76		1	
0 03 00	CLSE SOLUTION 7%	LB	.185	.430	.000			9/23/76		1	
0 04 00	CLSE SOLUTION 7.5%	LB	.184	.430	.000			9/23/76		1	
0 05 00	CLSE SOLUTION 8.5%	LB	.162	.420	.000			9/23/76		1	
0 06 00	CLSE SOLUTION 10%	LB	.180	.420	.000			9/23/76		1	
0 07 00	CLSE SOLUTION 11%	LB	.178	.410	.000			9/23/76		1	
0 08 00	CLSE SOLUTION 12.5%	LB	.175	.400	.000			9/23/76		1	

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA STA	USER R/M
0 09 00	CLSE SOLUTION 13.5%	LB	.174	.400	.000			9/23/76		1	
0 10 00	CLSE SOLUTION 15.0%	LB	.170	.390	.000			9/23/76		1	
0 11 00	CLSE SOLUTION 17.5%	LB	.167	.380	.000			9/23/76		1	
0 12 00	CLSE SOLUTION 20%	LB	.160	.370	.000			9/23/76		1	
0 13 00	CLSE SOLUTION 22.5%	LB	.154	.360	.000			9/23/76		1	
0 14 00	CLSE SOLUTION 25%	LB	.150	.350	.000			8/15/77		0	
0 14 00	CLSE SOLUTION 25%	LB	.150	.350	.000			9/23/76		1	
0 15 00	CLSE SOLUTION 27.5%	LB	.151	.340	.000			9/23/76		1	
0 16 00	CLSE SOLUTION 30%	LB	.148	.330	.000			9/23/76		1	
0 17 00	CLSE SOLUTION 33%	LB	.140	.320	.000			9/23/76		1	
1 01 00	CARBON SUSPENSION SOLUTION #1	LB	.189	.270	.250			4/14/77		1	
1 02 00	FIRE RETARDENT SOLUTION #2	LB	.119	.150	.150			8/31/77		1	
0 00 00	COAL TAR CP 524	GAL	.540	1.160	.000					4	
0 00 00	COAL TAR CP 524	GAL	.540	1.160	.000			10/24/77		6	
0 00 00	COAL TAR CP 524	GAL	.540	1.160	.000					0	
0 00 00	COAL TAR CP 524	GAL	.540	1.160	.000					4	
1 00 00	CONVERTOR CHEMFAST	PINT	1.600	1.600	.000				C		
4 00 00	COLD ROLL STEEL 3/4X1/8X12'	BAR	2.500	2.500	.000			11/30/76		0	
5 00 00	COLD ROLL STEEL 3/4X1/2X12'	BAR	4.160	4.160	.000			11/30/76		0	
7 00 00	COLD ROLL STEEL 1 1/4X3/8X12'	BAR	3.800	3.800	.000			11/30/76		0	
7 01 00	STYCAST 2057 BLACK	LB	.420	.490	.459			8/31/77		6	
9 00 00	STEEL PLATE 2X1/8X12'	PC	4.740	6.360	4.950			4/14/77		0	
7 00 00	STEEL TUBING 3/16X3X3X12'	PC	21.840	29.000	.000			4/14/77		0	
0 00 00	PG PANELS 4'X8'	EACH	27.520	27.520	.000					0	
0 01 00	PG PANELS 4'X12'	EACH	48.160	68.800	.000			8/31/77		0	
0 02 00	CP PANELS 3/4X48X96	EACH	25.634	36.620	.000			8/31/77		0	
0 03 00	CP PANELS 1/2X48X96	EACH	21.280	30.400	.000			8/31/77		0	
0 00 00	COPPER 8 QUINOLINOLET	LB	.430	.435	.000				C	6	
0 00 00	COPPER 8 QUINOLINOLET	LB	.430	.435	.000						
0 00 00	COPPER 8 QUINOLINOLET	LB	.430	.435	.000					0	

00 CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
3 00 00	COVERLITE 86 B TAPE 1 INCH	YARD	.110	.110	.000					3	
4 00 00	COVERLITE 86B TAPE 2 INCH	YARD	.110	.110	.000					3	
5 00 00	COVERLITE 86B TAPE 3 INCH	YARD	.110	.160	.110			4/14/77		3	
6 00 00	COVERLITE 86B TAPE 4 INCH	YARD	.110	.200	.110			4/14/77		3	
7 00 00 00	COVERLITE 39" /MIL-C-20696/	YARD	1.570	2.420	.000					3	
8 00 00 00	COVERLITE 60"	YARD	2.400	3.750	3.220			12/20/76		3	
8 00 00 00	COVERLITE 60 IN	YARD	2.400	3.750	3.220			12/20/76			
8 01 00	COVERLITE 24 IN	YARD	.672	.960	.000			7/21/77		3	
8 02 00	COVERLITE 30 IN	YARD	.840	1.200	.000			7/21/77		3	
8 03 00	COVERLITE 32 IN	YARD	.889	2.420	1.270			8/31/77		3	
8 04 00	COVERLITE 36 IN	YARD	1.008	2.420	1.440			8/31/77		3	
8 05 00	COVERLITE 40 IN	YARD	1.127	2.420	1.610			8/31/77		3	
8 06 00	COVERLITE 48 IN	YARD	1.344	1.920	.000			7/21/77		3	
8 07 00	COVERLITE 54 IN	YARD	1.512	2.160	.000			7/21/77		3	
5 00 00	CS 4152 - SILICONE	LB	1.490	2.370	.000			10/24/77		6	
5 00 00	CS 4152 -SILICONE-	LB	1.490	2.370	.000					4	
5 00 00	CS 4152 -SILICONE-	LB	1.490	2.370	.000					0	
5 00 00	CS 4152 -SILICONE-	LB	1.490	2.370	.000					5	
5 00 00	DAVONITE P 12	LB	.110	.110	.000					6	
5 00 00	DAVONITE P 12	LB	.110	.110	.000				C		
5 00 00	DAVONITE P 12	LB	.110	.110	.000					4	
0 00 00	D O P PLASTIZER	LB	.205	.405	.360			6/08/77	C		
0 00 00	D.O.P. PLASTIZER	LB	.200	.405	.360			6/08/77	C	6	
0 00 00	D.O.P. PLASTIZER	LB	.200	.405	.360			6/08/77			
0 00 00	D.O.P. PLASTIZER	LB	.200	.405	.360			6/08/77			
5 00 00	DAXAD	LB	.336	.540	.480			4/14/77		1	
0 00 00	DB VIII 28 4	LB	1.250	1.350	1.100			8/31/77	C	6	
0 00 00	DB VIII 28 4	LB	1.250	1.350	1.100			8/31/77		0	
0 00 00	DB VIII 28 4	LB	1.250	1.350	1.100			8/31/77			
5 00 00	DC 3 COMPLEX	LB	4.350	9.400	7.800			8/31/77		6	
5 00 00	DC 3 COMPLEX	LB	4.350	9.400	7.800			8/31/77		0	
5 00 00	DC 3 COMPLEX	LB	4.350	9.400	7.800			8/31/77			
4 00 00	DECHLORANE 25	LB	.750	1.450	1.150			8/31/77	C	6	
4 00 00	DECHLORANE 25	LB	.750	1.450	1.150			8/31/77	C	4	
4 00 00	DECHLORANE 25	LB	.750	1.450	1.150			8/31/77			

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA K/M
4 00 00	DECHLORANE 25	LB	.750	1.450	1.150			8/31/77		1	
0 00 00	DEFOAMER PC-1244	LBS	2.250	2.250	.000			10/31/76		0	
0 00 00	DEFOAMER PC 1244	LB	2.250	2.250	.000				C	6	
0 00 00	DEFOAMER PC1244	LB	2.250	2.250	.000						
0 00 00	DEFOAMER PC 1244	LB	2.250	2.250	.000					0	
0 00 00	DEFOAMER PC 1244	LB	2.250	2.250	.000					0	
0 00 00	DEFOAMER PC 1244	LB	2.250	2.250	.000						
3 00 00	DE-83	LB	1.400	1.400	2.000			8/31/77		6	
3 00 00	DE-83	LB	1.400	1.400	2.000			8/31/77		0	
5 00 00	DEH-29	LB	.360	.780	.000					4	
5 00 00	DEH - 29	LB	.360	.780	.000			10/24/77		6	
5 00 00	DEH 29	LB	.360	.780	.000				C		
5 00 00	DEH 29	LB	.360	.780	.000						
5 00 00	DEH - 31	LB	1.592	1.990	.000					6	
5 00 00	DEH-31	LBS	1.592	1.990	.000			10/31/76		0	
5 00 00	DEH-31	LB	1.592	1.990	.000				C		
0 00 00	DER 330	LB	.450	.455	.000						
0 00 00	DER 330	LB	.450	.455	.000					6	
5 00 00	DRH 201	LB	.520	.520	.000						
5 00 00	D I CASTOR OIL	LB	.450	.715	.000					6	
5 00 00	DI CASTOR OIL	LB	.450	.715	.000			10/24/77		6	
5 00 00	D I CASTOR OIL	LB	.450	.715	.000					4	
5 00 00	D I CASTOR OIL	LB	.450	.715	.000						
5 00 00	D I CASTOR OIL	LB	.450	.715	.000				C		
0 00 00	DI-CUP	LB	2.520	2.790	.000			6/08/77	C		
0 00 00	DICUP	LB	2.520	2.790	.000			6/08/77	C	3	
0 00 00	DICY ANDIAMIDE	LB	.350	.510	.720			8/31/77		6	
0 00 00	DICY ANDIAMIDE	LB	.350	.510	.720			12/20/76	C	6	
0 00 00	DICY ANDIAMIDE	LB	.350	.510	.720			12/20/76			
0 00 00	DICY ANDIAMIDE	LB	.350	.510	.720			12/20/76		0	
0 00 00	DICY ANDIAMIDE	LB	.350	.510	.720			12/20/76			
0 00 00	DIETHANOLAMINE	LB	.365	.521	.000			5/18/77		1	
0 00 00	DETA	LB	.200	.295	.000				C		
0 00 00	DETA	LB	.200	.295	.000				C		
0 00 00	DIMETHYLE FORMAMIDE	GAL	4.700	8.400	.000					6	
0 00 00	DIMETHYLE FORMAMIDE	GAL	4.700	8.400	.000				C		
0 00 00	DIMETHYLE FORMAMIDE	GAL	4.700	8.400	.000						
00 00	DPM 3 800 LC	LB	1.500	2.240	1.750			10/06/76		4	
00 00	DPM 3 800 LC	LB	1.500	2.240	.000			10/24/77		6	
00 00	DPM 3 800 LC	LB	1.500	2.240	1.750			10/06/76			
00 00	DPM 3 800 LC	LB	1.500	2.240	1.750			10/06/76		5	

ID CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
5 00 00	DIURON	LB	2.240	2.800	.000			10/24/77		6	
5 00 00	DIURON	LB	2.240	2.800	.000			10/24/77		5	
5 00 00	DIURON	LB	2.240	2.800	.000					4	
5 00 00	DIURON	LB	2.240	2.800	.000						
5 00 00	DIURON	LBS	2.240	2.800	.000			10/31/76		0	
6 00 00	DILUENT 65	LB	4.850	4.850	.000			10/31/76		6	
0 00 00	DMP 10	LB	.790	.790	.000				C	4	
0 00 00	DMP 10	LB	.790	.790	.000			10/24/77	C	6	
0 00 00	DMP 10	LB	.790	.790	.000					0	
0 00 00	DMP 10	LB	.790	.790	.000						
0 00 00	DMP 30	LB	.790	1.860	.000				C	4	
0 00 00	DMP 30	LB	.790	1.860	.000			10/24/77	C	6	
0 00 00	DMP 30	LB	.790	1.860	.000				C		
0 00 00	DMP 30	LB	.790	1.860	.000					0	
0 00 00	DMP 30	LB	.790	1.860	.000						
0 00 00	DP 116	LB	1.860	1.860	.000					6	
0 00 00	DP-116	LB	1.860	1.860	.000						
0 00 00	DP 116	LB	1.860	1.860	.000				C		
5 00 00	DURCAL #5	LB	.020	.047	.000			8/31/77		6	
0 00 00	DVB 55	LB	1.000	.91	.000					6	
0 00 00	DVB 55	LB	1.000	.91	.000					6	
0 00 00	DVB 55	LB	1.000	.91	.000					0	
0 00 00	DVB 55	LB	1.000	.91	.000				C		
0 00 00	DYLENE #8	LB	.170	.175	.000				C	6	
0 00 00	DYLENE #8	LB	.170	.175	.000						
0 00 00	DYLENE #8	LB	.170	.175	.000						
5 00 00	DYLITE M57-A BEADS	LB	.400	.62	.550			6/08/77		0	
5 01 00	COATED M57A BEADS	GAL	.319	.344	.344	.340		8/31/77		0	
5 02 00	EXPANDED M57A BEADS	GAL	.082	.103	.103	.100		8/31/77		0	
6 00 00	DYLITE F40 RAW	LB	.450	.51	.500			6/08/77		0	
6 00 00	DYLITE F 40 RAW	LB	.450	.51	.500			6/08/77		0	
7 00 00	SK DYLITE REP 524 BEADS	LB	.460	.13	.780			8/31/77		3	
3 00 00	DYNEL CLOTH	LB	2.200	2.20	.000					6	
5 00 00	ECN 1273	LB	.950	2.00	1.650			6/08/77			
6 00 00	EC-1828	LB	.694	.994	.000			8/31/77		6	
0 00 00	EMULPHOR 719	LB	.960	1.0	.000				C	6	
0 00 00	EMULPHOR 719	LB	.960	1.0	.000					0	
0 00 00	EMULPHOR 719	LB	.960	1.0	.000						

00 00 EPI CURE 841	LB	[illegible]	[illegible]	[illegible]	[illegible]		
00 00 EPICURE 841	LB	2.200	3.500	2.500	8/31/77	C	4
00 00 EPI CURE 841	LB	2.200	3.500	2.500	8/31/77		
00 00 EPICURE 845	LB	.710	.710	.000			
00 00 EPI CURE 855	LB	.670	1.030	.670	6/08/77		4
00 00 EPI CURE 855	LB	.670	1.030	.670	6/08/77	C	5
00 00 EPI CURE 855	LB	.670	1.030	.670	6/08/77		4
00 00 EPI-CURE 856	LB	1.500	1.500	.000		C	6
00 00 EIP CURE 874	LB	1.500	1.500	.000		C	6
00 00 EIP CURE 874	LB	1.500	1.500	.000			
00 00 EPI CURE 8494	LB	.960	2.300	2.700	8/31/77	C	6
00 00 EPI REZ 508	LB	1.450	1.450	.000		C	6
00 00 EPI REZ 508	LB	1.450	1.450	.000			0
00 00 EPI REZ 508	LB	1.450	1.450	.000			6
00 00 EPI REZ 5085	LB	.620	.620	.000		C	4
00 00 EPI REZ 5085	LB	.620	.620	.000	10/24/77	C	6
00 00 EPI REZ 5085	LB	.620	.620	.000			0
00 00 EPI REZ 5085	LB	.620	.620	.000			
00 00 EPI-REZ 5063	LB	2.500	3.100	.000			6
00 00 EPI-REZ 5063	LB	2.500	3.100	.000			
00 00 EPI REZ-5163	LB	1.030	1.510	.000	10/31/76		6
00 00 EPI REZ 5011	LB	1.500	1.500	.000			6
00 00 EPI REZ 5011	LB	1.500	1.500	.000			0
00 00 EPI REZ 5011	LB	1.500	1.500	.000		C	
[illegible] EPI REZ 5[illegible]	LB	1.270	2.000	.000			0
[illegible] EPI REZ 5[illegible]	LBS	.390	.775	.000	10/24/77		6
[illegible] EPI REZ 5[illegible]	LBS	.390	.775	.775	2/25/77		4
00 00 00 EPI REZ 510	LB	.390	.745	.745	2/25/77		6
00 00 00 EPI REZ 510	LB	.390	.745	.745	2/25/77		6
0 01 00 EPI REZ 510 SP-393	LB	.650	.650	.000		C	6
2 00 00 EPI REZ 5109	LB	.660	.660	.000	10/31/76		6
3 00 00 EPI-REZ 5183	LB	1.365	1.565	1.565	2/25/77		6
3 00 00 EPI-REZ 5183	LB	1.365	1.565	1.565	2/25/77		
0 00 00 EPI REZ 508	LB	.940	2.070	.000			

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1	00 00	EPI REZ-50124	LB	.660	.995	.995			2/25/77		6		
0	00 00	EPON 1031	LB	1.590	2.900	.000				C	5		
0	00 00	EPON 1031	LB	1.590	2.900	.000			10/24/77	C	6		
0	00 00	EPON 1031	LB	1.590	2.900	.000							
0	00 00	EPON 1031	LB	1.590	2.900	.000					0		
0	00 00	EPON 1031	LB	1.590	2.900	.000							
0	00 00	EPON 828	GAL	3.780	6.980	6.490			6/08/77		6		
0	00 00	EPON 828	GAL	3.780	6.980	6.490			6/08/77		4		
0	00 00	EPON 828	GAL	3.780	6.980	6.490			6/08/77				
0	00 00	EPON 828	GAL	3.780	6.980	6.490			6/08/77		0		
0	00 00	EPON 828	GAL	3.780	6.980	6.490			6/08/77		0		
0	00 00	EPON 828	GAL	3.780	6.980	6.490			6/08/77				
5	00 00	EPON 052	LB	.740	.740	.000							
0	00 00	EPON SD 298	GAL	4.268	4.268	.000					0		
0	03 00	EPON CS 217	GAL	4.150	4.365	.000							
0	03 00	EPON CS 217	GAL	4.150	4.365	.000							
1	00 00	EPON 1001 T 75	LB	.410	.615	.000					4		
1	00 00	EPON 1001 T 75	LB	.410	.615	.000							
1	00 00	EPON 1001 T 75	LB	.410	.615	.000				C	4		
2	00 00	EPONAL 55-L-32	LB	1.350	2.480	.000			10/24/77	C	6		
2	00 00	EPONAL 55-L-32	LB	1.350	2.480	2.180			6/08/77	C	4		
2	00 00	EPONAL 55-6-32	LB	1.350	2.480	2.180			6/08/77				
2	00 00	ARALDITE 488 E 32	LB	1.350	2.480	.000			8/31/77		0		
3	00 00	EPON 1001-B-80	LB	.440	.660	.000				C	4		
3	00 00	EPON 1001-B-80	LB	.440	.660	.000			10/31/76		0		
3	00 00	EPON 1001-B-80	LB	.440	.660	.000					0		
3	00 00	EPON 1001-B-80	LB	.440	.660	.000							
7	00 00	EPON 1001	LB	.520	.655	.795			8/31/77	C	5		
7	00 00	EPON 1001	LB	.520	.655	.660			8/31/77		0		
7	00 00	EPON 1001	LB	.520	.655	.795			8/31/77	C	7		
7	00 00	EPON 1001	LB	.520	.655	.795			8/31/77	C	5		
0	00 00	EPON 1001 T 75	LB	.410	.615	.000			10/24/77		6		
0	00 00	EPOTUF ED 37 200	LB	1.030	2.015	.000			10/24/77		6		
0	00 00	EPOTUF ED 37 200	LB	1.030	2.015	1.600			6/08/77		4		
0	00 00	EPOTUF ED 37 200	LB	1.030	2.015	1.800			6/08/77		0		
0	00 00	EPOTUF ED 37 200	LB	1.030	2.015	1.800			6/08/77		6		
0	01 00	EPOTUF 37-611	LB	1.880	1.880	.000			11/30/76		0		
0	02 00	EPOTUF 37-620	LB	.434	.620	.000			8/31/77		0		
0	00 00	EPOXIDE 8	GAL	4.798	6.800	6.800			8/31/77		0		

D	CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
0	00 00	EPOXY BLACK 2055	LB	1.250	1.750	.000					6	
0	00 00	EPOXY BLACK 2055	LB	1.250	1.750	.000				C	3	
0	00 00	EPOXY BLACK 2055	LB	1.250	1.750	.000						
0	00 00	EPOXY BLUE 20427	LB	2.600	3.500	3.150			12/20/76		6	
0	00 00	EPOXY BLUE 20427	LB	2.600	3.500	3.150			12/20/76	C	4	
0	00 00	EPOXY BLUE 20427	LB	2.600	3.500	3.150			12/20/76			
0	00 00	EPOXY BROWN 2127	LB	1.250	2.000	1.800			8/31/77		6	
0	00 00	EPOXY BROWN 2127	LB	1.250	2.000	1.800			8/31/77	C		
0	00 00	EPOXY BROWN 2127	LB	1.250	2.000	1.800			8/31/77			
5	00 00	EPOXY BROWN 20380	LB	1.100	1.100	.000					6	
5	00 00	EPOXY BROWN 20380	LB	1.100	1.100	.000						
0	00 00	EPOXY ERL 4221	LB	.920	1.260	.925			12/20/76		4	
0	00 00	EPOXY ERL 4221	LB	.920	1.260	.000			10/24/77		6	
0	00 00	EPOXY ERL 4221	LB	.920	1.260	.925			12/20/76	C		
0	00 00	EPOXY ERL 4221	LB	.920	1.260	.925			12/20/76			
0	00 00	EPOXY GRAY 2154	LB	1.250	1.900	1.600			6/08/77		6	
0	00 00	EPOXY GRAY 2154	LB	1.250	1.900	1.600			6/08/77		0	
0	00 00	EPOXY GRAY 2154	LB	1.250	1.900	1.600			6/08/77	C		
0	00 00	EPOXY GREEN 2053	LB	2.400	3.000	2.400			12/20/76	C	6	
0	00 00	EPOXY GREEN 2053	LB	2.400	3.000	2.400			12/20/76		0	
0	00 00	EPOXY GREEN 2053	LB	2.400	3.000	2.400			12/20/76			
0	00 00	EPOXY OLIVE DRAB 2155	LB	1.900	1.900	.000					6	
0	00 00	EPOXY OLIVE DRAB 2155	LB	1.900	1.900	.000					0	
0	00 00	EPOXY OLIVE DRAB 2155	LB	1.900	1.900	.000				C		
0	00 00	EPOXY ORANGE 2050	LB	2.650	2.650	.000					6	
0	00 00	EPOXY ORANGE 2050	LB	2.650	2.650	.000					0	
0	00 00	EPOXY ORANGE 2050	LB	2.650	2.650	.000				C		
0	00 00	EPOXY PURPLE	LB	2.950	2.950	.000					6	
0	00 00	EPOXY PURPLE	LB	2.950	2.950	.000				C		
0	00 00	EPOXY PURPLE	LB	2.950	2.950	.000						
0	00 00	EPOXY RED 2051	LB	2.900	4.550	2.900			8/31/77		6	
0	00 00	EPOXY RED 2051	LB	2.900	4.550	2.900			8/31/77	C	4	
0	00 00	EPOXY RED 2051	LB	2.900	4.550	2.900			8/31/77			
0	00 00	EPOXY STRIP T 251 C	LB	2.950	.553	.703			8/31/77		6	
0	00 00	EPOXY STRIP T 251 C	LB	2.950	.553	.703			8/31/77		4	
0	00 00	EPOXY STRIP T 251 C	LB	2.950	✓ .553	.703			8/31/77		0	
0	00 00	EPOXY STRIP T 251 C	LB	2.950	.553	.703			8/31/77		0	
0	00 00	EPOXY WHITE 2047	LB	1.050	1.750	1.050			6/08/77	C	6	
0	00 00	EPOXY WHITE 2047	LB	1.050	1.750	1.050			6/08/77		0	
0	00 00	EPOXY WHITE 2047	LB	1.050	1.750	1.050			6/08/77			
0	00 00	EPOXY YELLOW 2049	LB	1.250	3.750	1.250			6/08/77		6	

ID CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA STA	USER R/M
0 00 00	EPOXY YELLOW 2049	LB	1.250	3.750	1.250			6/08/77		0	
0 00 00	EPOXY YELLOW 2049	LB	1.250	3.750	1.250			6/08/77	C		
7 00 00	ERRE 0100	LB	.920	.920	.000						
8 00 00	ERRA 0163	LB	1.430	1.430	.000						
0 00 00	ETHYL ACETATE	LB	.160	.335	.000			10/24/77	C	4	
0 00 00	ETHYL ACETATE	LB	.160	.335	.000				C	1	
0 00 00	ETHYL ACITATE	LB	.160	.335	.000						
0 00 00	ETHYL ACETATE	LB	.160	.335	.000						
3 00 00	ETHYLENE GLYCOL	LB	.105	.105	.000			10/24/77		6	
3 00 00	ETHYLENE GLYCOL	LB	.105	.105	.000					4	
3 00 00	ETHYLENE GLYCOL	LB	.105	.105	.000						
5 00 00	ETHYL SILICATE 40	LB	.720	2.000	.000					0	
5 00 00	ETHYL SILICATE 40	LB	.720	2.000	.000					6	
5 00 00	ETHYL SILICATE 40	LB	.720	2.000	.000						
5 00 00	ETHYL SILICATE 40	LB	.720	2.000	.000				C		
0 00 00	EXPANDED SARAN BEADS	LB	3.250	3.250	.000			10/31/76		6	
2 00 00	ESPHERES FA-A WET	LB	.060	.077	.077			8/31/77		0	
5 00 00	FYBEX	LB	.500	.530	.000						
5 00 00	FYBEX	LB	.500	.530	.000			8/31/77		0	
5 01 00	FEED STOCK P.Q.	LB	.160	.168	.000					2	
5 03 00	FEED STOCK -CUSTOM-	LB	.210	.260	.310			10/10/76		2	
5 04 00	FEED STOCK CUSTOM -SW73114-	LB	.210	.260	.310			10/06/76		2	
0 00 00	FERRAMIC Q	LB	3.500	4.400	4.400			8/31/77		6	
0 00 00	FERRAMIC Q	LB	3.500	4.400	5.750			8/31/77		6	
0 00 00	FIBERGLASS MAT 50'' W	LB	.580	.580	.000						
1 00 00	FIBERGLASS MAT 60'' WIDTH	LB	.510	.510	.000						
1 02 00	FIBERGLASS MAT 3OZ. 72"	SQFT	.097	.110	.000			10/06/76		0	
1 02 00	FIBERGLASS MAT 3 OZ 72 IN WIDE	LB	.510	.580	.000						
5 00 00	FIBERGLASS CLOTH 60'' W	YARD	1.330	1.330	.000						
5 01 00	FIBERGLASS CLOTH M700 60 IN W	SQFT	.150	.150	.000						
2 00 00	FIBERGLASS MAT 2 OZ 60 IN WIDE	LB	.510	.580	.000						
3 00 00	CONFORMAT 2 OZ. 60" W	SQFT	.064	.092	.000			4/04/77		0	
4 00 00	DOORMAT I	SQFT	.130	.185	.163			8/31/77			

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02 00	FIBERGLASS TAPE 1	ROLL	2.080	2.080	.000					0	
03 00	FIBERGLASS 1.5 TAPE	ROLL	3.410	3.410	.000					0	
04 00	FIBERGLASS TAPE 2 INCH	ROLL	5.780	5.780	.000					0	
05 00	FIBERGLASS TAPE 2 1/2"	ROLL	6.220	6.220	.000					0	
00 00	FIBRE DRUMS /B-127	EACH	2.080	2.990	.000						
01 00	FIBRE DRUM -F55SF2-	EACH	4.890	5.840	.000					2	
00 00	FIBRE CARTONS 19"X19"X30"	EA	.890	1.050	5.840			9/22/77		0	
00 00	FOAM POLYST EXP 20X48X96	BUN	42.880	48.000	.000			2/18/77		0	
01 00	FOAM POLYSTYRENE EXPAND	BDFT	.067	.075	.000			2/18/77		0	
00 00	FOAM POLYETHER 38X28X75	BUN	37.333	55.400	42.260			8/31/77		0	
01 00	FOAM POLYETHER	BDFT	.080	.100	.100			8/31/77		0	
00 00	FOAM POLYEST FR 54X20X80	BUN	98.400	171.000	.000			2/18/77		0	
01 00	FOAM POLYESTER FR	BDFT	.164	.285	.000			2/18/77		0	
00 00	FOAM POLYEST 1/4X27X50	ROLL	4.613	9.350	8.200			6/08/77		0	
02 00	FOAM POLYEST 3/8X27X50	ROLL	6.919	12.220	.000			2/18/77		0	
06 00	FOAM POLYEST 1/2X27X50	ROLL	9.225	16.250	.000			2/18/77		0	
00 00	FOAM STYROFM IB 2X24X96	BLK	3.360	7.020	.000			2/18/77		0	
02 00	FOAM STYROFM IB 3X24X96	BLK	5.040	10.560	.000			2/18/77		0	
04 00	FOAM STYROFM IB 4X24X96	BLK	6.720	14.040	.000			2/18/77		0	
05 00	FOAM STYROFOAM IB	BDFT	.105	.220	.000			2/18/77		0	
00 00	FOAM SCOT 10PPI 12X40X80	BUN	239.900	391.760	265.860			3/24/77		0	
01 00	FOAM SCOTT 10PPI	BDFT	.900	1.180	.997			3/24/77		0	
00 00	FOAM 2185 54X81X13	BUN	64.750	77.000	.000					0	
01 00	FOAM 2185 54X81X13	BUN	64.750	77.000	.000						
00 00	FOAM 2214	BDFT	.175	.250	.000					0	
00 00	FOAM POLYPROPYLENE 1/16X30X55	PC	1.274	1.820	.000			8/15/77		0	
01 00	FOAM POLYPROPYLENE 1/8X30X55	PC	2.660	3.800	.000			8/15/77		0	

ID CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA STA	USER R/M
05 02 00	FOAM POLYPROPYLENE 1/4X30X55	PC	4.830	6.900	.000			8/15/77		0	
10 00 00	FOSTER GRANT 1375 BEADS	LB	.395	.395	.000						
15 00 00	FREON TF	LB	.480	1.310	.600			6/08/77		4	
15 00 00	FREON TF	LB	.480	1.310	.600			6/08/77	C		
15 00 00	FREON TF	LB	.480	1.310	.600			6/08/77			
22 00 00	FYROL HB-32	LB	.860	1.800	.000					6	
22 00 00	FYROL HB-32	LB	.860	1.800	.000			10/31/76		0	
24 00 00	FYROL DMMP	LBS	.860	1.800	.000			10/31/76		6	
27 00 00	GACO GRAY N-700A	GAL	8.820	16.700	10.200			6/08/77		6	
28 00 00	GELVAMP 263	LB	.630	.855	.775			8/31/77		6	
28 00 00	GELVAMP 263	LB	.630	.855	.775			8/31/77			
28 00 00	GELVAMP 263	LB	.630	.855	.775			8/31/77	C		
29 00 00	GF 397-1123A	LBS	3.500	4.000	.000			10/31/76		6	
30 00 00	GENAMID XR 2000	LB	.890	1.290	.000					4	
30 00 00	GENAMID XR 2000	LB	.890	1.290	.000			10/24/77		6	
30 00 00	GENAMID XR 2000	LB	.890	1.290	.000					0	
30 00 00	GENAMID XR 2000	LB	.890	1.290	.000					4	
31 00 00	GALV. METAL 4' X 8' X .026	SHT	6.380	6.380	.000						
31 00 00	GALV. METAL 4'X8'X.026	SHT	6.380	6.380	.000			11/30/76		0	
40 00 00	GLASSBUBBLES B23/500	LB	.800	.950	.680			8/31/77		1	
55 00 00	GLASS ROCK GP-71	LB	.170	.170	.000						
70 00 00	GLYCERINE SHELL	GAL	4.100	9.000	4.600			8/31/77		6	
70 00 00	GLYCERINE SHELL	GAL	4.100	9.000	4.600			8/31/77		0	
70 00 00	GLYCERINE SHELL	GAL	4.100	9.000	4.600			8/31/77		5	
71 00 00	GOLD POWDER 325 MESH	TROZ	128.415	183.450	.000			8/15/77	C	1	
80 00 00	HARDNER 830	LB	1.950	1.950	.000					6	
80 00 00	HARDNER 830	LB	1.950	1.950	.000						
81 00 00	HARDNER 850	LB	1.950	1.950	.000					6	
81 00 00	HARDNER 850	LB	1.950	1.950	.000						
85 00 00	HARDENER 955	LB	.630	.635	.000				C	6	
90 00 00	HARDENER 972	LB	.580	1.160	.000						
95 00 00	VERSAMID 140	LBSM	.020	.995	.000			10/31/76		0	
95 00 00	VERSAMID 140	LB	.720	.995	.000			8/31/77		6	
95 00 00	VERSAMID 140	LB	.720	.995	.000					0	
95 00 00	VERSAMID 140	LB	.720	.995	.000						
95 00 00	VERSAMID-140	LB	.720	.995	.000			10/31/76		0	

) CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA STA	USER R/M
5 00 00	VERSAMID 140	LB	.720	.995	.000					0	
5 00 00	VERSAMID 140	LB	.720	.995	.000			10/31/76		0	
) 00 00	H-85	GAL	8.470	8.470	.000				C		
) 00 00	HB 40	LB	.260	.555	.000			10/24/77	C	6	
) 00 00	HB 40	LB	.260	.555	.475			6/08/77	C	4	
) 00 00	HB 40	LB	.260	.555	.475			6/08/77		0	
) 00 00	HB 40	LB	.260	.555	.475			6/08/77			
5 00 00	HELASTIC 1030	GAL	3.820	7.100	.000					4	
5 00 00	HELASTIC 1030	GAL	3.820	7.100	.000					0	
5 00 00	HELASTIC 1030	GAL	3.820	7.100	.000				C		
7 00 00	HELIOGEN BLUE	LB	.581	.830	.000			8/31/77		0	
) 00 00	HET ANHYDRIDE	LB	.850	1.750	.000				C	6	
) 00 00	HET ANHYDRIDE	LB	.850	1.750	.000						
) 00 00	HET ANHYDRIDE	LB	.850	1.750	.000						
) 00 00	HETRON 92	LB	.490	.955	.490			8/31/77		4	
) 00 00	HETRON 92	LB	.490	.955	.490			8/31/77		6	
) 00 00	HETRON 92	LB	.490	.955	.490			8/31/77	C	3	
) 00 00	HEXAHYDRE PHTHALIC ANHYDRIDE	LB	.660	1.130	.000			10/24/77		5	
) 00 00	HEXAHYDRE PHTHALIC ANHYDRIDE	LB	.660	1.130	.000			10/24/77		6	
) 00 00	HEXAHYDRE PHTHALIC ANHYDRIDE	LB	.660	1.130	.000					4	
) 00 00	HEXAHYDRE PHTHALIC ANHYDRIDE	LB	.660	1.130	.000					0	
) 00 00	HEXAHYDRE PHTHALIC ANHYDRIDE	LB	.660	1.130	.000					6	
) 00 00	HEXANE	GAL	.500	1.080	.905			12/20/76		4	
) 00 00	HEXANE	GAL	.500	1.080	.905			12/20/76		0	
) 00 00	HEXANE	GAL	.500	1.080	.905			12/20/76		4	
' 00 00	ECCOSHIELD HINGES COMPLETE	SET	18.410	18.410	.000						
' 00 00	ECCOSHIELD HINGES COMPLETE	SET	18.410	18.410	.000			11/30/76		0	
) 00 00	HTH CHLORINE GRANULAR	LB	.378	.700	.414			8/31/77		3	
) 00 00	HYDROCHLORIC ACID	LB	.046	.046	.000						
) 00 00	HYDROCAL WHITE FLATD	LB	.050	.060	.052			12/20/76		6	
) 00 00	HYDROCAL WHITE FLAT D	LB	.050	.060	.052			12/20/76		0	
) 00 00	HYDROCAL WHITE FLATD	LB	.050	.060	.052			12/20/76			
) 00 00	HYDROCAL WHITE FLATD	LB	.050	.060	.052			12/20/76			
) 00 00	HYDROSPHERES HALVES 30F -4000-	BOX	78.000	107.000	.000					3	
? 00 00	HYDROSPHERES HALVES 40F -4000-	BOX	116.000	116.000	.000					3	
) 00 00	HYDROSPHERES HALVES 50F -4000-	BOX	122.000	122.000	.000					3	
) 00 00	HYDROSPHERES HALVES 60F -4000-	BOX	100.000	124.000	.000					3	

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8 00 00	HYDROSPHERES HALVES 90F -4000-	BOX	156.000	190.000	.000					3	
9 00 00	HYDROSPHERES HALVES 120F -4000-	BOX	180.000	180.000	.000					3	
0 00 00	ISOPROPYL ALCOHOL	GAL	.990	1.065	.000					3	
1 00 00	IRON POWDER SF	LB	1.570	1.570	.000			10/31/76	C	0	
5 00 00	JEFFAMINE D-1000	LB	.850	.850	.000						
6 00 00	JEFFAMINE D-2000	LB	.800	.870	.000					4	
6 00 00	JEFFAMINE D-2000	LB	.800	.870	.000			10/24/77		6	
6 00 00	JEFFAMINE D-2000	LB	.800	.870	.000						
6 00 00	JEFFAMINE D-2000	LB	.800	.870	.000			8/31/77		0	
7 00 00	JEFFAMINE D-230	LB	1.100	1.190	.000					4	
7 00 00	JEFFAMINE D 230	LB	1.100	1.190	.000			10/24/77		6	
7 00 00	JEFFAMINE D-230	LB	1.100	1.190	.000						
7 00 00	JEFFAMINE D-230	LB	1.100	1.190	.000			8/31/77		0	
8 00 00	JEFFAMINE D-400	LB	.800	.990	.870			12/20/76		4	
8 00 00	JEFFAMINE D-400	LB	.800	.990	.870			12/20/76			
8 00 00	JEFFAMINE D-400	LB	.800	.990	.000			8/31/77		0	
0 00 00	LAMINATE .031	SQFT	.540	.540	.000					2	
5 00 00	LIGHT FIXTURE RINGS	EACH	5.600	8.000	.000			8/31/77		0	
5 01 00	LIGHT FIXTURES	EACH	18.200	26.000	.000			8/31/77		C	
0 00 00	LINSEED OIL	GAL	1.950	1.950	.000					4	
0 00 00	LINSEED OIL	GAL	1.950	1.950	.000			10/24/77		6	
0 00 00	LINSEED OIL	GAL	1.950	1.950	.000				C	1	
0 00 00	LINSEED OIL	GAL	1.950	1.950	.000						
5 00 00	LIGROINE	LB	.460	1.250	.793			6/08/77	C	6	
0 00 00	LP 2	LB	1.880	1.880	.000					6	
0 00 00	LP 2	LB	1.880	1.880	.000				C	4	
0 00 00	LUDOX LS	LB	.230	.693	.230			12/20/76		4	
0 00 00	LUDOX LS	LB	.230	.693	.230			12/20/76		0	
0 00 00	LUDOX LS	LB	.230	.693	.230			12/20/76	C		
5 00 00	LUPRICA AMT CAT 10	LB	2.000	2.000	1.760			8/31/77		6	
0 00 00	LUSTREX CRYSTAL STYRENE	LB	.250	.360	.360			12/20/76		6	
0 00 00	LUSTREX CRYSTAL STYRENE	LB	.250	.360	.360			12/20/76			
1 00 00	MAS DOOR NAMEPLATE	PC	1.500	3.500	1.500			4/14/77		0	
2 00 00	MEMBRANE	LB	1.084	1.084	.000			4/14/77		0	
3 00 00	DOOR IVES PULLS BRONZE 26 FIN.	EACH	8.400	8.400	.000						

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA STA	USER R/M
4 00 00	MAS DOOR LEAF	PC	146.750	226.600	.000			4/14/77		0	
5 00 00	MAS DOOR HANDLE	PC	11.000	11.000	.000			4/14/77		0	
7 00 00	METHANOL	GAL	.660	.665	.000						
) 00 00	MPDA	LB	.940	1.400	1.200			8/31/77		4	
) 00 00	MPDA	LB	.940	1.400	1.200			8/31/77	C	9	
) 00 00	MPDA	LB	.940	1.400	1.200			8/31/77			
) 00 00	M PYROL	LB	.570	.970	.878			8/31/77		4	
) 00 00	M PYROL	LB	.570	.970	.878			8/31/77			
) 00 00	M PYROL	LB	.570	.970	.878			8/31/77		4	
00 00	MAGNESIUM CHLORIDE FLAKE	LB	.070	.171	.108			8/31/77		2	
00 00	MAGNESIUM OXIDE	LB	.320	.590	.000					5	
00 00	MAGNESIUM OXIDE	LB	.320	.590	.000						
00 00	MAGNORITE 70	LB	.310	.360	.000						
00 00	MAGNORITE 70	LB	.310	.360	.000				C	5	
00 00	MARVELSEAL	YARD	.560	.800	.000			7/21/77		3	
00 00	MD 153 A COPPER SHOT	LB	1.200	1.430	1.140			12/20/76		3	
00 00	MD 180 COPPER GRANULAR	LB	.920	.923	.000					3	
00 00	325 SILVER COATED COPPER	LB	1.000	1.000	.000						
00 00	MEK	LB	.180	.360	.310			8/31/77	C		
00 00	MEK	LB	.180	.360	.310			8/31/77	C	4	
00 00	MEK	LB	.180	.360	.310			8/31/77	C	6	
00 00	MEK	LB	.180	.360	.310			8/31/77		0	
00 00	MEK	LB	.180	.360	.310			8/31/77		0	
00 00	MEK	LB	.180	.360	.310			8/31/77			
00 00	MEK PEROXIDE	LB	2.400	2.500	.000				C		
00 00	MEK PEROXIDE	LB	2.400	2.500	.000			10/31/76	C	0	
00 00	MENTHANE DIAMINE	LB	1.700	3.365	.000				C	4	
00 00	MENTHANE DIAMINE	LB	1.700	3.365	.000			10/24/77	C	6	
00 00	MENTHANE DIAMINE	LB	1.700	3.365	.000					0	
00 00	MENTHANE DIAMINE	LB	1.700	3.365	.000						
00 00	METALLIC SILVER 15	LB	4.900	8.500	.000					1	
00 00	METALLIC SILVER 15	LB	4.900	8.500	.000					0	
00 00	METALLIC SILVER 15	LB	4.900	8.500	.000					8	
00 00	METHYL NADIC ANHYDRIDE 906	LB	1.050	1.550	1.460			8/31/77		6	
00 00	METHYL NADIC ANHYDRIDE 906	LB	1.050	1.460	1.460			8/31/77		6	
00 00	METHYL NADIC ANHYDRIDE 906	LB	1.050	1.460	1.550			8/31/77		4	
00 00	METHYL NADIC ANHYDRIDE 906	LB	1.050	1.550	1.460			12/20/76			
00 00	METHYL NADIC ANHYDRIDE 906	LB	1.050	1.460	1.550			8/31/77		0	

ODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
) 00	METHYL NADIC ANHYDRIDE 906	LB	1.050	1.460	1.550			8/31/77		4	
) 00	METHYLENE CHLORIDE	LB	.120	.293	.210			6/08/77		6	
) 00	METHYLENE CHLORIDE	LB	.120	.293	.210			6/08/77		4	
) 00	METHELYNE CHLORIDE	LB	.120	.293	.210			6/08/77		0	
) 00	METHYLENE CHLORIDE	LB	.120	.293	.210			6/08/77		4	
) 00	MIBK	LB	.150	.380	.000			10/24/77		6	
) 00	MIBK	LB	.150	.380	.000					4	
) 00	MIBK	LB	.150	.380	.000					0	
) 00	MIBK	LB	.150	.380	.000				C	4	
) 00	MICRON MINUSIL 5	LB	.100	.200	.123			8/31/77	C	6	
) 00	MICRON MINUSIL 5	LB	.100	.200	.123			8/31/77	C	5	
) 00	MICRON MINUSIL 5	LB	.100	.200	.123			8/31/77		0	
) 00	MINUSIL 15 MICRON	LB	.050	.066	.056			8/31/77	C	6	
) 00	MINUSIL 15 MICRON	LB	.050	.066	.056			8/31/77	C	5	
) 00	MINUSIL 15 MICRON	LB	.050	.066	.056			8/31/77			
) 00	MICROGLASS 1/32 INCH	LB	.490	.570	.500			8/31/77		6	
) 00	MICROGLASS 1/32 INCH	LB	.490	.570	.500			8/31/77			
) 00	MICROGLASS 1/32 INCH	LB	.490	.570	.500			8/31/77		2	
) 00	MICROGLASS 1/32 INCH	LB	.490	.570	.500			8/31/77		5	
) 00	M.P.A.-60 TOLUENE	LB	.560	.760	.000				C	6	
) 00	MOD EPOX	LB	.390	.395	.000			10/24/77	C	6	
) 00	MOD EPOX	LB	.390	.395	.000				C	4	
) 00	MOLD RELEASE WAX 334	GAL	8.200	9.300	.000						
) 00	MOLD RELEASE 225	GAL	7.500	7.500	.000						
) 00	MOLD RELEASE 1225	LBSK	5.040	5.040	.000			10/31/76		0	
) 00	MONTAN WAX	LB	.490	1.000	.650			8/31/77			
) 00	MOBIL OIL	GAL	.900	1.080	.000				C	4	
) 00	MOBIL OIL	GAL	.900	1.080	.000			10/24/77	C	6	
) 00	MOBIL OIL	GAL	.900	1.080	.000						
) 00	MODICAL VD	LB	.276	.395	.000			8/31/77		0	
) 00	NAPHTHA	LB	.275	1.110	.000					4	
) 00	N METHYL MORPHOLINE	LB	2.050	2.630	.000					6	
) 00	N METHYL MORPHOLINE	LB	2.050	2.630	.000					0	
) 00	N METHYL MORPHOLINE	LB	2.050	2.630	.000				C		
) 00	NED SPECTRA MARK 111 CARB BLK	LB	.730	1.540	1.085			12/20/76			
) 00	NEOPRENE SPONGE CORD 1/4 OD	FT	.060	.130	.060			6/08/77		4	

) CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA	K/M
) 00 00	NEOPRENE 400	WP	.250	.565	.490			10/06/76		2		
) 00 00	NEOPRENE 400	WP	.250	.565	.490			10/06/76		1		
) 02 00	NEOPRENE TUBING 1/8 ID	FT	.030	.035	.000					4		
) 03 00	NEOPRENE TUBING 1/16 IN	FT	.035	.035	.000							
00 00	NEOZONE D SPECIAL	LB	1.380	1.380	.000			10/31/76		1		
00 00	NITROCELLULOSE LACQUER	GAL	3.500	4.250	.000			10/24/77		6		
00 00	NITROCELLULOSE LACQUER	GAL	3.500	4.250	.000					1		
00 00	NITROCELLULOSE LACQUER	GAL	3.500	4.250	.000							
00 00	NITROCELLULOSE LACQUER	GAL	3.500	4.250	.000				C			
00 00	NON FER AL	LB	.060	.070	.000					6		
00 00	NON FER AL	LB	.060	.070	.000					0		
00 00	NON FER AL	LB	.060	.070	.000							
00 00	NOVACITE - 325	LB	.020	.026	.000							
00 00	NOVACITE 1250	LB	.333	.475	.000			4/04/77		0		
00 00	NUOCURE 28	LB	2.500	3.000	.000					6		
00 00	NUOCURE 28	LB	2.500	3.000	.000							
00 00	NUOCURE 28	LB	2.500	3.000	.000				C			
00 00	NUODEX	LB	.490	.590	.000					6		
00 00	NUODEX	LB	.490	.590	.000					6		
00 00	NUODEX	LB	.490	.590	.000					0		
00 00	NUODEX	LB	.490	.590	.000				C			
00 00	ONCOR 23A	LB	.560	1.665	.000			10/24/77		6		
00 00	ONCOR 23A	LB	.560	1.665	1.510			6/08/77		5		
00 00	ONCOR 23A	LB	.560	1.665	1.510			6/08/77				
00 00	ONCOR 23A	LB	.560	1.665	1.540			6/08/77		1		
00 00	ONCOR 23A	LB	.560	1.665	1.510			6/08/77		0		
00 00	ONCOR 23 A	LB	.560	1.665	1.510			6/08/77		5		
00 00	OAK 1/2''X4''X8'	EACH	4.500	4.500	.000							
00 00	OAK THRESHOLD 3 1/2X4'	PC	2.300	4.600	.000			4/14/77		0		
00 00	PAINT GOLD	GAL	8.950	17.740	10.250			6/08/77		3		
00 00	PAINT GOLD	GAL	8.950	17.740	10.250			6/08/77		0		
01 00	PAINT BLUE	GAL	3.300	3.750	3.750			8/31/77		0		
01 00	PAINT WHITE CHEMFAST	GAL	9.750	9.750	.000				C			
02 00	PAINT ORANGE CHEMFAST	GAL	10.850	10.850	.000				C			
03 00	PAINT YELLOW CHEMFAST	GAL	13.500	13.500	.000				C			
05 00	PAINT BLACK CHEMFAST	GAL	9.750	9.750	.000				C			

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/G
L 06 00	PAINT RED CHEMFAST	GAL	10.850	10.850	.000				C		
3 00 00	PAINT SHER-WILL GLO CERISE	GAL	19.030	19.030	.000				C		
4 00 00	WHITE BLOCKING COAT (SHER-WILL)	GAL	6.550	6.550	.000				C		
0 00 00	PARAPLEX P-13	LB	.730	1.725	.940			6/31/77		6	
0 00 00	PARAPLEX P-13	LB	.730	1.725	.940			12/20/76		6	
0 00 00	PARAPLEX P-13	LB	.730	1.725	.940			12/20/76	C	6	
0 00 00	PARAPLEX P 43	LB	.350	.700	.000					6	
0 00 00	PARAPLEX P 43	LB	.350	.700	.000					4	
0 00 00	PARAPLEX P 43	LB	.350	.700	.000			10/24/77		6	
0 00 00	PARAPLEX P 43	LB	.350	.700	.000					0	
0 00 00	PARAPLEX P 43	LB	.350	.700	.000				C		
9 00 00	PARATEX W/BACK 24''X50'X2' UND	ROLL	18.540	43.020	25.250			4/14/77		0	
3 00 00	PARATEX W/BACK 24''X75'X1'' UND	ROLL	18.450	27.840	22.130			4/14/77		0	
0 00 00	PENSALT S 2	LB	.690	.690	.000				C	6	
0 00 00	PENSALT 52	LB	.690	.690	.000						
1 00 00	PENSALT NONIC 218	LBS	.690	.690	.000			10/31/76		6	
0 00 00	PENTAMID 825	LB	.660	1.090	.000					4	
0 00 00	PENTAMID 825	LB	.660	1.090	.000			10/24/77		6	
0 00 00	PENTAMID 825	LB	.660	1.090	.000					0	
0 00 00	PENTAMID 825	LB	.660	1.090	.000					4	
0 00 00	PENTAMID 840	LB	.720	1.080	.000						
0 00 00	PENTAMID 840	LB	.720	1.080	.000					4	
0 00 00	PENTAMID 840	LB	.720	1.080	.000			10/24/77		6	
0 00 00	PENTAMID 840	LB	.720	1.080	.000						
0 00 00	PENTAMID 840	LB	.720	1.080	.000					0	
0 00 00	PENTAMID 840	LB	.720	1.080	.000					4	
5 01 00	PINE #3 1"X8"X12'	EACH	1.840	1.640	.000			4/21/77		0	
5 02 00	PINE ROUGH 1"X4"X12'	EACH	.920	.820	.000			4/21/77		0	
5 00 00	PHOPLEX TR 520	LB	.635	.343	.000						
0 00 00	PHOS CHEK P-30	LB	.520	1.210	.000			10/24/77		6	
0 00 00	PHOS CHEK P-30	LB	.520	1.210	1.090			6/08/77		5	
0 00 00	PHOS-CHECK P-30	LB	.520	1.210	1.090			6/08/77		1	
4 00 00	PLASTILEASE 512B MOLD RELEASE	GAL	9.500	9.500	.000				C		
5 00 00	PHOSPHORIC ACID NF 7140	PINT	5.800	5.800	.000			10/24/77	C	6	
5 00 00	PHOSPHORIC ACID NF 7140	PINT	5.800	5.800	.000				C	4	
5 00 00	PLASTIC MAGNETS 1/2X1/4X2'	PC	.700	.814	.000			11/30/76		0	

D	CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
0	00 00	PLEOGEN 4050	LB	.600	1.150	.000			10/24/77		6	
0	00 00	PLEOGEN 4050	LB	.600	1.150	1.000			6/08/77		4	
0	00 00	PLEOGEN 4050	LB	.600	1.150	1.000			6/08/77		0	
0	00 00	PLEOGEN 4050	LB	.600	1.150	1.000			6/08/77		4	
5	00 00	PLEOGEN 4074	LB	1.020	1.020	.000				C	2	
5	00 00	PLEOGEN 4074	LB	1.020	1.020	.000						
9	00 00	PLYWOOD AC EXT 4' X 8' X 1/2	EACH	9.980	9.980	.000						
0	00 00	PLYWOOD AC EXT 4' X 8' X 3/4	EACH	12.000	19.200	.000						
0	00 00	PHENYL GLYCIDYL ETHER(PGE)	LB	2.000	2.205	2.205			2/25/77		4	
0	00 00	PHENYL GLYCIDYL ETHER (PGE)	LB	2.000	2.205	.000			10/24/77		6	
0	00 00	PHENYL GLYCIDYL ETHER -PGE-	LB	2.000	2.205	2.205			2/25/77		0	
0	00 00	PHENYL GLYCIDYL ETHER(PGE)	LB	2.000	2.205	2.205			2/25/77			
0	00 00	PHTHALIC ANHYRIDE RD 901	LB	.160	.280	.000					6	
0	00 00	PHTHALIC ANHYRIDE RD 901	LB	.160	.280	.000					0	
0	00 00	PHTHALIC ANHYRIDE RD 901	LB	.160	.280	.000						
5	00 00	PLIOBOND 2014	GAL	3.750	6.550	6.550			8/31/77		5	
5	00 00	PLIOBOND 2014	GAL	3.750	6.550	6.550			8/31/77		2	
5	00 00	PLIOBOND 2014	GAL	3.750	6.550	6.550			8/31/77		3	
5	00 00	PLIOBOND 2014	GAL	3.750	6.550	6.550			8/31/77		2	
5	00 00	PLIOBOND 2014	GAL	3.750	6.550	6.550			8/31/77		1	
0	00 00	PMDA	LB	5.000	7.500	.000					5	
0	00 00	PMDA	LB	5.000	7.500	.000					0	
0	00 00	PMDA	LB	5.000	7.500	.000					5	
1	00 00	POLYCIN 52	LB	.830	.835	.000					6	
1	00 00	POLYCIN 52	LB	.830	.835	.000				C		
2	00 00	POLYLITE 33-057	GAL	2.270	4.180	.000						
4	00 00	POLYLITE 33-031	LB	.250	.420	.000						
4	00 00	POLYLITE 33-031	LB	.250	.420	.000						
5	00 00	POLYPREP	GAL	4.250	4.680	.000				C	6	
5	00 00	POLYPREP	GAL	4.250	4.680	.000						
0	00 00	POLYESTER PIGMENT ORANGE	QT	15.000	15.000	.000						
7	00 00	POLYESTER PIGMENT BLUE	QT	4.750	4.750	.000						
4	00 00	POLYESTER PIGMENT YELLOW	QT	9.400	9.400	.000						
2	00 00	POLYSTY. 16IN X 3IN X 9FT	EACH	10.040	10.040	.000					0	
3	00 00	POLYSTYRENE SPHERES 3"	EACH	.021	.021	.000					0	
5	00 00	POLYESTER RESIN P11016	LB	.240	.460	.000					6	
5	00 00	POLYESTER RESIN P11016	LB	.240	.460	.000					4	

D	CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA	R/M
5	00 00	POLYESTER RESIN P11016	LB	.240	.460	.000							
5	00 00	POLYESTER RESIN P11016	LB	.240	.460	.000							
7	00 00	POLYESTER RESIN 7340 F-S	LB	.240	.460	.000			10/31/76		0		
0	00 00	ANTIMONY TRIOXIDE	LB.	6.450	6.450	.000					6		
0	00 00	POTASSIUM CARBONATE	LB	.300	.215	.000					3		
0	00 00	POTASSIUM CYANIDE	LB	.460	.776	.000					3		
5	00 00	PRIMERS S11	GAL	22.000	22.000	.000					6		
5	00 00	PRIMERSWS403	GAL	22.000	22.000	.000				C			
0	01 00	PLYWOOD 3/8X4'X8'	PC	8.490	11.320	.000			4/21/77		0		
0	02 00	PLYWOOD 3/8X4'X10'	PC	15.584	19.480	.000			4/21/77		0		
0	03 00	PLYWOOD 1/2X4'X8'	PC	9.980	13.730	.000			4/21/77		0		
0	04 00	PLYWOOD 1/2X4'X10'	PC	17.984	22.480	.000			4/21/77		0		
0	05 00	PLYWOOD 3/4X4'X8'	PC	12.000	18.140	.000			4/21/77		0		
0	06 00	PLYWOOD 3/4X4'X10'	PC	22.840	28.550	.000			4/21/77		0		
0	00 00	RAM 66-114 GEL COAT	GAL	7.560	7.560	.000				C			
0	00 00	RAROLITE SP 700 RED	LB	1.420	1.520	.000				C	6		
0	00 00	RAROLITE SP 700 RED	LB	1.420	1.520	.000					0		
0	00 00	RAROLITE SP 700 RED	LB	1.420	1.520	.000					0		
0	00 00	RAROLITE SP 700 RED	LB	1.420	1.520	.000							
0	00 00	REGAL 300R	LB	.170	.348	.300			8/31/77		0		
0	00 00	REGAL 300R	LB	.170	.348	.300			8/31/77		5		
0	00 00	REGAL 300 R	LB	.170	.348	.300			6/31/77		6		
0	00 00	REGAL 300R	LB	.170	.348	.300			8/31/77		0		
0	00 00	REGAL 300R	LB	.170	.348	.300			8/31/77				
0	00 00	REGAL 300R	LB	.170	.348	.300			6/31/77	C			
0	00 00	RED IRON OXIDE	LB	.280	.520	.000			10/24/77		6		
0	00 00	RED IRON OXIDE	LB	.280	.520	.000					5		
0	00 00	RED IRON OXIDE	LB	.280	.520	.000			10/31/76		0		
5	00 00	RELEASE PAPER	LB	.530	.604	.000					4		
0	00 00	RESODUR 22	LB	4.600	8.480	.000					0		
0	00 00	RESODUR 22	LB	4.600	8.480	.000							
0	00 00	RESODUR 22	LB	4.600	8.480	.000				C			
5	00 00	CAT 37 RETCHOLD 37-610 C ITEM	LB	.830	.835	.000					6		
5	00 00	CAT 37 RETCHOLD 370610 C ITEM	LB	.830	.835	.000				C	0		
8	00 00	RHOPLEX	LB	.302	.431	.000			5/18/77		1		

CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
00 00	RTV 615 PT A	LB	5.400	9.170	7.180			8/31/77		6	
00 00	RTV 615 PT A	LB	5.400	9.170	7.180			8/31/77	C	6	
00 00	RTV 615 PT A	LB	5.400	9.170	7.180			8/31/77			
00 00	RTV 615-B	LB	2.640	2.640	.000						
00 00	RTV 616 PT A	LB	3.900	3.900	.000					6	
00 00	RTV 616 PT A	LB	3.900	3.900	.000				C	6	
00 00	RTV 616 PT A	LB	3.900	3.900	.000					0	
00 00	RTV 616 PT B	LB	10.000	10.000	.000					6	
00 00	RTV 616 PART B	LB	10.000	10.000	.000					6	
00 00	RTV SILICONE V-64	LB	2.530	3.650	.000						
00 00	RTV SILICONE V-64	LB	2.530	3.650	.000					4	
00 00	RTV SILICONE V-64	LB	2.530	3.650	.000			10/24/77		6	
00 00	RTV SILICONE V-64	LB	2.530	3.650	.000			10/31/76		0	
00 00	RTV SILICONE V-64	LB	2.530	3.650	.000						
00 00	RTV 88	LB	4.350	7.330	4.690			12/20/76	C	6	
00 00	RTV 88	LB	4.350	7.330	4.690			12/20/76			
00 00	RUFLEX 84	LBS	.520	.520	.000			10/31/76		0	
00 00	S 35 SILICATE OF SODA	LB	.050	.050	.000				C	3	
00 00	SAG 47	LB	4.400	6.610	3.900			8/31/77		6	
00 00	SAG 47	LB	4.400	6.610	3.900			8/31/77	C		
00 00	SAG 47	LB	4.400	6.610	3.900			8/31/77			
00 00	SANTOBRITE POWICIDE PELLETS	LB	.390	.946	.394			12/20/76		1	
00 00	SCOTCH GRIP 2218	GAL	3.080	4.400	.000			8/15/77		0	
00 00	SERAN BEADS	LB	3.250	3.250	.000					6	
00 00	SERAN BEADS	LB	3.250	3.250	.000						
00 00	SF 96 SILICONE OIL /SF-90-56/	LB	1.400	1.400	.000					6	
00 00	SF 96 SILICONE OIL -SF-90-56-	LB	1.400	1.400	.000					0	
00 00	SF 96 SILICONE OIL /SF-90-56/	LB	1.400	1.400	.000					5	
00 00	CHAMBER NAME PLATE 3"X7 1/2"	PC	1.500	4.000	1.500			4/14/77		0	
00 00	SHAWINIGAN	LB	.530	.540	.000				C	6	
00 00	SHAWINIGAN	LB	.530	.540	.000						
01 00	SHIELD WP-3-AL .003X50	LBS	.632	.790	.000			4/21/77		0	
01 00	SHIELD WP-3-AL .003X50	LB	.632	.790	.000			8/31/77		0	
02 00	SHIELD WP-3-SS .003X24.5	LBS	1.635	2.185	.000			4/21/77		0	
02 00	SHIELD WP-3-SS .003X24.5	LB	1.635	2.185	.000			8/31/77		0	
03 00	SHIELD WP-3-CU .003X26	LBS	1.058	1.323	.000			4/21/77		0	
03 00	SHIELD WP-3-CU .003X26	LB	1.058	1.323	.000			8/31/77		0	

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA K/A
1 01 00	SHIELD CORNER CAPS COMP.	SET	3.700	✓ 2.830	2.420			8/31/77		0	
1 03 00	SHIELD DOOR NAME PLATES	EACH	1.500	3.500	.000			4/21/77		0	
1 04 00	SHIELD CHAMBER NAME PLATES	EACH	1.500	4.000	.000			4/21/77		0	
1 05 00	SHIELD VENTS HV-1 W/FLANGE	SF	40.960	51.200	.000			10/24/77		0	
0 00 00	SI 02	LB	.060	.060	.000				C		
1 00 00	SILASTIC 6 126	LB	3.000	5.130	.000				C	6	
0 00 00	SILICA 325 MESH	LB	.020	.022	.000					6	
0 00 00	SILICA 325 MESH	LB	.020	.022	.000			10/24/77		6	
0 00 00	SILICA 325 MESH	LB	.020	.022	.000					5	
0 00 00	SILICA 325 MESH	LB	.020	.022	.000						
0 00 00	SILICA 325 MESH	LB	.020	.022	.000				C	9	
1 00 00	SILICA NJ 28	LB	.031	.044	.000			8/31/77		0	
0 00 00	SODIUM SILICATE POWDER	LB	.160	.169	.000				C	6	
5 00 00	SODIUM SILICATE	LB	.050	✓ .035	.031			6/08/77			
0 00 00	SILICONE DEFOAMER 60 (AF-60)	LB	1.660	2.590	1.660			8/31/77	C	6	
0 00 00	SILICONE DEFOAMER 60 -AF-60-	LB	1.660	2.590	1.660			4/14/77		1	
0 00 00	SILICANE A-187	LB	.090	.110	8.250			8/31/77	C	6	
0 00 00	SILICANE A-187	LB	.090	.110	8.250			9/22/77		0	
5 00 00	SILICON CE-1013	LB	4.100	5.150	.000						
6 00 00	SILICONE SWS 804 -04341-	LB	3.500	4.000	.000					6	
6 00 00	SILICONE SWS 804 (04341)	LB	3.500	4.000	.000					4	
6 00 00	SILICONE SWS 804 (04341)	LB	3.500	4.000	.000			10/24/77		6	
6 00 00	SILICONE SWS 804 -04341-	LB	3.500	4.000	.000					4	
6 00 00	SILICONE SWS 804 -04341-	LB	3.500	4.000	.000				C		
7 00 00	SW S-801 SILICONE (04340)	LB	3.500	3.850	.000					4	
7 00 00	SW S-801 SILICONE (04340)	LB	3.500	3.850	.000			10/24/77		6	
7 00 00	SW S-801 SILICONE -04340-	LB	3.500	3.850	.000						
7 00 00	SW S-801 SILICONE (04340)	LB	3.500	3.850	.000				C		
8 00 00	SILICONE X-67 (04343)	LB	3.250	3.250	.000				C	6	
8 00 00	SILICONE X-67 -04343-	LB	3.250	3.250	.000					4	
8 00 00	SILICONE X-67 -04343-	LB	3.250	3.250	.000						
5 00 00	S3000S POTTERS BEADS	LB	4.650	10.020	8.850			8/31/77	C	6	
5 00 00	S3000S POTTERS BEADS	LB	.000	10.020	8.850			8/31/77		4	
5 00 00	S3000S POTTERS BEADS	LB	4.650	10.020	8.850			8/31/77			
5 00 00	S3000S POTTERS BEADS	LB	4.650	10.020	8.850			8/31/77			
0 00 00	SILVER CYANIDE	OZ	2.430	5.020	3.985			6/08/77		3	

00 CODE	PRODUCT DESCRIPTION	U/M	BASE UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER SIA R/M
3 00 00	SILANE A/186	LB	10.000	10.000	.000					6	
0 00 00	SI-O-SIL SS 101	LB	1.570	3.080	2.530			6/08/77	C	6	
0 00 00	CLOTH FOR SC	YARD	.280	.950	.280			4/14/77		0	
1 00 00	COTTON SHEET SC 46"	ROLL	111.920	237.500	111.920			4/14/77		0	
0 00 00	SPRAZEE	GAL	4.200	7.900	7.040			12/20/76	C	6	
0 00 00	SPRAZEE	GAL	[illegible]	7.900	[illegible]			[illegible]		0	
3 00 00	SODIUM [illegible]	LB	.025	.035	.000			[illegible]		6	
0 00 00	SODIUM [illegible]	LB	.025	.035	.000			[illegible]		5	
3 00 00	SODIUM [illegible]	LB	[illegible]	[illegible]	[illegible]			[illegible]		0	
0 00 00	SODIUM [illegible]	LB	.025	.035	.000			[illegible]		0	
5 00 00	SOLVEX	LB	.020	.043	.275			8/31/77		6	
5 00 00	SOLUTION-C	LB	.100	.200	.170			4/14/77		1	
0 00 00	SR [illegible]	LB	[illegible]	[illegible]	4.070			[illegible]		6	
1 00 00	SR [illegible]	LB	[illegible]	[illegible]	[illegible]			[illegible]	C	12	
0 00 00	SR [illegible]	LB	[illegible]	4.070	4.070			8/31/77		4	
7 00 00	SR [illegible]	LB	3.980	4.070	.000			10/24/77	C	6	
7 00 00	SR 387 [illegible]	LB	3.980	4.070	.000				C	1	
0 00 00	SR 385 [illegible]	LB	[illegible]	[illegible]	.000					4	
5 00 00	SR [illegible]	LB	3.980	4.070	.000					0	
0 00 00	SR 385 [illegible]	LB	3.980	[illegible]	.000					5	
5 00 00	SILICONE SC-3900 GE	LB	4.400	4.400	.000					6	
5 00 00	SILICONE SC-3900 GE	LB	4.400	4.400	.000				C		
3 00 00	SC-3900	LB	4.400	4.400	.000						
1 00 00	SILMAR POLYESTER RESIN 540	LBS	.240	.460	.000			10/31/76		6	
1 00 00	SS [illegible]	GAL	[illegible]	[illegible]	.000			[illegible]	C	6	
1 00 00	SS [illegible]	GAL	[illegible]	[illegible]	.000			[illegible]		0	
1 00 00	SS [illegible]	GAL	[illegible]	[illegible]	.000			[illegible]			
1 00 00	SS [illegible]	GAL	[illegible]	[illegible]	.000			[illegible]		6	
1 00 00	SS [illegible]	GAL	[illegible]	[illegible]	.000			[illegible]		0	
1 00 00	[illegible]	GAL	[illegible]	[illegible]	.000			8/15/77	C	1	
000 00	2" SS STRAP WIRE	LB	[illegible]	1.850	.000			8/31/77		0	
1 00 00	SS ANGLE [illegible]	PC	[illegible]	[illegible]	.000			11/30/76		0	
1 00 00	SS ANGLE 1 3/4X1/2X8'	PC	[illegible]	10.800	[illegible]			[illegible]		0	
00 00	STEEL [illegible]	PC	[illegible]	[illegible]	.000			11/30/76		0	
03 00	STEEL [illegible]	BAR	[illegible]	[illegible]	.000			[illegible]		0	

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA STA	USER R/M
2 04 00	STEEL CRS HAT F 10'	BAR	4.872	6.090	.000			4/21/77	0		
2 05 00	STEEL CRS HAT F 12'	BAR	5.846	7.308	.000			4/21/77	0		
2 06 00	STEEL CRS HAT F 20'	EACH	5.600	12.380	.000				0		
2 08 00	STEEL CRS HAT F 24'	EACH	6.720	14.820	.000				0		
3 01 00	STEEL CRS HAT C INSIDE 8'	BAR	1.664	2.080	.000			4/21/77	0		
3 02 00	STEEL CRS HAT C INSIDE 10'	BAR	2.080	2.600	.000			4/21/77	0		
3 03 00	STEEL CRS HAT C INSIDE 12'	BAR	2.496	3.120	.000			4/21/77	0		
3 04 00	STEEL CRS HAT C INSIDE 20'	BAR	4.160	5.200	.000			4/21/77	0		
3 05 00	STEEL CRS HAT C INSIDE 24'	BAR	4.992	6.240	.000			4/21/77	0		
4 01 00	STEEL CRS HAT C OUTSIDE 8'	BAR	2.310	2.888	.000			4/21/77	0		
4 02 00	STEEL CRS HAT C OUTSIDE 10'	BAR	2.888	3.610	.000			4/21/77	0		
4 03 00	STEEL CRS HAT C OUTSIDE 12'	BAR	3.466	4.332	.000			4/21/77	0		
4 04 00	STEEL CRS HAT C OUTSIDE 20'	BAR	5.776	7.220	.000			4/21/77	0		
4 05 00	STEEL CRS HAT C OUTSIDE 24'	BAR	6.931	8.664	.000			4/21/77	0		
5 01 00	STEEL CRS FLATS 1/8X2X8'	BAR	3.405	4.256	.000			4/21/77	0		
5 02 00	STEEL CRS FLATS 1/8X2X10'	BAR	4.256	5.320	.000			4/21/77	0		
5 03 00	STEEL CRS FLATS 1/8X2X12'	BAR	5.107	6.384	.000			4/21/77	0		
5 04 00	STEEL CRS FLATS 1/8X2X20'	BAR	8.512	10.640	.000			4/21/77	0		
50 01 00	STYCAST 0005 12X12X3/8	SHT	11.550	12.710	.000				9		
50 02 00	STYCAST 0005 12X12X1/2	SHT	14.350	15.790	.000				9		
50 02 00	STYCAST 0005 12X12X1/2	SHT	14.350	15.790	.000				0		
50 03 00	STYCAST 0005 12X12X1/4	SHT	10.920	10.920	.000				9		
50 17 00	STYCAST 0005 12X12X3/4	SHT	17.680	19.640	.000				9		
50 18 00	STYCAST 0005 12X12X1/8	SHT	9.590	9.590	.000				9		
50 18 00	STYCAST 0005 12X12X1/8	SHT	9.590	9.590	.000						
50 19 00	STYCAST 0005 12X12X1/16	SHT	4.785	10.550	.000				9		
50 20 00	STYCAST 0005 12X12X1	SHT	20.650	22.720	.000				9		
50 20 00	STYCAST 0005 12X12X1	SHT	20.650	22.720	.000			8/31/77	0		
50 25 00	STYCAST 0005 12X12X1/4	SHT	10.920	10.920	.000				0		

ROD CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
51 04 00	STYCAST 0005 48X7/16	ROD	1.512	1.680	.000					9	
51 05 00	STYCAST 0005 48X5/16	ROD	1.332	1.480	.000					9	
51 06 00	STYCAST 0005 48X1 3/4	ROD	15.400	15.400	.000					9	
51 07 00	STYCAST 0005 48X3/8	ROD	1.360	1.520	.000					9	
51 07 00	STYCAST 0005 48X3/8	ROD	1.360	1.520	.000						
51 08 00	STYCAST 0005 48X5/8	ROD	2.360	2.600	.000					9	
51 08 00	STYCAST 0005 48X5/8	ROD	2.360	2.600	.000						
51 09 00	STYCAST 0005 48X3/16	ROD	1.008	1.120	.000					9	
51 10 00	STYCAST 0005 48X1 1/4	ROD	8.496	9.440	.000					9	
51 11 00	STYCAST 0005 48X1/4	ROD	1.120	1.240	.000					9	
51 11 00	STYCAST 0005 48X1/4	ROD	1.120	1.240	.000						
51 12 00	STYCAST 0005 48X1/2	ROD	1.720	1.920	1.920			8/31/77		9	
51 12 00	STYCAST 0005 48X1/2	ROD	1.060	1.920	1.060			8/31/77		0	
51 13 00	STYCAST 0005 48X1	ROD	4.480	4.920	.000					9	
51 13 00	STYCAST 0005 48X1	ROD	4.480	4.920	.000						
51 14 00	STYCAST 0005 48X2 1/2	ROD	31.480	31.480	.000					9	
51 15 00	STYCAST 0005 48X2	ROD	10.400	18.200	.000					9	
51 15 00	STYCAST 0005 48X2	ROD	10.400	18.200	.000						
51 16 00	STYCAST 0005 48X1 1/8	ROD	7.560	8.400	.000					9	
51 21 00	STYCAST 0005 48X3/4	ROD	2.772	3.080	.000					9	
51 21 00	STYCAST 0005 48"X3/4"	ROD	2.772	3.080	.000			8/31/77		0	
51 22 00	STYCAST 0005 48X1/8	ROD	1.030	1.030	.000					9	
51 23 00	STYCAST 0005 48X3	ROD	36.400	36.400	.000					9	
1 24 00	STYCAST 0005 48X1 1/2	ROD	10.500	10.500	10.500			8/31/77		9	
1 24 00	STYCAST 0005 48X1 1/2	ROD	10.000	10.500	10.000			8/31/77		0	
1 25 00	STYCAST 0005 48INX1/16	ROD	.702	.780	.000					9	
0 00 00	STYRENE MONOMER	LB	.170	.330	.000					6	
0 00 00	STYRENE MONOMER	LB	.170	.330	.000			10/24/77		6	
0 00 00	STYRENE MONOMER	LB	.170	.330	.000					4	
0 00 00	STYRENE MONOMER	LB	.170	.330	.000				C		
0 00 00	STYRENE MONOMER	LB	.170	.330	.000					0	
0 00 00	STYRENE MONOMER	LB	.170	.330	.000				C		
0 00 00	STYROFOAM 2X24X96	EACH	3.040	7.020	3.040			8/31/77		9	
0 00 00	STYROFOAM 2X24X96	EACH	3.040	7.020	3.040			8/31/77		1	

DO CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
10 00 00	SULPHURIC ACID	LB	.050	.089	.078			8/31/77		2	
20 00 00	CARBIUM MM	LB	.064	.083	.000			8/31/77		6	
20 00 00	CARBIUM MM	LB	.064	.083	.064			6/08/77			
20 00 00	CARBIUM MM	LB	.064	.083	.064			6/08/77		8	
30 00 00	SUREFX MM	LB	.050	.090	.000					6	
30 00 00	SUREEX MM	LB	.050	.090	.000					0	
30 00 00	SUREEX MM	LB	.050	.090	.000						
36 00 00	SWS 832	LB	2.530	3.380	3.850			12/20/76		4	
36 00 00	SWS 832	LB	2.530	3.380	.000			10/24/77		6	
36 00 00	SWS 832	LB	2.530	3.380	3.850			12/20/76			
36 00 00	SWS 832	LB	2.530	3.380	3.850			12/20/76			
50 00 00	TABULA ALUMINA 325 MESH	LB	.150	.319	.278			8/31/77		6	
50 00 00	TABULA ALUMINA 325 MESH	LB	.150	.319	.278			8/31/77		6	
50 00 00	TABULA ALUMINA 325 MESH	LB	.150	.319	.278			8/31/77		5	
50 00 00	TABULA ALUMINA 325 MESH	LB	.150	.319	.278			8/31/77		0	
50 00 00	TABULA ALUMINA 325 MESH	LB	.150	.319	.278			8/31/77		5	
55 00 00	TABULA ALUMINA 14 28 MESH	LB	.140	.303	.261			8/31/77		6	
55 00 00	TABULA ALUMINA 14 28 MESH	LB	.140	.303	.261			8/31/77		5	
55 00 00	TABULA ALUMINA 14 28 MESH	LB	.140	.303	.261			8/31/77		0	
55 00 00	TABULA ALUMINA 14 28 MESH	LB	.140	.303	.261			8/31/77	C		
60 00 00	TABULA ALUMINA 60 MESH	LB	.130	.303	.237			8/31/77		5	
60 00 00	TABULA ALUMINA 60 MESH	LB	.130	.303	.237			8/31/77		6	
60 00 00	TABULA ALUMINA 60 MESH	LB	.130	.303	.237			8/31/77		0	
60 00 00	TABULA ALUMINA 60 MESH	LB	.130	.303	.237			8/31/77		5	
63 00 00	TABULAR ALUMINA 48 MESH	LBS	.125	.230	.000			10/31/76		5	
63 00 00	TABULAR ALUMINA 48 MESH	LB	.125	.230	.000			10/24/77		6	
65 00 00	TABULA ALUMINA 20 MICRON T-61	LB	.370	.422	.000			10/24/77	C	6	
65 00 00	TABULA ALUMINA 20 MICRON T-61	LB	.370	.422	.271			6/08/77	C	5	
65 00 00	TABULA ALUMINA 20 MICRON T-61	LB	.370	.422	.271			6/08/77			
70 00 00	TAMOL SN	LB	.220	.470	.405			12/20/76		1	
80 00 00	TEFLON POWDER CODE 752	LB	2.250	3.500	3.150			6/08/77		6	
80 00 00	TEFLON POWDER CODE 752	LB	2.250	3.500	3.150			6/08/77		6	
80 00 00	TEFLON POWDER CODE 752	LB	2.250	3.500	3.150			6/08/77	C	6	
88 00 00	TERTIARY BUTYL STYRENE	LB	.980	1.400	.000			8/31/77		0	
90 00 00	TETRAETHYLENE PENTAMINE -TEPA-	LB	.650	1.255	1.140			8/31/77		4	
90 00 00	TETRAETHYLENE PENTAMINE-TEPA	LB	.650	1.255	1.140			8/31/77		6	
90 00 00	TETRAETHYLENE PENTAMINE -TEPA-	LB	.650	1.255	1.140			8/31/77		2	
90 00 00	TETRAETHYLENE PENTAMINE -TEPA-	LB	.650	1.255	1.140			8/31/77		0	
90 00 00	TETRAETHYLENE PENTAMINE -TEPA-	LB	.650	1.255	1.140			8/31/77		4	
90 00 00	TETRA HYDRO FURNA	LB	.720	.850	.000					6	
90 00 00	TETRA HYDRO FURNA	LB	.720	.850	.000						

)D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
)0 00 00	TETRA HYDRO FURNA	LB	.720	.850	.000				C		
10 00 00	TEXAPHOR-277	LB	.140	.147	.000			10/24/77	C	6	
.0 00 00	TEXAPHOR-277	LB	.140	.147	.000				C	4	
.0 00 00	TEXAPHOR-277	LBS	.140	.147	.000			10/31/76	C	0	
4 00 00	THERMALASTIC BEADS	LBS	1.950	3.040	.000			10/31/76		0	
4 00 00	THERMALASTIC BEADS	LBS	1.950	3.040	.000			10/31/76		6	
5 00 00	TH IRON POWDER ACID TREATED	LB	1.760	1.980	.000			10/24/77	C	6	
5 00 00	TH IRON POWDER ACID TREATED	LB	1.760	1.980	.000				C	4	
6 00 00	THERMOLASTIC SOLUTION	LB	.420	.420	.000					0	
6 00 00	THERMOLASTIC SOLUTION	LB	.420	.420	.000				C	6	
6 00 00	THERMOLASTIC SOLUTION	LB	.420	.420	.000					0	
9 00 00	THERMO GAURD S	LB	1.256	1.795	.000			8/31/77		0	
0 00 00	THERMOLITE 12	LB	1.950	3.470	3.040			8/31/77		6	
0 00 00	THERMOLITE 12	LB	1.950	3.470	3.040			8/31/77		0	
0 00 00	THERMOLITE 12	LB	1.950	3.470	3.040			8/31/77	C		
1 00 00	THINNER CHEMFAST	GAL	3.450	3.450	.000				C		
2 00 00	THIOKOL LP-3	LBS	1.480	1.745	.000			10/31/76		6	
2 00 00	THIOKOL LP-3	LB	1.480	1.745	.000						
0 00 00	TIO2 TITANIUM OXIDE	LB	.610	.820	.000					6	
0 00 00	TIO2 TITANIUM OXIDE	LB	.610	.820	.000					6	
0 00 00	TIO2 TITANIUM OXIDE	LB	.610	.820	.000			10/31/76		0	
0 00 00	TIO2 TITANIUM OXIDE	LB	.610	.820	.000					0	
0 00 00	TIO2 TITANIUM OXIDE	LB	.610	.820	.000				C		
3 00 00	TITANIUM DIOXIDE	LB	.300	.850	.000					2	
00 00	TITANIUM DIOXIDE R 722	LB	.675	.675	.000				C	6	
00 00	TITANOX RA 47	LB	.300	.350	.000					1	
00 00	TITANOX RA-45	LB	.300	.415	.000			10/24/77		6	
00 00	TITANOX RA-45	LB	.300	.415	.000					5	
00 00	TITANOX 2030	LB	.350	.501	.000			8/31/77		0	
00 00	TITANOX RA 50	LB	.270	.270	.000						
00 00	TOLUOL	GAL	.580	1.500	1.090			8/31/77		0	
00 00	TOLUOL	GAL	.580	1.500	1.090			12/20/76		4	
00 00	TOLUOL	GAL	.580	1.500	.000			10/24/77		6	
00 00	TOLUOL	GAL	.580	1.500	1.090			12/20/76		4	
00 00	TOLUOL	GAL	.580	1.500	1.090			8/31/77		0	
00 00	TOLUOL	GAL	.580	1.500	1.090			12/20/76	C	8	
00 00	TOLUOL	GAL	.580	1.500	1.090			12/20/76			

) CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/A
) 00 00	TONIX LC	LB	.840	1.450	.940			6/08/77			
) 00 00	TONIX LC	LBS	.840	1.450	.940			6/08/77		6	
) 00 00	TONIX LC	LB	.840	1.450	.000			8/31/77		0	
) 00 00	TRI PHENYL PHOSPHATE	LB	.310	.310	.000					5	
) 00 00	TRI PHENYL PHOSPHATE	LB	.310	.310	.000						
) 00 00	TRI PHENYL PHOSPHATE	LB	.310	.310	.000				C		
) 00 00	TWEEN 21	LB	.750	1.580	.000				C	6	
) 00 00	TWEEN 21	LB	.750	1.580	.000						
) 00 00	TWEEN 21	LB	.750	1.580	.000						
) 00 00	UNOX 221	LB	.925	2.040	.000				C		
) 00 00	UNOX EPOXIDE 289 ERL 4289	LB	1.490	1.250	.000					4	
) 00 00	UNOX EPOXIDE 289 ERL 4289	LB	1.490	1.250	.000				C		
) 00 00	UREA PRILLED CODE 55762	LB	.060	.133	.230			12/20/76		7	
) 00 00	UREFOAM CATALYST 2-19	LB	1.750	1.750	.000				C		
) 00 00	UREFOAM R	LB	1.300	1.860	1.650			6/08/77		6	
) 00 00	UREFOAM R	LB	1.300	1.860	1.650			6/08/77		0	
) 00 00	UREFOAM R	LB	1.300	1.860	1.650			6/08/77		4	
1 00 00	VAZO	LB	1.500	6.020	.000						
) 00 00	VARCUM P-4331	LB	.385	.550	.000			4/04/77		0	
5 00 00	VELCRO PILE	FT	.265	.590	.407			8/31/77		0	
5 01 00	VELCRO HOOK	FT	.265	.407	.000			4/04/77		0	
4 01 00	CAT 11	LB	1.071	1.569	.000					0	
4 01 00	CAT 11	LB	1.071	1.569	.000					0	
9 01 00	CAT 17	LB	3.705	5.401	.000					0	
9 01 00	CAT 17	LB	3.705	5.401	.000					0	
7 01 00	CAT 12H	LB	.726	1.149	.000					0	
7 01 00	CAT 12H	LB	.726	1.149	.000					0	
0 01 00	VINYL FILM .020 CONDUCTIVE	SOFT	.410	.410	.000					9	
0 02 00	VINYL FILM .060	SOFT	1.210	1.210	.000					9	
0 02 00	VINYL FILM .060	SOFT	1.210	1.210	.000						
0 03 00	VINYL FILM .010	LB	2.500	2.500	.000					9	
0 04 00	VINYL FILM .040	SOFT	.810	.810	.000					9	
0 05 00	VINYL FILM .030	SOFT	.715	.878	.000			6/08/77		9	
0 07 00	VINYL FILM .050	SOFT	1.210	1.210	.000			10/31/76		9	

ROD CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA	R/M
501 00 00	VINYL CLEAR	YARD	.520	.525	.000					0		
502 00 00	VINYL PERFORATED	YARD	.700	.700	.000					0		
504 00 00	CAT 25	LB	1.272	1.507	.000					0		
504 00 00	CAT 25	LB	1.272	1.507	.000					0		
520 00 00	VINYL TOLUENE T 50	LB	.300	.510	.000					6		
20 00 00	VINYL TOLUENE T50	LB	.300	.510	.000			8/31/77		6		
20 00 00	VINYL TOLUENE T 50	LB	.300	.510	.000				C	2		
20 00 00	VINYL TOLUENE T 50	LB	.300	.510	.000							
30 00 00	VISTANEX	LB	.450	.450	.000					6		
30 00 00	VISTANEX	LB	.450	.450	.000							
40 00 00	VOLAN BONDING AGENT	LB	.950	1.190	.000							
50 02 00	181 FIBER GLASS CLOTH 38'' WD	YARD	1.500	1.500	.000					0		
50 04 00	VOLAN 1581 72'' WIDE	YARD	2.000	2.000	.000							
50 05 00	VOLAN 1581 60 INCH WIDE	YARD	1.180	1.640	1.180			8/31/77		0		
2 00 00	1/8''X54''X600' VOLARA CHARCOAL	ROLL	189.000	199.800	.000					8		
2 01 00	VOLARA 1/8	SQFT	.052	.074	.000					0		
3 00 00	1/16''X54''X600' VOLARA WHITE	ROLL	54.000	148.500	.000					8		
3 01 00	VOLARA 1/16	SQFT	.042	.060	.000					0		
3 02 00	VOLARA 1/4	SQFT	.078	.112	.000					0		
3 04 00	VOLARA 300'X54X7/32	ROLL	189.000	189.000	.000							
3 05 00	VOLARA 900'X54"X1/16"	ROLL	81.000	81.000	.000			10/31/76		0		
3 06 00	VOLARA 300'X54"X1/4"	ROLL	168.000	168.000	.000			10/31/76		0		
01 00	VOLARA 1/16X54X54	EACH	.320	.320	.000			10/31/76		0		
02 00	VOLARA 1/8X54X54	EACH	1.117	1.117	.000			10/31/76		0		
03 00	VOLARA 1/2X54X54	EACH	51.200	51.200	.000			10/31/76		0		
04 00	VOLARA 3/8X54X54	EACH	.480	.480	.000			10/31/76		0		
05 00	VOLARA 1X54X54	EACH	10.240	10.240	.000			10/31/76		0		
00 00	VORITE 63	LBS	.830	1.230	1.020			8/31/77		0		
00 00	VORITE 63	LB	.830	1.230	1.020			8/31/77		6		
00 00	VORITE 63	LB	.830	1.230	1.020			8/31/77	C			
00 00	VORTNAL CP 700	LB	.270	.628	.333			6/08/77		4		

) CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA	K/M
) 00 00	VORINAL CP 700	LB	.270	.628	.000			10/24/77		6		
) 00 00	VORONOL CP 700	LB	.270	.628	.333			6/08/77		0		
) 00 00	VORINAL CP 700	LB	.270	.628	.333			6/08/77	C			
0 00 00	VULCAN XC 72 CARBON	LB	.310	.443	.368			6/08/77		5		
0 00 00	VULCAN XC 72 CARBON	LB	.310	.443	.000			10/24/77		6		
0 00 00	VULCAN XC 72 CARBON	LB	.310	.443	.413			8/31/77		1		
0 00 00	VULCAN XC 72 CARBON	LB	.310	.443	.368			6/08/77	C			
6 00 00	VULCARITE 549	LB	1.200	1.200	.000							
90 00 00	VULTAFOAM 15 V 13	WP	.850	1.401	1.230			8/31/77		8		
90 00 00	VULTAFOAM 15 V 13	WP	.850	1.401	1.230			12/20/76		4		
90 00 00	VULTA FOAM 15 V 13	WP	.850	1.401	.000			10/24/77		6		
90 00 00	VULTAFOAM 15 V 13	WP	.850	1.401	1.230			12/20/76		0		
90 00 00	VULTAFOAM 15 V 13	WP	.850	1.401	1.230			12/20/76				
95 01 00	VULTA FOAM ROF 151 21 A	WP	.570	.629	.570			8/31/77	C	4		
95 02 00	VULTA FOAM ROF 151 21 B	WP	.570	.629	.570			8/31/77	C	6		
95 02 00	VULTA FOAM ROF 151 21 B	WP	.570	.629	.570			8/31/77	C	4		
[illegible]	VYAS 3	LB	.450	.455	.000				C	5		
00 00 00	VYAS-3	LB	.450	.455	.000							
00 00 00	VYAS 3	LB	.450	.455	.000							
01 00 00	V 7410 ORANGE	LB	2.620	2.620	.000			10/31/76		0		
30 00 00	WITCO 77 86	LB	.750	1.195	.750			6/08/77		6		
30 00 00	WITCO 77 86	LB	.750	1.195	.750			6/08/77		0		
30 00 00	WITCO 77 86	LB	.750	1.195	.750			6/08/77	C			
73 00 00	RED DYE SOLUTION	LB	1.310	1.310	.000			10/31/76		0		
98 01 00	SUPPORT CASTING 5	EACH	5.000	5.000	.000					0		
98 04 00	SUPPORT CASTINGS 14	EACH	15.000	15.000	.000					0		
98 06 00	SUPPORT CASTINGS 8	EACH	7.250	7.250	.000					0		
98 08 00	SUPPORT CASTINGS 12	EACH	9.000	9.000	.000					0		
98 09 00	SUPPORT CASTINGS 18	EACH	16.000	16.000	.000					0		
98 11 00	SUPPORT CASTINGS 16''	EACH	15.500	15.500	.000					0		
98 14 00	SUPPORT CASTING 24''	EACH	45.000	50.000	.000					0		
99 00 00	STANDS	EACH	15.500	15.500	.000					0		
01 00 00	60 MESH FINES	LB	.336	.336	.000			11/30/76		0		
37-01 00	3M #425 ALUM FOIL TAPE 1/2 INCH ROLL		2.230	2.530	.000					4		

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
7 02 00	3M #425 ALUM FOIL TAPE 1	ROLL	3.590	5.980	.000					4	
7 03 00	3M #425 ALUM FOIL TAPE 2	ROLL	7.340	9.840	7.760			8/31/77		4	
7 04 00	3M #425 ALUM FOIL TAPE 4	ROLL	14.360	19.680	.000					4	
8 00 00	PS PERF ALUM TAPE 2"	ROLL	11.000	13.500	.000			10/31/76		0	
0 00 00	ECCOSPHERES R	LB	.508	.588	.288			8/31/77		0	
0 00 00	ECCOSPHERES R	LB	.588	.588	.000					6	
1 00 00	FT 102	LB	.940	2.877	.000				C	6	
2 02 00	ECCOSPHERES ST	LB	1.420	3.177	2.795			8/31/77		6	
2 02 00	ECCOSPHERES ST	LB	2.229	3.177	2.075			8/31/77		0	
3 00 00	ESPHERES VT	LB	3.301	3.301	.000				C	6	
9 00 00	ECCOSPHERES IGD 101	LB	.831	.831	.000					5	
9 01 00	IG101	LB	.340	.288	.588			8/31/77			
9 01 00	IG101	LB	.340	.288	.588			8/31/77		6	
9 01 00	IG-101	LB	.508	✓ .288	.000					0	
9 01 00	IG101	LB	.340	.288	.588			8/31/77			
9 02 00	IGD-101	LB	.714	.419	.000					0	
9 02 00	IGD-101	LB	.714	✓ .419	.000			10/31/76		0	
2 00 00	MICROBALLONS FTD-202	LB	1.650	3.455	.000					0	
2 00 00	MICROBALLONS FTD-202	LB	1.650	3.455	.000						
9 00 00	MICROBALLONS IG-25	LB	.845	.845	.000						
2 00 00	ECCOSPHERES FTD 146	LB	2.910	3.240	.000						
0 49 00	X 55	LB	1.920	1.920	.000						
5 00 00	ORX 55	LB	1.960	1.960	.000						
0 00 00	XD 7855	LB	.920	1.750	1.430			8/31/77			
1 00 00	XD-7080	LB	.805	1.150	.000			8/31/77		6	
0 00 00	X-12	LB	.300	.510	.350			12/20/76		1	
1 00 00	XYLENE	GAL	.530	1.500	.000					4	
1 00 00	XYLENE	GAL	.530	1.500	.000					4	
1 00 00	XYLENE	GAL	.530	1.500	.000						
1 00 00	XYLENE	GAL	.530	1.500	.000				C		
0 00 00	ZINC BORATE	LB	.347	.495	.000			5/18/77		1	
2 00 00	ZINC CHLORIDE GRANULAR	LB	.180	.312	.000					2	

J CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
4 00 00	ZINC OXIDE MB-1 TIGRON	LB	.180	.312	.000			10/31/76	0		
5 00 00	ZINC OXIDE XX78	LB	.180	.445	.295			6/08/77	5		
6 00 00	ZINC OXIDE MX935	LB	.333	.440	.495			8/31/77	1		
8 00 00	ZINC STERATE	LB	1.250	.760	.000						
5 00 00	ZZLA 0822 /H-221/	LB	2.030	2.930	.000				4		
5 00 00	ZZLA 0822 /H-221/	LB	2.030	2.930	.000			10/24/77	6		
5 00 00	ZZLA 0822 -H-221-	LB	2.030	2.930	.000				0		
5 00 00	ZZLA 0822 /H-221/	LB	2.030	2.930	.000				4		
6 00 00	6 OZ SPRAY CAN	EACH	1.250	1.250	.000				6		
8 00 00	6 OZ SPRAY CAN	EACH	1.250	1.250	.000				0		
8 00 00	6 OZ SPRAY CAN	EACH	1.250	1.250	.000				0		

Bof N-2-3-1
E&C Canton MA

I.

CANTON, MASSACHUSETTS

The property in Canton, Massachusetts consists of two basic facilities, sometimes referred to below as Plant #1 and Plant #2.

Plant #1 is located at 869 Washington Street, Canton, Massachusetts, on a parcel of land containing approximately acres. Plant #1 consists of 7 essentially separate buildings, which are generally described as follows:

Building 1: This building is used for manufacturing and maintenance purposes, consists of a basement and one story above grade (each floor containing approximately 4,700 sq. ft.) and is of brick, stone and wood construction.

Building 2: This building is used for maintenance and storage, consists of one story of approximately 3,300 sq. ft. and is of concrete block and wood construction.

Building 3: This building is used for offices, laboratories and storage, consists of a basement and one story above grade (each floor containing approximately 5,700 sq. ft.) and is of wood, stone and brick construction.

Building 4: This building is used for manufacturing, consists of one story of approximately 525 sq. ft. and is of poured concrete, concrete block and steel sheeting construction.

Building 5: This building is used for manufacturing, storage and shipping, consists of a basement and three stories above grade (each floor containing approximately 4,200 sq. ft.) and is of stone, brick and wood construction.

Building 6: This building is used for offices and storage, consists of a basement and two stories above grade. The basement contains approximately 5,500 sq. ft. and there is a total of approximately 9,700 sq. ft. above grade. The building is of reinforced concrete, concrete block and steel construction.

Building 7: This building is used for manufacturing, consists of one story of approximately 2,700 sq. ft. and is of concrete, stone, brick, concrete block and wood construction.

Plant #2 is located at 59 Walpole Street, Canton, Massachusetts, on a parcel of land containing approximately acres. Plant #2 consists of 6 essentially separate buildings, which are generally described as follows:

Building 1: This building is used for offices, consists of a basement and 2½ stories above grade (each floor containing approximately 2,200 sq. ft.) and is of stone, concrete, steel, wood and stucco construction.

Building 2: This building is used for offices, consists of two stories, contains approximately 3,000 sq. ft. above the basement level, and is of concrete, steel, concrete block and brick construction.

Building 3: This building is used for manufacturing, consists of a basement and three stories above grade, and contains approximately 3,400 sq. ft. in the basement and 51,900 sq. ft. above grade. It is of stone, wood and concrete construction.

Building 4: This building is used for manufacturing and the boiler house. It is in part a one story building and in part a two and one-half story building. The total floor area above the basement level contains approximately 24,200 sq. ft. The building is of stone, wood and brick construction.

Building 5: This building is used for manufacturing, consists of a basement and 2½ stories above grade, and contains approximately 15,000 sq. ft. in the basement and 34,500 sq. ft. above grade. It is of stone, wood and concrete construction.

Building 6: This building is used for laboratory testing, consists of a basement and one story and contains approximately 5,800 sq. ft. above grade. It is of concrete, brick and wood construction.

The land on which Plants 1 and 2 is located consists of multiple parcels. The deeds in to Emerson & Cuming described the various parcels as follows:

Deed recorded in Book 3130, Page 184:

and buildings thereon
a certain parcel of land/in the Town of Canton, Norfolk County, Commonwealth
of Massachusetts, being bounded and described as follows:

The first, "Parcel A", Beginning at the southeasterly corner of the premises on the easterly side of Washington Street, now or formerly owned by George H. Lawless; and running

NORTHEASTERLY along land now or formerly of James W. Dennis, two hundred ten (210) feet to a corner; then turning and running

NORTHWESTERLY along other land now or formerly of said Lawless about ninety-five (95) feet to a corner; then turning and running

SOUTHWESTERLY along parcel "B" and along the northwesterly face of the brick Building on Parcel "A" about two hundred five (205) feet to land of said James W. Dennis and a corner; then turning and running

SOUTHEASTERLY along land of said Dennis about eighty-five (85) feet to the point of beginning and containing about seventeen thousand nine hundred and nine (17,909) square feet.

The second, "Parcel B": Beginning at the northwesterly corner of the above described "Parcel A" and running

NORTHWESTERLY along other land now or formerly owned by the Tobe Deutschmann Corporation of Norwood, Massachusetts, about forty-five (45) feet to a corner; then turning and running

SOUTHWESTERLY about seventy-five (75) feet to a corner; then turning and running

SOUTHEASTERLY about twenty-five (25) feet to the northwesterly face of the concrete building on "Parcel B" and a corner; then turning and running

SOUTHWESTERLY along the northeasterly face of the said concrete building on "Parcel B" and partly along the southeasterly face of a building on other land now or formerly owned by the Tobe Deutschmann Corporation of Norwood, Massachusetts, about fifty-five (55) feet to a corner; then turning and running

SOUTHEASTERLY about twenty-three (23) feet to the northwesterly face of the Brick Building on "Parcel A" and a corner; then turning and running

NORTHEASTERLY along the aforementioned northwesterly face of the brick Building on "Parcel A" about a hundred and thirty (130) feet to the point of beginning and containing about Four thousand two hundred and fifty (4,250) square feet.

The third parcel "Parcel C" formerly known as the "Windmill Lot" on the northerly side of Sherman Street together with the easement and all rights thereto, all as shown on a plan made by Robert B. Bellamy, C.E., dated March 24, 1945, and entitled "Plan of an Easement through land of James W. Dennis, Canton, Mass." and filed in the Norfolk County Registry of Deeds, Book 2562, Page 337.

Together with the rights and easements vested in the grantor for the maintaining and use of power lines, sanitary and storm sewers, and water lines as well as the rights in andover the passageways as shown on a plan entitled "Plan of Land in Canton, Mass., April 3, 1948, Wm. S. Crocker, C.E., 46 Cornhill, Boston, Massachusetts, and recorded at the Norfolk Registry of Deeds in Plan Book 145, Plan 250 of 1948.

Being the same premises conveyed to me by deed of George H. Lawless of said Canton, dated June 18, 1949, and recorded in the Norfolk County Registry of Deeds on June 20, 1949, Book 2037, Page 574.

Except so much thereof as was taken by the Town of Canton for the laying out of requit Street by instrument recorded July 20, 1950, in Norfolk Deeds, Book 2929, Page 510.

Deed recorded in Book 3515, Page 529:

The land with the buildings thereon situate in Canton, Norfolk County, Massachusetts, shown as lots "A" and "B" on a Plan of Land in Canton, Mass., dated December 10, 1952, John P. Walsh. Civil Engineer, to be recorded herewith, said lots being together bounded

[Description and encumbrances, if any]

and described as follows:

Beginning at a point at the southwesterly corner of the premises herein conveyed at land of the grantor as shown on said plan, thence running Southeasterly by land of Walter S. Dennis as shown on said plan, 107.40 feet to a granite bound; thence turning and running,

Northeasterly by land of the Canton Housing Authority as shown on said plan, 210 feet to a corner at land of the grantor: thence turning and running,

Northwesterly by land of said grantor, 140 feet to an iron pipe; thence turning and running,

Southwesterly 75 feet to an iron pipe at land of the grantor; thence turning and running,

Southeasterly 25 feet to the northwesterly face of the "one story concrete building" as shown on said plan; thence turning and running,

Southwesterly along the northwesterly face of said concrete building 34.60 feet; thence turning and running,

Southeasterly 90/100ths of a foot; thence turning and running

Southwesterly along the Northeasterly face of said concrete building, 37.10 feet: thence turning and running

Northwesterly 2 feet; thence turning and running

Southwesterly 58.15 feet by land of said grantor to land of said Dennis and the point of beginning.

Together with the rights and easements to use the parcel designated as "Proposed Passageway" shown on said plan recorded herewith, to enable the grantee and its successors and assigns to reach the existing passageway to Washington Street as shown on said plan.

Also, together with the rights and easements vested in the grantor for the maintaining and use of power lines, sanitary and storm sewers, and water lines as well as the rights in and over passageways as shown on a plan entitled, "Plan of Land in Canton, Mass.," April 3, 1948, William L.Crocker, C.E., 46 Cornhill,Boston,Massachusetts and recorded with Norfolk Deeds as Plan No. 250 of 1948 in Plan Book 145.

The above described premises are the same premises intended to be conveyed as Parcels "A" and "B" in deed of Tobo Deutschmann Corporation to George H. Lawless, dated August 5, 1948, recorded with Norfolk Deeds in Book 2777,Page 267. See also deed of said Lawless to Leon J.Kowal, dated June 18, 1949 and recorded with said Deeds in Book 2837 Page 574, and deed of said Kowal to the grantee named herein, dated November 3, 1952 and recorded with said Deeds in Book 3130 Page 184.)

Deed recorded in Book 3446, Page 352:

A certain parcel of land with the buildings thereon situated on a right of way Easterly from Washington Street in Canton, Norfolk County, Commonwealth of Massachusetts; shown as Lot E on "Plan of Land in Canton, Massachusetts" by John F. Walsh, civil engineer, dated December 10, 1955, to be recorded herewith, and more particularly, bounded and described as follows:

Beginning at the Southeast corner of the granted premises at the Southwest corner of other land of the grantee and in the Northerly line of land now or formerly of James W. and Pauline S. Dennis; thence running Westerly along land now or formerly of said Dennis, 152.36 feet, to other land of the grantor; thence running Northeasterly along land of grantor, 115.43 feet, according to said Plan, to the land now or formerly of the Brooks Glue Co., and the center line of a common passage way; thence running Easterly along land now or formerly of Brooks Glue Co. and the center line of said passage way, 91.55 feet to other land of the grantor; thence running Easterly, 35.2 feet along said grantor's land to land of the grantee; thence running Easterly 25. feet along land of grantee; thence running Southwesterly, 34.60 feet; thence Easterly, 0.90 feet; thence Southwesterly, 37.10 feet; thence running Westerly, 2. feet and thence Southwesterly 58.15 feet to point of beginning, the last five courses being by other land of the grantee.

Together with the right in common with the grantor and others entitled thereto and consistent with their interests to use the passage ways shown on said Plan, to Washington Street.

The grantor reserves to itself and its grantees and others entitled thereto the right and easement to use, inspect, maintain and have access to water, sewer, power and other utility lines and mains, if any, as at present constituted or involving no greater use of space, passing through or over the premises hereby granted to or from premises now or formerly owned by the grantor and for such purposes, to enter upon the premises hereby granted; and the grantor hereby grants the right and easement, to the grantee to use, inspect and maintain such lines and mains, if any, as at present constituted or involving no greater use of space, in premises retained by the grantor which service the grantee and for such purposes, the right and easement to enter upon premises retained by the grantor subject to rights and easements granted to others by the grantor.

The right of the grantor and its past or future grantees to enter upon the premises herein granted to inspect and maintain said water, sewer, power and other utility lines and mains and the right of the grantee and its parties to enter for said purposes upon premises retained by the grantor, are to be exercisable only in the event and to the extent of the failure of the persons upon whose premises the inspection and maintenance is necessary, to repair and maintain the same, the person so entering for such purpose to indemnify the person whose premises are so entered, from any cost, loss or damage resulting from such entry or such repair or maintenance.

Deed recorded in Book 3565, Page 12:

the land with the buildings thereon situated in Canton, Norfolk County, Massachusetts, shown as Lots F, G and H on a Plan of Land in Canton, Mass., dated May 8,

1957, by John P. Walsh, Registered Civil Engineer, to be recorded herewith, and bounded and described as follows:

Lot H

Northwesterly by the southeasterly line of Washington Street, forty and 42/100 (40.42) feet;

Northeasterly by Parcel C as shown on a Plan of Land in Canton, Mass., dated Oct. 1948, by M. A. Mahoney, C.E., recorded in Norfolk Deeds, Book 2787, page 364, one hundred twenty-nine and 63/100 (129.63) feet;

Southeasterly by lot B as shown on a Plan of Land in Canton, Mass., dated May 1, 1948, by John P. Walsh, recorded in Book 2754, page 266, eighty-three and 32/100 (83.32) feet; and

Southwesterly by land now or formerly of Walter S. Dennis, one hundred twenty and 69/100 (120.69) feet.

Lot F

Southwesterly by said lot B, one hundred twenty-six and 04/100 (126.04) feet;

Northeasterly and Northerly by various courses, by Parcel D as shown on said plan dated Oct. 1948, by M. A. Mahoney, one hundred seventy-one and 43/100 (171.43) feet;

Southeasterly by land conveyed to Brooks Glue Company, Inc., by deed dated April 7, 1948, recorded in Book 2746, page 481, and shown on a Plan of Land in Canton, Mass., dated April 3, 1948, recorded as Plan No. 250 in Plan Book 145, twenty and 48/100 (20.48) feet;

Southerly by Parcel E on said plan dated Oct. 1948, fifty-five and 26/100 (55.26) feet;

Easterly by the same, forty-eight and 50/100 (48.50) feet;

Southeasterly by said land conveyed to Brooks Glue Company, Inc., about ten (10) feet;

Northeasterly by the same, eighty-seven and 58/100 (87.58) feet;

Southeasterly, in part by the center line of a wall, by Lot "E" as shown on a Plan of Land in Canton, Mass., dated Dec. 10, 1955, by John P. Walsh, C.E., recorded as Plan No. 101 in Plan Book 201, one hundred eleven and 43/100 (111.43) feet;

Southwesterly by said land now or formerly of Walter S. Dennis, about one hundred five and 21/100 (105.21) feet;

Northwesterly by said Lot B shown on said plan dated May 1, 1948, thirty-four and 70/100 (34.70) feet;

Southwesterly by the same, five (5) feet;

Northwesterly by the same, thirty-eight and 59/100 (38.59) feet;
Northeasterly by the same, one and 60/100 (1.60) feet; and
Northwesterly by the same, fifty and 32/100 (50.32) feet.

Lot G

Northwesterly by said land conveyed to Brooks Glue Company, Inc., forty-seven and 16/100 (47.16) feet;
Northeasterly by the same, nine and 92/100 (9.92) feet;
Northwesterly by the same, twelve and 03/100 (12.03) feet;
Southwesterly by the same, nine and 91/100 (9.91) feet;
Northwesterly by the same, twenty and 66/100 (20.66) feet;
Southwesterly by the same, by two courses, fifty and 35/100 (50.35) feet;
Northwesterly by the same, ninety-five and 88/100 (95.88) feet;
Southwesterly by said Lot "E" on said plan dated Dec. 10, 1955, twenty-three and 46/100 (23.46) feet;
Southeasterly by Lot "B" as shown on a Plan of Land in Canton, Mass., dated Dec. 10, 1952, by John P. Walsh, C.E., recorded in Book 3146, page 114, seventy-five (75) feet;
Northeasterly by Lot A on a Plan of Land in Canton, Mass., dated May 24, 1954, by John P. Walsh, C.E., recorded in Book 3325, page 51, eighteen and 73/100 (18.73) feet;
Southeasterly, Easterly and Northeasterly by the same, one hundred thirteen and 55/100 (113.55) feet;
Southeasterly by the same, eight (8) feet; and
Northeasterly by land now or formerly of August Thiel, about fifty and 5/10 (50.5) feet.

Be all said measurements more or less, and be the premises however otherwise bounded or described.

The granted premises are conveyed together with and subject to the easements and rights of way granted and reserved in the following deeds, all so far as now in force and applicable:

Elijah A. Morse to Samuel Billings, dated July 20, 1883, Book 548, page 573;
Felicia V. Morse et al to J. L. Prescott Company, dated July 31, 1911, Book 1187, page 353;
Canton Heel Co. to August Thiel, dated May 28, 1920, Book 1456, page 403;
Tobe Deutschmann Corporation to Brooks Glue Company, Inc., dated April 7, 1948, Book 2746, page 481;
Same to Control Engineering Corp., dated May 14, 1948, Book 2754, page 266;
Same to George H. Lawless, recorded August 24, 1948, Book 2777, page 267;
Same to same, dated October 1, 1948, Book 2787, page 384;
Same to Emerson & Cuming, Inc., dated January 8, 1953, Book 3146, page 114;

Same to Walter J. Hanson, dated December 6, 1954, Book 3325, page 51;
Same to Emerson & Cuming, Inc., dated January 28, 1956, Book 3446, page 353.

The granted premises are also subject to a lease to Boston Edison Company, dated October 25, 1941, Book 2366, page 194, to a grant to Boston Edison Company, dated January 9, 1947, Book 2659, page 141, and to taxes assessed as of January 1, 1957.

Deed recorded in Book 3847, Page 426:

the land in Canton, show as Lot "A" on a plan entitled "Plan of Land in Canton, Mass. Belonging to James W. & Pauline Dennis", dated September 12, 1960, prepared by John P. Walsh, (of even record herewith) and bounded and described, as shown on said plan, as follows:

NORTHEASTERLY	by other land of the grantee, thirty-five and 12/100 (35.12) feet;
EASTERLY	by Lot "C", one hundred nine and 76/100 (109.76) feet;
NORTHEASTERLY	by said Lot "C", in two courses measuring eighty-five and 73/100 (85.73) feet and two hundred sixty-nine and 80/100 (269.80) feet, respectively;
NORTHWESTERLY	by said Lot "C" sixty-one and 61/100 (61.61) feet;
NORTHEASTERLY	by other land of the grantee, seventy-three and 50/100 (73.50) feet;
SOUTHEASTERLY	by land now or formerly of the Canton Housing Authority, one hundred eighteen and 53/100 (118.53) feet;
SOUTHWESTERLY	by land now or formerly of Estey and Endicott, in three courses measuring ninety-eight and 01/100 (98.01) feet, one hundred forty-two and 65/100 (142.65) feet and one hundred fifty and 85/100 (150.85) feet, respectively;
NORTHWESTERLY	by other land of the grantors, forty-nine and 77/100 (49.77) feet; and
SOUTHWESTERLY	by said land of the grantors, in two courses measuring forty-nine and 06/100 (49.06) feet and one hundred forty-three and 66/100 (143.66) feet, respectively.

All of said measurements and boundaries being as shown on said plan, and containing 33,109 square feet, according to said plan.

This conveyance is made subject to those easements granted to the Tobe Deutschman Corp., recorded in Books 2408, Page 551, 2562, Page 335 and 2562, Page 338, Norfolk Deeds, all insofar as and only to the extent

that the same affect the granted premises, and only insofar as the same are now in force and applicable.

Being a part of (and intending hereby to convey a part of) the premises conveyed to us by Deed of James W. Dennis dated April 25, 1949, recorded at Book 2825, Page 521, said Deeds.

Deed recorded in Book 3917, Page 596:

two certain parcels of land in said Canton, with the improvements thereon as follows:

Parcel 1.
A certain parcel of land with the buildings thereon, situated on the southeasterly side of Washington Street in Canton, Massachusetts, and sometimes known and numbered as 863 Washington Street, and shown as lot "B" on a "Plan of Land in Canton, belonging to Tobe Deutschmann Corp." by John P. Walsh, registered Civil Engineer, dated May 1, 1948, containing 16,960 square feet, more or less, recorded with Norfolk County Registry of Deeds, as Plan 384 of 1948, Book 2754, Page 266, and bounded and described as follows:

Northwesterly by lot "A" on said plan eighty-seven and 8/100 (87.08) feet,

Northeasterly by other land now or formerly of said Tobe Deutschmann Corp., by three courses, one hundred and sixty-two and 26/100 (162.26) feet to a spike in the pavement

Southeasterly by other land now or formerly of Tobe Deutschmann Corp., fifty and 32/100 (50.32) feet to a point on the outside face of a three-story brick building,

Southwesterly by other land now or formerly of Tobe Deutschmann Corp., one and 60/100 (1.60) feet,

Southeasterly by a building now or formerly of Tobe Deutschmann Corp., thirty-eight and 59/100 (38.59) feet,

Northeasterly by a building now or formerly of Tobe Deutschmann Corp., five (5) feet,

Southeasterly by other land now or formerly of Tobe Deutschmann Corp., thirty-four and 70/100 (34.70) feet,

Southwesterly by land now or formerly of Walter S. Dennis, forty-four and 90/100 (44.90) feet,

Northwesterly by land now or formerly of Walter S. Dennis, fifteen and 10/100 (15.10) feet, and

Southwesterly by land now or formerly of Walter S. Dennis, one hundred twenty and 89/100 (120.89) feet.

All as shown on said plan aforementioned and filed and recorded aforesaid.

Being the same premises conveyed to the grantor by deed of Ideal Realty Corp., dated August 24, 1953 and recorded with said deeds, Book 3195, Page 401.

Parcel II.

A certain parcel of land situated in said Canton and being shown as lot "C" on "Plan of Land in Canton, Mass." belonging to James W. and Pauline Dennis, Jean F. Walsh, C.E., dated Jan. 23, 1954 recorded with Norfolk Deeds, Book 3212, Page 18, bounded and described as follows:

Northerly by land now or formerly of the grantor one hundred twenty and 89/100 (120.89) feet,

Southeasterly by other land now or formerly of the grantor, fifteen and 10/100 (15.10) feet,

Northerly by other land now or formerly of the grantor, land now or formerly of Tobe Deutschmann Corp. and land of the grantee three hundred thirty-six and 5/10 (336.5) feet,

Southeasterly by land now of formerly of Dennis, sixty-one and 61/100 (61.61) feet,

Southerly by land now or formerly of Dennis by two courses, two hundred sixty-nine and 80/100 (268.80) feet and eighty-five and 73/100 (85.73) feet, respectively, and

Northwesterly by land now or formerly of Dennis, one hundred nine and 76/100 (109.76) feet.

Said premises are hereby conveyed subject to two easements granted to Tobe Deutschmann Corp. as shown on said plan and recorded with Norfolk Deeds, Book 2408, Page 551 and Book 2562, Page 338, respectively, and a third easement as shown on said plan and a lease to Boston Edison Co. and recorded with said deeds, book 2659, page 141.

Being the same premises conveyed to grantor by deed of James W. and Pauline Dennis dated February 18, 1954 and recorded with said deeds, Book 3242, page 18.

Deed recorded in Book 3695, Page 543:

PARCEL I

Beginning at a stone post on the Westerly line of the location of the New York, New Haven and Hartford Railroad tracks (sometimes also identified as the Boston & Providence Railroad right of way) about twenty (20) feet Northerly from the wing wall of the railroad viaduct (see point marked "abutment" on Sheet 1 of Plan entitled "Plan of Land in Canton, Mass., formerly property of Neponset Woolen Mills, compiled from various deeds & plans by John P. Walsh, Civil Engineer, dated December 19, 1958", to be recorded herewith); thence turning and running in a

NORTHWESTERLY direction by land now or formerly of Cole, one hundred two and 75/100 (102.75) feet, to a point; thence turning and running in a

SOUTHWESTERLY direction, still by land of said Cole, fifty-five (55) feet to a stone monument on Neponset Street; thence turning and running in a

SOUTHEASTERLY direction along Neponset Street, ninety-seven (97) feet to a stone bound at the end of a wall; thence running along Neponset Street in a similar direction in two (2) courses of eighty-two and 15/100 (82.15) feet and one hundred fifty-seven and 66/100 (157.66) feet to a point on a curve; thence turning and running along said curve, still in a generally Southeasterly direction, seventy-five and 70/100 (75.70) feet to a point; thence turning and running in a

NORTHEASTERLY direction, two hundred sixty (260) feet, more or less, to a point on a curve; thence turning and running in a generally

NORTHWESTERLY direction, one hundred thirty (130) feet to the point of the abutment; thence Northwesterly twenty (20) feet to point of beginning.

Being the same premises shown on said Plan as "Lot A", and all of said points and monuments being as shown on said Plan.

PARCEL II

Commencing at the Northerly boundary of the Canton River, as shown on said Plan, on the Westerly side of Neponset Street; thence running in a generally

SOUTHWESTERLY direction, four hundred thirty (430) feet, to a point on the Northerly bank of the Canton River at which said Northerly bank intersects a property line shown on said Plan as "Approx. Fuller Prop. Line"; thence turning and running in a

SOUTHEASTERLY direction, twenty (20) feet, to the thread of the stream; thence turning and running generally in a

SOUTHWESTERLY and then NORTHWESTERLY direction six hundred twenty (620) feet to a point on the thread of the stream intersecting a line on said Plan shown as "Approx. Line Between Lot C & D^2"; thence turning and running in a

SOUTHEASTERLY direction along said line between Lots C and D^2, three hundred twenty (320) feet, to a point on the Southerly side of the Mill Race shown on said Plan; thence turning and running in an

EASTERLY direction, thirty-eight (38) feet, to a point on the South side of the Mill Race opposite a fence post as shown on said Plan; thence turning and running in a

SOUTHEASTERLY direction along the woven wire fence shown on said Plan, three hundred and five (305) feet, to a stone bound on the North side of Walpole Street; thence turning and running generally in an

EASTERLY and NORTHEASTERLY direction along the Northerly side of Walpole Street in three (3) courses of one hundred and five (105) feet, two hundred eleven and 69/100 (211.69) feet and three hundred forty-one and 26/100 (341.26) feet, respectively, to a point on a curve on the North side of Walpole Street; thence turning and running in a generally

NORTHEASTERLY direction along the Northerly line of Walpole Street, one hundred seventy-three and 44/100 (173.44) feet, to a stone bound; thence turning and running in a

NORTHWESTERLY direction along the Westerly side of Neponset Street, two hundred twenty-three (223) feet to the point of beginning.

Being the same parcel shown on said Plan as "Lot C", and all of said points and monuments being as shown on said Plan.

PARCEL III

Beginning at a point on the Northwesterly side of said Railroad line running generally in a Westerly direction along a curve,

one hundred seven and 02/100 (107.02) feet, to a stone bound on the South side of Walpole Street, as shown on said Plan; thence turning and running

SOUTHWESTERLY along said South side of Walpole Street in two (2) curves of three hundred fifty-two and 77/100 (352.77) feet and sixty-six (66) feet, respectively, to a point on the South side of Walpole Street, which is the Northeasterly corner of land now or formerly of Bordenko; thence turning and running

SOUTHEASTERLY along the Northeasterly boundary of said land of Bordenko, three hundred ninety (390) feet, more or less, to a point on the Northwesterly boundary of land shown on said Plan as land of the "N.Y. N.H. & H. RR."; thence turning and running generally in a

NORTHEASTERLY direction, three hundred (300) feet along said Northwesterly boundary of the Railroad land to a point; thence turning and running, but still in a

NORTHEASTERLY direction, sixty (60) feet, still along land of said Railroad, as shown on said Plan; thence turning and running still in a

NORTHEASTERLY direction along land of said Railroad, as shown on said Plan, two hundred sixty-three (263) feet to the point of beginning.

Being the same premises shown as "Lot B" on said Plan, and all of said points and monuments being as shown on said Plan.

All of the foregoing references to said Plan are to Sheet 1 thereof.

PARCEL IV

Beginning at the thread of the stream of said Canton River at the Northwesterly bound of Lot C as shown on said Plan; thence turning and running generally in a

WESTERLY and SOUTHWESTERLY direction along the thread of the stream, sixteen hundred seventy (1670) feet, to a point fifteen (15) feet from the North side of a ditch shown on Sheet 2 of said Plan; thence turning and running

SOUTHWESTERLY fifteen (15) feet, to a point near the most Northeasterly point of the ditch shown on said Sheet 2 of said Plan; thence turning and running generally in a

SOUTHEASTERLY direction along a Northeasterly boundary of land now or formerly known as the "Canton and Sharon Park Plot", four hundred twenty (420) feet, to a point; thence turning and running generally in an

EASTERLY direction along the Northerly boundary of said Canton and Sharon Park Plot, seven hundred (700) feet, to a point; thence turning and running

SOUTHEASTERLY along a Southwesterly boundary of said Park Plot, one hundred (100) feet, to a point; thence turning and running

NORTHEASTERLY along a Northwesterly boundary of said Plot, two hundred fifty-eight and 07/100 (258.07) feet, to a point; thence turning and running in a

NORTHERLY direction, ninety-five and 88/100 (95.88) feet, to the most Northwesterly point of Walpole Terrace shown on Sheet 2 of said Plan; thence turning and running in a

NORTHEASTERLY direction, sixty (60) feet, along Walpole Terrace to a point on the North side of Walpole Terrace; thence turning and running in a

NORTHERLY direction, forty-five (45) feet, along the Westerly boundary of Lot 7, as shown on Sheet 2 of said Plan to a point; thence turning and running in an

EASTERLY direction along the Northerly boundary of said Lot 7, one hundred twenty-nine and 58/100 (129.58) feet, to a point; thence turning and running in a

SOUTHEASTERLY direction along the Northeasterly boundary of said Lot 7, forty-nine and 66/100 (49.66) feet, to a point on a curve on the Northeasterly side of Walpole Terrace; thence turning and running in a generally

SOUTHEASTERLY direction along said curve, eighty-two and 47/100 (82.47) feet, to a point on a woven wire fence which is a part of the boundary of Lot C hereinabove described, and which point is one hundred eighty-eight (188) feet from the Northerly side of Walpole Street.

Being the same premises shown on said Plan as "Lots D^1 and D^2", and all of said points and monuments being shown on Sheets 1 and 2 of said Plan, read together.

However otherwise said premises may be bounded or described, and be any or all of said measurements more or less, it being the intention, however, of the Grantor to convey by this instrument all the land on which are constructed the Neponset Woolen Mills' buildings, so-called, and the adjoining premises, as are included within the bounds of Lots A, B, C, D^1 and D^2 on the Plan hereinbefore referred to, including, but without limiting the rights Grantee may otherwise have with respect to the granted premises, the right to use the water flowing through the granted premises by the East branch of the Neponset River, and a right to maintain a dam on the granted premises across said East branch of the Neponset River, the height of which dam may be at least as high as the bolt placed in a drill hole in the viaduct near the Westerly corner of the Northerly abutment of the most Northerly arch of the viaduct of the Boston & Providence Railroad, the top of said dam being at least as high as said bolt, said right being referred to in the deed from Wright et al to the Grantor, recorded at Norfolk Deeds Book 1512, Page 243.

As a part of the granted premises, the Grantor also conveys to the Grantee with quitclaim covenants the fee in those portions of said Neponset and Walpole Streets on which the granted premises bound, except insofar as the granted premises do not bound on both sides of said streets, as to which such portions this conveyance includes only the fee to the

middle of the way, and the Grantor's right, title and interest in the balance thereof; but the foregoing grant with respect to said ways is subject to any takings made by municipal or other governmental authorities thereof for the purpose of laying out and maintaining public ways.

Excepting and excluding from the foregoing that parcel (conveyed out by Emerson & Cuming, Inc.) by deed recorded in Book 4409, Page 518, and bounded and described as follows:

the land in Canton, Norfolk County, Massachusetts, bounded and described as follows:

Beginning at a point on the Northwesterly side of land of the N.Y. N.H. & H. RR. thence running generally in a Westerly direction along a curve, one hundred seven and 02/100 (107.02) feet, more or less, to a stone bound on the South side of Walpole Street, as shown on the Plan hereinafter referred to; thence turning and running

SOUTHWESTERLY	along said South side of Walpole Street two (2) distances of three hundred fifty-two and 77/100 (352.77) feet, more or less, and sixty-six (66) feet, more or less, respectively, to a point on the South side of Walpole Street, which is the Northeasterly corner of land now or formerly of Bordenko; thence turning and running
SOUTHEASTERLY	along the Northeasterly boundary of said land of Bordenko, three hundred ninety (390) feet, more or less, to a point on the Northwesterly boundary of land shown on said Plan as land of the "N.Y. N.H. & H. RR."; thence turning and running generally in a
NORTHEASTERLY	direction, three hundred (300) feet, more or less, along said Northwesterly boundary of the Railroad land to a point; thence turning and running, but still in a
NORTHEASTERLY	direction sixty (60) feet, more or less, still along land of said Railroad, as shown on the Plan hereinafter referred to; thence turning and running still in a
NORTHEASTERLY	direction along land of said Railroad, as shown on said Plan, two hundred sixty-three (263) feet, more or less, to the point of beginning.

The aforementioned premises being the same premises as shown as "Lot B" on Sheet 1 of a Plan entitled "Plan Of Land In Canton, Mass., Formerly Property of Reponset Woolen Mills Compiled From Various Deeds & Plans by John P. Walsh-Registered Civil Engineer, December 19, 1958, Scale 1 in. = 40 ft.", recorded at Norfolk Deeds as Plan No. 6 and 7 of 1959 in Plan Book 206.

Title to the Canton property is subject to the following exceptions:

Listing to Schedule
to Section 7.36

Listings of effluent and atmospheric discharge generated in the manufacture of the product line.

June 1973	-	Waste service information
Feb. 1975	-	Air contaminants report.
March 1975	-	Process waste discharge into sanitary sewer.
April 1975	-	Fuel burning Equipment Registration
November 1976	-	Fuel burning Equipment Registration
December 1976	-	Process Manufacturing Equipment
March 1978	-	Hydrocarbon Emissions Registration
May 1978	-	Liquid Organic Material Storage
May 1978	-	Process Manufacturing Equipment
May 1978	-	Process Fuel Burning Equipment Registration.

The Commonwealth of Massachusetts
Metropolitan District Commission
20 Somerset Street, Boston 02108

SEWERAGE DIVISION

Re: Questionnaire

Dear Sir:

The enclosed questionnaire has been developed to supply the Sewerage Division of the Metropolitan District Commission with needed information, so that we may serve you more efficiently and program your future needs.

The requested information will be used in the classification of various process waste discharges and to aid in forecasting future waste service demands, trends, and loadings. Your cooperation in responding to this questionnaire is urgently solicited to identify the most critical program (s) which require modification or enlargement.

The questionnaire should be completed as soon as possible and returned to the indicated address. Matters pertaining to specific manufacturing processes will be considered privileged information.

Your participation and interest in this industrial survey is appreciated.

Sincerely,

A. C. Hayes

A. C. Hayes
Director of Sewerage Division
and Chief Sewerage Engineer

APF:mc

THE COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT COMMISSION
SEWERAGE DIVISION

Due Date _____

LOCATION: 869 WASHINGTON ST., CANTON

1. If different from stated address, please correct when answering
   A) Name of Company, EMERSON & CUMING, INC.
   B) Business Address, 59 WALPOLE ST, CANTON, MA 02021
   No. Street Town or City Zip Code

2. Telephone Number, 828-3300 3. Years at present location 20

4. Type of industry, CHEMICALS
   A) Standard Industrial Classification Index Number, _____
   B) Major products or services: CHEMICAL RESINS; INORGANIC POWDERS
   C) List type and quantity of chemicals used annually in process-(if applicable):

5. Daily water consumption, 17,000 cu. ft/day or (gal/day)
   A) Source of supply, TOWN OF CANTON

6. Total volume of waste discharged into Public Sewer, _____ gal/day
   Other discharge:- Sub-surface or ground, _____ gal/day
   Surface waters, _____ gal/day
   Scavenger services, (type/quantity) _____

NOTE: If seasonal, please indicate _____
A) Characteristics of waste discharge-(if known): _____

B) Is pretreatment practiced? X Yes _____ No

If "Yes" please indicate type:

a) Separators or Traps _____

b) Screening _____

c) Sedimentation X

d) Coagulation and/or Precipitation _____

e) Other (specify) _____

C) Is pretreatment planned? _____ Yes _____ No, if "Yes", indicate implementation date:

_____

7. Would you like additional copies of the "Rules and Regulations concerning Discharge of Waste"? _____ Yes X No

If "Yes" indicate number of copies _____

Name of Company Representative preparing this return:

Name: VICTOR W. MORGAN Date _____

Title: PLANT MANAGER

Please return to:

METROPOLITAN DISTRICT COMMISSION
SEWERAGE DIVISION
20 SOMERSET STREET
BOSTON, MASSACHUSETTS 02108

Att: Noel Baratta
Assistant Sanitary Engineer
(Telephone: 727-8989)

REVISED 6/19/73

DATE RECEIVED	APPLICATION NUMBER	COORDINATES
	0607 (59 Walpole St, Camden)	

PLEASE MAINTAIN COPY

OFFICIAL USE ONLY

Date Inspected	Inspector

APPLICATION FOR THE REGISTRATION OF PROCESSING
OR MANUFACTURING EQUIPMENT, SOLVENT USEAGE, AND INCINERATORS
OPERATED DURING THE CALENDAR YEAR [redacted] 1974

The Bureau of Air Quality Control, Division of Environmental Health, Department of Public Health, requests you to complete and return this application within 30 days under Regulation 12 of the Regulations for the Control of Air Pollution. You will receive written acknowledgement upon satisfactory completion of the application.

BEFORE FILLING OUT THE APPLICATION, PLEASE READ THE FOLLOWING INSTRUCTIONS:

- Everyone receiving this form, regardless of whether or not he has any equipment which needs to be registered, must complete page one.

- Indicate any changes in the name and/or address on page one.
- The information submitted should pertain to the calendar year [redacted] 1974
- An application is required for each location of:

  (a) process and/or manufacturing operations where air contaminants are vented or discharged into the ambient air;

  (b) solvent useage;

  (c) incinerator(s).

- The owner is ultimately responsible for registering his air pollution source. Each page must be signed by the owner or by a responsible company official at the location. If an agent has been designated to fill out this form, the owner or official must check and sign this form. If you are a tenant or property manager, your cooperation is asked for by forwarding this application to the owner.

- Additional forms may be copied from the original or obtained from the nearest District Office.

- The form is designed for a wide variety of applicants and many of the questions may not apply or may require engineering expertise. Answer what you can. You will be contacted if further information is necessary.

- Returned applications should be directed to the District Office checked below:

☐ Metropolitan Boston APCD
600 Washington St., Rm. 320
Boston, Tel. 617-727-2658

☐ Southeastern Mass. APCD
Lakeville State Hospital
Lakeville, Tel. 617-947-1060

☐ Merrimack Valley APCD
Tewkesbury State Hospital
Tewkesbury, Tel. 617-727-7908

☐ Central Mass. APCD
75 Grove Street
Worcester, Mass., Tel.617-791-3672

☐ Berkshire & Pioneer Valley APCD
1414 State Street
Springfield, Tel. 413-785-5327

LOCATION OF SOURCE TO BE REGISTERED:

Facility Name EMERSON & CUMING, INC.

Address 59 WALPOLE ST.

City or Town CANTON, MASS. Zip Code 02021

A. L. Did you previously receive and return a registration form? Yes___ No V

2. If yes, were there any significant changes or additions to the registered equipment or changes in production rate during the calendar year [redacted]? 1974
Yes ___ No ___

B. Approximate number of employees 95

C. Operating hours of source: hrs/day 8; days/wk 5; wks/yr 52

D. 1. What products are produced or services rendered? MOLDED PLASTICS

2. Are processing or manufacturing operations involved? Yes X No ____
If yes, complete page two.

3. Are solvent containing materials used as an integral part of the process or manufacturing? Yes____ No X. If yes, complete page three.

E. Do you have/or operate an on-premise incinerator? Yes____ No X.
If yes complete page four.

F. If pages two, three, and/or four are no applicable, so indicate in the appropriate box on the page and sign the page.

G. Person to be contacted for further information, if necessary:

Name VICTOR MORGAN Title PLANT MGR.
(please print)

Address 59 WALPOLE ST Area Code 617 Tel. 821-3300

City or Town CANTON Zip Code 02021

PROCESS AND/OR MANUFACTURING EQUIPMENT AND OPERATIONS

INSTRUCTIONS: List those steps in the process or manufacturing where air contaminants are vented or discharged into the ambient air. Additional instructions are on the back of this page. Use the back of this page for additional comments. The information should be for the calendar year 1974. Indicate if otherwise _____.

We have no process and/or manufacturing where air contaminants are vented or discharged into the ambient air. If true, check box and sign below. ☐

1. Process and/or manufacturing Data:

Major Steps Involved in Process	Type Equip. Used	RAW MATERIALS Type	RAW MATERIALS Max/Hr.	RAW MATERIALS Avg/Yr.	FINISHED MATERIALS Type	FINISHED MATERIALS Max/Hr.	FINISHED MATERIALS Avg/Yr.	2. Operating Schedule: Hrs per day	Days per week	Wks per year	Months in Operation (e.g., Sept-May
1. FIBERGLASS COATING	BLENDER	FIBERGLASS		200,000 lbs.	—			8	5	52	—
2.											
3.											
4.											

3. How is gas/air vented to stack (fan, blower, nat)	4. Stack/Vent Data for Process: Ht above ground	Inside Diam at Top	Exit Velocity (ft/sec)	Exit Temp (°F)	Quantity of Gaseous Discharge (cfm)	5. Air Cleaning Equipment: Type	Percent Efficiency Rated Actual	6. Process Emissions: Type Contaminant Collected	Amount Removed (ton/yr)
1. FAN	6'	—	—	AMBIENT	2000	NONE		NONE	
2.									
3.									
4.									

7. Provide a roof plan showing the location of the stacks and/or vents.

CERTIFICATION: I certify that I have examined the above information and that to the best of my knowledge, it is true and complete.	Signed: W.W. Morgan	Title: Plant Mgr	Date: 2/27/75

INSTRUCTIONS

1. PROCESS AND/OR MANUFACTURING DATA:
   Major Step: State process (e.g., casting, heat treating, wood finishing, cement manufacturing, etc.).
   Type Equipment Used: Give name of equipment (e.g., rotary dryer, grey iron cupola furnace, storage silo, heat treat oven, conveying/handling equipment, paint booth, plating tank, extruder, etc.).
   Raw Material: State what material is used in measurable unit such as tons, feet, or number of items produced. Indicate maximum amount of material used per hour and total quantity per year. Give estimates if exact number not known. Examples of raw materials: iron scrap, sand, aluminum, cotton, hardwood, etc.
   Finished material: State the final product in measurable units (e.g., wood chairs, machinery, drill bits, clocks, etc.)

2. OPERATING SCHEDULE: Give hours, days, weeks of normal operation. Estimate if exact numbers not known. Under months of operation, name months that process is in operation.

3. SELF EXPLANATORY

4. STACK/VENT DATA FOR PROCESS:
   This information should correspond with Section 1.
   -Stack Height: Estimate if measurement not known
   -Inside Diam:
   -Exit Velocity(FPS) Provide if Available
   -Exit Temperature(°F)
   -Quantity of Gaseous Discharge

5. AIR CLEANING EQUIPMENT:
   Type: State type of control equipment used to control emissions from process. If no equipment, please indicate "none", (e.g., baghouse, electrostatic precipitator, cyclone, etc.).
   % Efficiency: Rated efficiency is % efficiency as stated by the manufacturer of control equipment. Actual efficiency is % efficiency determined by stack testing. Provide if known.

6. PROCESS EMISSIONS:
   Type Contaminant Collected: Indicate type of contaminant controlled (e.g., iron oxide dust, mineral dust, formaldehyde, sulfur dioxide, etc.).
   Amount Removed (Ton/yr): State total tons/yr. of contaminant prevented from being exhausted to air by control equipment. This number can be obtained by exact measurement or material balance.

7. This will identify which stack serves which process. It is suggested that you number each stack/vent and assign corresponding numbers to the equipment being registered.

COMMENTS: _____

Materials Containing Solvents Used in Process and/or Manufacturing

INSTRUCTIONS: This section is to be completed if materials containing solvents are used as an integral part of the processing or manufacturing in quantities of greater than or equal to 40 lbs. per day. This means, for instance, that materials containing solvents used to clean machinery should not be mentioned and those used in such operations as surface coating (paint, varnish, lacquer, enamel, primer, glaze, resin, sealer shellac, etc.), laundries (degreasing agents, dry cleaning agents), and miscellaneous (adhesives, insecticides, printing inks, putty) should be mentioned.

We use no materials containing solvents used in process and/or manufacturing- if true, check box and sign below. ☒

1. Surface Coatings

	Type*	Amount Max Hour	(gal) Annual	Type+ Control Equip	Vents Height (Ft)	Vents Discharge (cfm)
a.						
b.						
c.						

* If paint, indicate whether water base or solvent base.
\+ Spray booth, water spray, incinerator, etc.

2. Solvent Cleaners

	Type*	Max Hour	Annual	Recovery System	Discharge Method	Height (Ft)	Discharge (cfm)
1.							
2.							
3.							

*Indicate solvent material (Trichloroethylene, trichloroethane, perchloroethylene, stoddard solvent, etc.)
\+For intermittent operation, indicate maximum rate

3. Miscellaneous

	Type	Amount Max Hour	Amount Annual	Percent Solids	Emission Control Equipment	Vents Height (Ft)	Vents Discharge (cfm)
1.							
2.							

CERTIFICATION: I certify that I have examined the above information and that to the best of my knowledge, it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).

Signed: [illegible] Title [illegible] Date 2/27/90

INCINERATORS

We do not use an incinerator - if true, check box and sign below [✓]

1. Manufacturer's Name _____ Make _____ Model # _____

2. Type: single chamber _____ multi _____ pathological _____ Other ____

3. Auxilliary Fuel, if any: gas _____ oil _____ number of burners _____

4. Flyash Control Devices, if any: type _____

5. Loading: type(s) waste _____ max lbs/hr _____ estimated tons/yr ____

6. Operating schedule (please circle):

   hours of day 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12

   days of week Mon Tues Wed Thurs Fri Sat Sun

7. If incinerator has smoke stack separate from boiler stack:

   a.

Stack(s)	1	2	3
Incinerator served			
Height (ft)			
Inside diameter at top (ft)			
Exit Velocity (ft/sec)			
Exit temperature (^{o}F)			

   b. Show location in Section H.

8. Has the incinerator(s) been approved by the Bureau? Yes _____ No _____

   Date of approval _____

H. Location of Stack(s) and/or Vents
   Instructions: It will be necessary to locate your stacks and/or vents on a city or town map. In order to assist us, please sketch out several major and minor streets indicating the approximate location of the stacks and/or vents in respect to them.

CERTIFICATION: I certify that I have examined the above information and that to the best of my knowledge, it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).

Signed: Victor W. Morgan Title Plant Mgr. Date 2/27/87

The Commonwealth of Massachusetts
Metropolitan District Commission
20 Somerset Street, Boston 02108

SEWERAGE DIVISION

March 27, 1975

CC- WRC
- file

Victor Morgan, Plant Engineer
Emerson & Cuming
869 Washington Street
Canton, Massachusetts 02021

Re: Process waste discharges into the sanitary sewer.

Dear Mr. Morgan:

This confirms the results of the March 21, 1975 inspection of your company's premises by sanitary engineers from this office.

It is apparent that there is a substantial quantity of rinse water used to clean the chemical mixing tanks, containing mixtures of sulfuric acid and sodium borasilicate which is intermittently discharged into the sanitary sewer system. The backwash water used to rinse particulate matter (powered glass) from six (6) air filter beds is intermittently discharged, as well.

As stated at the time of inspection the plant process discharge is intermittently milky white in color and contains large quantities of suspended matter.

It is our understanding, that neutralization of the acid bearing waste stream is occasionally practiced prior to sewer discharge.

The discharge of the aforementioned process wastes with an unknown pH, containing unknown concentration of suspended solids could be in violation of the Metropolitan District Commission's Rules and Regulations. You are referred to Sections 4.h.1 & 2, and 4.i of the enclosed copy of Rules and Regulations.

The Division is requiring at this time that your company contact an approved testing laboratory to conduct analysis on the process waste discharge.

The analytical data, to include: pH readings, total suspended solids and dissolved solids concentrations, turbidity and any other pertinent information should be submitted to this office prior to June 1, 1975, so that a fair and equitable evaluation of your process waste can be made.

If this office can be of assistance, please do not hesitate to notify us.

Sincerely,

A. P. Fisichelli
Assistant Director of
Sewerage Engineering

NDB:dlm

enc. Rules and Regulations

cc: Thomas C. McMahon, Dir. of W.P.C.
Harold J. Publicover, Super., of Public Works, Canton

FORM AP-1

DIVISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

1. APPLICATION NO. | 2. STACK NO.

	LEGAL NAME	BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)	PHONE
FIRM	EMERSON & CUMING, INC.	59 WALPOLE ST., CANTON, 02021	828-3300
DIVISION			
APPLICANT			
INSTALLATION			

EQUIPMENT BEING REGISTERED	TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)	BRAND NAME OF EQUIPMENT	MODEL NUMBER	NUMBER OF IDENTICAL UNITS ON THIS FORM	AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)
	BOILER	DILCON		2	☐ YES ☒ NO

MAJOR ACTIVITY OF FIRM: ☒ MFG. ☐ OFFICE ☐ RETAIL OR WHLSE. STORE ☐ SCHOOL OR CHURCH ☐ HOTEL/MOTEL ☐ HOSPITAL OR LAB ☐ WAREHOUSE ☐ RESIDENCE OR APTS. ☐ OTHER (Specify)

TYPES OF FUEL USED

FUEL	GRADES	(x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft.³)	MAXIMUM FIRING RATE PER UNIT (Lbs., Gals., ft.³/hr.)	(BTU/hr.)	SEASONAL USE Month	Yr.	to	Month	Yr.	FUEL SUPPLIER Name	City or Town
COAL ☐	Bituminous		. %	. %						—				
	Anthracite		. %							—				
OIL ☒	Kerosene		. %							—				
	2		. %							—				
	4		. %							—				
	5		. %							—				
	6	X	1.0 %		135,000 GAL	30 GAL/HR				—			WHITE FUEL	BOSTON
NAT. GAS ☐			. %	. %						—				
OTHER ☐										—				

FUEL USAGE BREAKDOWN: % OF FUEL USED FOR HEATING 90 % | % OF FUEL USED FOR COOLING % | % OF FUEL USED FOR POWER % | % OF FUEL USED FOR PROCESS 10 %

BURNER EQUIPMENT: ARE OIL HEATERS USED? ☒ YES ☐ NO | OIL TEMPERATURE BEFORE INJECTION 150 °F | BURNER MANUFACTURER TOMYSON | DATE OF BURNER INSTALLATION OCTOBER 1973 | BURNER MODEL NO. L268133

TYPE OF COAL BURNER: ☐ HAND FIRED ☐ UNDERFEED STOKER ☐ TRAVELING GRATE ☐ CHAIN GRATE ☐ SPREADER STOKER ☐ STOKER WITH GAS REINJECTION ☐ CYCLONE FURNACE ☐ PULVERIZED COAL

TYPE OF OIL BURNER: ☐ PRESSURE OR GUN ☒ ROTARY CUP ☐ STEAM ATOMIZER ☐ AIR ATOMIZER ☐ TANGENTIALLY FIRED ☐ OTHER (Specify)

COMBUSTION: OVERFIRE AIR CONTROL ☒ YES ☐ NO °F | TYPE OF DRAFT ☐ FORCED ☐ INDUCED ☒ NATURAL | TYPE OF AIR FUEL RATIO CONTROL SYSTEM ☐ ON-OFF ☐ LOW FIRE ☒ HIGH-LOW FIRE ☐ HAND CONTROLLED ☒ FULL AUTOMATIC

EQUIPMENT INFORMATION: BREACHING GAS TEMPERATURE 425 °F | DATE EQUIPMENT WAS PUT IN SERVICE MONTH OCTOBER YEAR 1906

EXHAUST GAS FLOW RATE (ACFM): NORMAL MAXIMUM

STACK GAS VELOCITY IN FEET PER SECOND | EQUIPMENT OPERATING HOURS HOURS PER YEAR

FACILITY OPERATING HOURS HOURS/DAY 16 DAYS/WEEK 6-1 WEEKS/YEAR 52

15. STACK TEST RESULTS:

TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST

STACK INFORMATION: STACK EXIT DIRECTION ☐ HORIZ. ☒ VERT. | SIZE OF STACK EXIT: ROUND STACK Inside Diameter In. | RECTANGULAR STACK In. By 26 In. | STACK HEIGHT (FEET) 400' | IS STACK EQUIPPED WITH RAIN HAT? ☐ YES ☒ NO | TEMPERATURE AT STACK EXIT °F

SMOKE INDICATOR IN STACK ☒ YES ☐ NO | MAKE AND MODEL NO. OF SMOKE INDICATOR HEAT-TIMER MODEL-ML | STACK LINING ☐ METAL ☐ REFRACTORY ☒ OTHER (Specify) RED BRICK

STACK LOCATION: NAME OF NEAREST INTERSECTING STREET: WALPOLE ST. | DISTANCE TO STACK FROM INTERSECTION: 300' | DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE S SW W NW

CERTIFICATION: I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).

SIGNED Vita Morgan | TITLE PLANT MGR | DATE 4/4/75

APPLICANT

500-2.74-001602

FORM AP-1

DIVISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
ROOM 320, BOSTON, MASSACHUSETTS 02111 (617) 727-2658

1. APPLICATION NO. | 2. STACK NO.

	LEGAL NAME	BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)	PHONE
FIRM	EMERSON & CUMING, INC.	869 WASHINGTON ST, CANTON 02021	828-3300
DIVISION			
APPLICANT			
INSTALLATION			

EQUIPMENT BEING REGISTERED	TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)	BRAND NAME OF EQUIPMENT	MODEL NUMBER	NUMBER OF IDENTICAL UNITS ON THIS FORM	AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)
	BOILER	HODGE	—	1	☐ YES ☒ NO

MAJOR ACTIVITY OF FIRM: ☒ MFG. ☐ OFFICE ☐ RETAIL OR WHLSE. STORE ☐ SCHOOL OR CHURCH ☐ HOTEL/MOTEL ☐ HOSPITAL OR LAB ☐ WAREHOUSE ☐ RESIDENCE OR APTS. ☐ OTHER (Specify)

TYPES OF FUEL USED

FUEL	GRADES	(x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft.³)	MAXIMUM FIRING RATE PER UNIT (Lbs., Gals., ft.³/hr.)	(BTU/hr.)	SEASONAL USE Month	Yr.	to	Month	Yr.	FUEL SUPPLIER Name	City or Town
COAL ☐	Bituminous		. %	. %						—				
	Anthracite		. %							—				
OIL ☒	Kerosene		. %							—				
	2		0.30 %		36,000 GAL	14 GAL/HR				—			WHITE FUEL	BOSTON
	4		. %							—				
	5		. %							—				
	6		. %							—				
NAT. GAS ☐										—				
OTHER ☐			. %	. %						—				

FUEL USAGE BREAKDOWN: % OF FUEL USED FOR HEATING 50 % | % OF FUEL USED FOR COOLING % | % OF FUEL USED FOR POWER % | % OF FUEL USED FOR PROCESS 50 %

BURNER EQUIPMENT: ARE OIL HEATERS USED? ☐ YES ☒ NO | OIL TEMPERATURE BEFORE INJECTION 70 °F | BURNER MANUFACTURER WALTHAM | DATE OF BURNER INSTALLATION 12/71 | BURNER MODEL NO. LE

TYPE OF COAL BURNER: ☐ HAND FIRED ☐ UNDERFEED STOKER ☐ TRAVELING GRATE ☐ CHAIN GRATE ☐ SPREADER STOKER ☐ STOKER WITH GAS REINJECTION ☐ CYCLONE FURNACE ☐ PULVERIZED COAL

TYPE OF OIL BURNER: ☒ PRESSURE OR GUN ☐ ROTARY CUP ☐ STEAM ATOMIZER ☐ AIR ATOMIZER ☐ TANGENTIALLY FIRED ☐ OTHER (Specify)

COMBUSTION: OVERFIRE AIR CONTROL ☐ YES ☒ NO ____ °F | TYPE OF DRAFT ☐ FORCED ☐ INDUCED ☒ NATURAL | TYPE OF AIR FUEL RATIO CONTROL SYSTEM ☒ ON-OFF ☐ LOW FIRE ☐ HIGH-LOW FIRE ☒ FULL AUTOMATIC ☐ HAND CONTROLLED

EQUIPMENT INFORMATION: BREACHING GAS TEMPERATURE °F | DATE EQUIPMENT WAS PUT IN SERVICE MONTH YEAR | EXHAUST GAS FLOW RATE (ACFM): NORMAL MAXIMUM | STACK GAS VELOCITY IN FEET PER SECOND | EQUIPMENT OPERATING HOURS HOURS PER YEAR 5000 | FACILITY OPERATING HOURS HOURS/DAY 16 DAYS/WEEK 6 WEEKS/YEAR 52

15. STACK TEST RESULTS

TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST

STACK INFORMATION: STACK EXIT DIRECTION ☐ HORIZ. ☒ VERT. | SIZE OF STACK EXIT: ROUND STACK Inside Diameter In. | RECTANGULAR STACK In. By 14 In. | STACK HEIGHT (FEET) 60 | IS STACK EQUIPPED WITH RAIN HAT? ☐ YES ☒ NO | TEMPERATURE AT STACK EXIT ____ °F

SMOKE INDICATOR IN STACK ☐ YES ☒ NO | MAKE AND MODEL NO. OF SMOKE INDICATOR | STACK LINING ☐ METAL ☐ REFRACTORY ☒ OTHER (Specify) RED BRICK

STACK LOCATION: NAME OF NEAREST INTERSECTING STREET: PEQUIT STREET | DISTANCE TO STACK FROM INTERSECTION: 200 FT. | DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE S SW W NW

CERTIFICATION: I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements). | SIGNED [illegible] | TITLE PLANT MGR. | DATE 4/7/75

APPLICANT

10M-3-74-091692

...G EQUIPMENT REGISTRATION — DEPARTMENT OF PUBLIC HEALTH

...VISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

111 / 1

	LEGAL NAME	BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)	PHONE
FIRM	EMERSON & CUMING INC	869 WASHINGTON ST., CANTON 02021	829-3300
DIVISION			
APPLICANT			
INSTALLATION			

EQUIPMENT BEING REGISTERED	TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)	BRAND NAME OF EQUIPMENT	MODEL NUMBER	NUMBER OF IDENTICAL UNITS ON THIS FORM	AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)
	BOILER	HODGE		1	☐ YES ☑ NO

MAJOR ACTIVITY OF FIRM: ☑ MFG. ☐ OFFICE ☐ RETAIL OR WHLSE. STORE ☐ SCHOOL OR CHURCH ☐ HOTEL/MOTEL ☐ HOSPITAL OR LAB ☐ WAREHOUSE ☐ RESIDENCE OR APTS. ☐ OTHER (Specify)

a. TYPES OF FUEL USED

FUEL	GRADES	(x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft.³)	MAXIMUM FIRING RATE PER UNIT (Lbs., Gals., ft.³/hr.)	(BTU/hr.)	SEASONAL USE Month	Yr.	to Month	Yr.	FUEL SUPPLIER Name	City or Town
COAL ☐	Bituminous		. %	. %									
	Anthracite		. %										
OIL ☑	Kerosene		. %										
	2	✓	0.30 %		33,000 GAL	21 GAL/HR.						WHITE FUEL	BOSTON
	4		. %										
	5		. %										
	6		. %										
NAT. GAS ☐													
OTHER ☐			. %	. %									

b. FUEL USAGE BREAKDOWN: % OF FUEL USED FOR HEATING 30 % | % OF FUEL USED FOR COOLING % | % OF FUEL USED FOR POWER % | % OF FUEL USED FOR PROCESS 70 %

10. BURNER EQUIPMENT: ARE OIL HEATERS USED? ☐ YES ☑ NO | OIL TEMPERATURE BEFORE INJECTION 70 °F | BURNER MANUFACTURER WALTHAM | DATE OF BURNER INSTALLATION 12/71 | BURNER MODEL NO. LF

11. TYPE OF COAL BURNER: ☐ HAND FIRED ☐ UNDERFEED STOKER ☐ TRAVELING GRATE ☐ CHAIN GRATE ☐ SPREADER STOKER ☐ STOKER WITH GAS REINJECTION ☐ CYCLONE FURNACE ☐ PULVERIZED COAL

12. TYPE OF OIL BURNER: ☑ PRESSURE OR GUN ☐ ROTARY CUP ☐ STEAM ATOMIZER ☐ AIR ATOMIZER ☐ TANGENTIALLY FIRED ☐ OTHER (Specify)

13. COMBUSTION: OVERFIRE AIR CONTROL ☐ YES ☑ NO ____ °F | TYPE OF DRAFT ☐ FORCED ☐ INDUCED ☑ NATURAL | TYPE OF AIR FUEL RATIO CONTROL SYSTEM ☑ ON-OFF ☐ LOW FIRE ☐ HIGH-LOW FIRE ☐ HAND CONTROLLED ☑ FULL AUTOMATIC

14. EQUIPMENT INFORMATION: BREACHING GAS TEMPERATURE °F | DATE EQUIPMENT WAS PUT IN SERVICE MONTH 12 YEAR 1971 | EXHAUST GAS FLOW RATE (ACFM): NORMAL MAXIMUM | STACK GAS VELOCITY IN FEET PER SECOND | EQUIPMENT OPERATING HOURS HOURS PER YEAR 5000 | FACILITY OPERATING HOURS HOURS/DAY 16 DAYS/WEEK 5 WEEKS/YEAR 52

15. STACK TEST RESULTS

TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST

16. STACK INFORMATION: STACK EXIT DIRECTION ☐ HORIZ. ☑ VERT. | SIZE OF STACK EXIT: ROUND STACK Inside Diameter In. | RECTANGULAR STACK 14 In. By 14 In. | STACK HEIGHT (FEET) 60 | IS STACK EQUIPPED WITH RAIN HAT? ☐ YES ☑ NO | TEMPERATURE AT STACK EXIT ____ °F

SMOKE INDICATOR IN STACK ☐ YES ☑ NO | MAKE AND MODEL NO. OF SMOKE INDICATOR | STACK LINING ☐ METAL ☐ REFRACTORY ☑ OTHER (Specify) RED BRICK

STACK LOCATION: NAME OF NEAREST INTERSECTING STREET: PEQUIT ST | DISTANCE TO STACK FROM INTERSECTION: 200 FT. | DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE S SW W NW

I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).

SIGNED [signature] | TITLE [illegible] | DATE 11/29/71

A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved IN Process	Type Equipment Used	LOCATION OF EQUIPMENT: Plant	Bldg	Floor	RAW MATERIALS: Type	Max/ Hour	Total/ Year	FINISHED MATERIALS: Type	Max/ Hour	Total Year
1. DRY CERAMIC MICROSPHERES	ROTARY OVEN (2)	2		BASEMENT				CERAMIC MICROSPHERES	250 LBS PER OVEN	500,000
2.										
3.										

PART 2. OPERATING SCHEDULE / PART 3. STACK/VENT DATA

Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside diameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velocity (ft/sec)	Does Stack have rain cap?
1. VENT	5	50	12								
2.											
3.											

PART 4. PROCESS EMISSIONS / PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

~~Stack~~ VENT Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. 3	CERAMIC DUST		BAG FILTER	DRAPER BROS.		1976
2.						
3.						

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED: [signature] TITLE: [illegible] DATE: 12 12 76

A. PROCESS/MANUFACTURING EQUIPMENT

(see instructions, page 2 and 3)

APPLICATION NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved In Process	Type Equipment Used	LOCATION OF EQUIPMENT Plant	Bldg	Floor	RAW MATERIALS Type	Max/ Hour	Total/ Year	FINISHED MATERIALS Type	Max/ Hour	Total/ Year
1. MANUFACTURE FEED STOCK	CHEMICAL SPRAY DRYER	1	5	1	SODIUM SILICATE BORIC ACID UREA & WATER	62 GAL	3000 GAL	FEED STOCK	186 Lbs	75,000
2. DRYING MICROBALLOONS	DRYING OVEN	1	1	BASEMENT	MICROBALLOONS			MICROBALLOONS	60	100,[illegible]
3. MANUFACTURE MICROBALLOONS	BALLOONING FURNACE (10)	1	5	1 & 2	FEED STOCK			MICROBALLOONS		350,00[illegible]

PART 2. OPERATING SCHEDULE / PART 3. STACK/VENT DATA

Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside diameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velocity (ft/sec)	Does Stack have rain cap?
1. PART 4, ITEM 1											
2. 8	3	50	12	#1 VENT	HORIZONTAL	6"x6"	10'	450°F	UNKNOWN	UNKNOWN	NA
3. PART 4, ITEM 3											

PART 4. PROCESS EMISSIONS / PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. NA	PARTICULATES	LESS THAN 0.1 LBS/HR	BAGHOUSE (2)	TORIT DIVISION DONALDSON CO.	99.9 %	1974
2. #1 VENT	FLUE GAS					
3. NA	PARTICULATES	LESS THAN 0.1 LBS/HR	BAGHOUSE (3)	TORIT DIVISION DONALDSON CO.	99.9 %	1975

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED: [illegible] TITLE: [illegible] DATE: 12 17 7[illegible]

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT: Plant	Bldg	Floor	Size of Unit (Indicate Btu/hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA: Type Fuel	Amt/yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
1. CHEMICAL DISPOSAL BOILER	1	5	1	1,250,000 BTU/HR	ATMOSPHERIC TORCH	NATURAL GAS	476,000 cu/FT	1190 cu/FT
2. COKING OVEN	1	1	BASEMENT	800,000 BTU/HR	ATMOSPHERIC TORCH	NATURAL GAS	1,300,000 cu/FT	723 cu/FT
3. BALLOONING FURNACE	1	5	1	310,000 BTU/HR (EA)	ATMOSPHERIC TORCH	NATURAL GAS	7,085,700 cu/FT	1770 cu/F
4. BALLOONING FURNACE	1	5	2	310,000 BTU/HR (EA)	ATMOSPHERIC TORCH	NATURAL GAS	1,417,110 cu/FT	1180 cu/F

PART 2. OPERATING SCHEDULE:

	Hrs. per day	Days per week	Wks per yr.	Months in Operation
1.	8	1	50	12
2.	8	3	50	12
3.	16	5	50	12
4.	8	3	50	12

PART 3. STACK/VENT DATA:

	Stack No.	Stack Exit Direction (horiz-vert)	Inside Diameter at top (ft)	Height above ground (ft)	Exit gas Temp. (°F)	Quantity gaseous discharge (acfm)	Exit velocity (ft/sec)	Does stack have rain cap?
1.	N.A. - SEE SECTION A., PART 5 (EMISSION CONTROL SYSTEM)							
2.	VENT	HORIZONTAL	6" x 6"	10'	450°F	UNKNOWN	UNKNOWN	NA
3.	N.A. - SEE SECTION A., PART 5 (EMISSION CONTROL SYSTEM)							
4.	N.A. - SEE SECTION A., PART 5 (EMISSION CONTROL SYSTEM)							

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(s) AND VENT(s).

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED E Paul Hamlette TITLE Plant Mgr. DATE 12 17 76

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT			Size of Unit (Indicate Btu/hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA		
	Plant	Bldg	Floor			Type Fuel	Amt/yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
1. ROTARY DRYING OVEN	2		BASEMENT	180,000 BTU/HR	CONTINUOUS LINE	NATURAL GAS	174,000 CU. FT.	175 CU. FT.
2. ROTARY DRYING OVEN	2		BASEMENT	180,000 BTU/HR	CONTINUOUS LINE	NATURAL GAS	174,000 CU. FT.	175 CU. FT.
3.								
4.								

PART 2. OPERATING SCHEDULE:

	Hrs. per day	Days per week	Wks per yr.	Months in Operation
1.	4	5	50	12
2.	4	5	50	12
3.				
4.				

PART 3. STACK/VENT DATA:

	Stack No.	Stack Exit Direction (horiz-vert)	Inside Diameter at top (ft)	Height above ground (ft)	Exit gas Temp. (°F)	Quantity gaseous discharge (acfm)	Exit velocity (ft/sec)	Does stack have rain cap?
1.	VENT #1	VERTICAL	10 IN	30	—	—	—	YES
2.	VENT #2	VERTICAL	10 IN	30	—	—	—	YES
3.								
4.								

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(s) AND VENT(s).

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED E. Paul Griffith TITLE Plant Mgr. DATE 12 17 76

VISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

1. APPLICATION NO. 111

2. STACK NO. 2

	LEGAL NAME	BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)	PHONE
IRM	[illegible]	[illegible]	[illegible]
IVISION			
PPLICANT			
NSTALLATION			

QUIPMENT IG REGISTERED	TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)	BRAND NAME OF EQUIPMENT	MODEL NUMBER	NUMBER OF IDENTICAL UNITS ON THIS FORM	AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)
	[illegible]	[illegible]	[illegible]	1	☐ YES ☑ NO

IAJOR IVITY OF FIRM: ☑ MFG. ☐ OFFICE ☐ RETAIL OR WHLSE. STORE ☐ SCHOOL OR CHURCH ☐ HOTEL/ MOTEL ☐ HOSPITAL OR LAB ☐ WARE-HOUSE ☐ RESIDENCE OR APTS. ☐ OTHER (Specify)

TYPES OF FUEL USED

FUEL	GRADES	(x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft.³)	MAXIMUM FIRING RATE PER UNIT (Lbs., Gals., ft.³/hr.)	(BTU/hr.)	SEASONAL USE Month	Yr.	to	Month	Yr.	FUEL SUPPLIER Name	City or Town
COAL ☐	Bituminous		. %	. %						—				
	Anthracite		. %							—				
OIL ☑	Kerosene		. %							—				
	2	✓	[illegible] %		[illegible]	[illegible]				—			[illegible]	[illegible]
	4		. %							—				
	5		. %							—				
	6		. %							—				
NAT. GAS ☐			. %	. %						—				
OTHER ☐														

FUEL USAGE BREAKDOWN: % OF FUEL USED FOR HEATING [illegible] % | % OF FUEL USED FOR COOLING % | % OF FUEL USED FOR POWER % | % OF FUEL USED FOR PROCESS [illegible] %

BURNER QUIPMENT: ARE OIL HEATERS USED? ☐ YES ☑ NO | OIL TEMPERATURE BEFORE INJECTION [illegible] °F | BURNER MANUFACTURER [illegible] | DATE OF BURNER INSTALLATION [illegible] | BURNER MODEL NO. [illegible]

YPE OF COAL URNER: ☐ HAND FIRED ☐ UNDERFEED STOKER ☐ TRAVELING GRATE ☐ CHAIN GRATE ☐ SPREADER STOKER ☐ STOKER WITH GAS REINJECTION ☐ CYCLONE FURNACE ☐ PULVERIZED COAL

YPE OF OIL URNER: ☐ PRESSURE OR GUN ☐ ROTARY CUP ☐ STEAM ATOMIZER ☐ AIR ATOMIZER ☐ TANGENTIALLY FIRED ☐ OTHER (Specify)

OMBUSTION: OVERFIRE AIR CONTROL ☑ YES ☐ NO ____ °F | TYPE OF DRAFT ☐ FORCED ☐ INDUCED ☑ NATURAL | TYPE OF AIR FUEL RATIO CONTROL SYSTEM ☑ ON-OFF ☐ LOW FIRE ☐ HIGH-LOW FIRE ☐ HAND CONTROLLED ☐ FULL AUTOMATIC

QUIPMENT NFORMATION: BREACHING GAS TEMPERATURE [illegible] °F | DATE EQUIPMENT WAS PUT IN SERVICE MONTH [illegible] YEAR [illegible]
EXHAUST GAS FLOW RATE (ACFM): NORMAL MAXIMUM
STACK GAS VELOCITY IN FEET PER SECOND | EQUIPMENT OPERATING HOURS HOURS PER YEAR [illegible]
FACILITY OPERATING HOURS HOURS/DAY ____ DAYS/WEEK ____ WEEKS/YEAR ____

15. STACK TEST RESULTS

TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST

'ACK IFORMATION: STACK EXIT DIRECTION ☐ HORIZ. ☑ VERT. | SIZE OF STACK EXIT ROUND STACK Inside Diameter In. | RECTANGULAR STACK In. By In. | STACK HEIGHT (FEET) [illegible] | IS STACK EQUIPPED WITH RAIN HAT? ☐ YES ☑ NO | TEMPERATURE AT STACK EXIT ____ °F
SMOKE INDICATOR IN STACK ☑ YES ☐ NO | MAKE AND MODEL NO. OF SMOKE INDICATOR [illegible] | STACK LINING ☐ METAL ☐ REFRACTORY ☑ OTHER (Specify)

ACK ICATION: NAME OF NEAREST INTERSECTING STREET: [illegible] | DISTANCE TO STACK FROM INTERSECTION: [illegible] | DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE S SW W NW

RTIFICATION: I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).

SIGNED [illegible] | TITLE [illegible] | DATE

APPLICANT

18-374-001662

AIR APCI

VISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

	LEGAL NAME	BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)	PHONE
FIRM	[illegible]	[illegible]	[illegible]
DIVISION			
APPLICANT			
INSTALLATION			

EQUIPMENT BEING REGISTERED	TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)	BRAND NAME OF EQUIPMENT	MODEL NUMBER	NUMBER OF IDENTICAL UNITS ON THIS FORM	AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)
	BOILER	D. D. DILLON		1	☐ YES ☒ NO

MAJOR ACTIVITY OF FIRM: ☒ MFG. ☐ OFFICE ☐ RETAIL OR WHLSE. STORE ☐ SCHOOL OR CHURCH ☐ HOTEL/MOTEL ☐ HOSPITAL OR LAB ☐ WAREHOUSE ☐ RESIDENCE OR APTS. ☐ OTHER (Specify)

TYPES OF FUEL USED

FUEL	GRADES	(x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft.³)	MAXIMUM FIRING RATE PER UNIT (Lbs., Gals., ft.³/hr.)	(BTU/hr.)	SEASONAL USE Month	Yr.	to	Month	Yr.	FUEL SUPPLIER Name	City or Town
COAL ☐	Bituminous		. %	. %						—				
	Anthracite		. %							—				
OIL ☒	Kerosene		. %							—				
	2	✓	[illegible] %		[illegible]	[illegible]				—			[illegible]	[illegible]
	4		. %							—				
	5		. %							—				
	6		. %							—				
NAT. GAS ☐										—				
OTHER ☐			. %	. %						—				

FUEL USAGE BREAKDOWN: % OF FUEL USED FOR HEATING 70 % | % OF FUEL USED FOR COOLING % | % OF FUEL USED FOR POWER % | % OF FUEL USED FOR PROCESS %

BURNER EQUIPMENT: ARE OIL HEATERS USED? ☐ YES ☒ NO | OIL TEMPERATURE BEFORE INJECTION [illegible] °F | BURNER MANUFACTURER [illegible] | DATE OF BURNER INSTALLATION [illegible] | BURNER MODEL NO. [illegible]

TYPE OF COAL BURNER: ☐ HAND FIRED ☐ UNDERFEED STOKER ☐ TRAVELING GRATE ☐ CHAIN GRATE ☐ SPREADER STOKER ☐ STOKER WITH GAS REINJECTION ☐ CYCLONE FURNACE ☐ PULVERIZED COAL

TYPE OF OIL BURNER: ☐ PRESSURE OR GUN ☒ ROTARY CUP ☐ STEAM ATOMIZER ☐ AIR ATOMIZER ☐ TANGENTIALLY FIRED ☐ OTHER (Specify)

COMBUSTION: OVERFIRE AIR CONTROL ☒ YES ☐ NO ____ °F | TYPE OF DRAFT ☐ FORCED ☐ INDUCED ☒ NATURAL | TYPE OF AIR FUEL RATIO CONTROL SYSTEM ☐ ON-OFF ☐ LOW FIRE ☒ HIGH-LOW FIRE ☐ FULL AUTOMATIC ☐ HAND CONTROLLED

EQUIPMENT INFORMATION:
BREACHING GAS TEMPERATURE [illegible] °F | DATE EQUIPMENT WAS PUT IN SERVICE MONTH [illegible] YEAR [illegible]
EXHAUST GAS FLOW RATE (ACFM): NORMAL | MAXIMUM
STACK GAS VELOCITY IN FEET PER SECOND | EQUIPMENT OPERATING HOURS HOURS PER YEAR
FACILITY OPERATING HOURS HOURS/DAY ____ DAYS/WEEK ____ WEEKS/YEAR ____

15. STACK TEST RESULTS

TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST

STACK INFORMATION: STACK EXIT DIRECTION ☐ HORIZ. ☒ VERT. | SIZE OF STACK EXIT: ROUND STACK Inside Diameter In. | RECTANGULAR STACK In. By In. | STACK HEIGHT (FEET) [illegible] | IS STACK EQUIPPED WITH RAIN HAT? ☐ YES ☒ NO | TEMPERATURE AT STACK EXIT ____ °F
SMOKE INDICATOR IN STACK ☒ YES ☐ NO | MAKE AND MODEL NO. OF SMOKE INDICATOR [illegible] | STACK LINING ☐ METAL ☐ REFRACTORY ☐ OTHER (Specify)

STACK LOCATION: NAME OF NEAREST INTERSECTING STREET: [illegible] ST. | DISTANCE TO STACK FROM INTERSECTION: [illegible] | DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE S SW W NW

CERTIFICATION: I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).

SIGNED | TITLE [illegible] | DATE

APPLICANT

10M-3-74-091882

AP-1

SION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

	LEGAL NAME	BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)	PHONE
A	[illegible]	[illegible]	[illegible]
ISION			
LICANT			
TALLATION			

IPMENT REGISTERED	TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)	BRAND NAME OF EQUIPMENT	MODEL NUMBER	NUMBER OF IDENTICAL UNITS ON THIS FORM	AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)
	BOILER	HOLDEN		1	☐ YES ☑ NO

IOR ITY OF FIRM: ☑ MFG. ☐ OFFICE ☐ RETAIL OR WHLSE. STORE ☐ SCHOOL OR CHURCH ☐ HOTEL/MOTEL ☐ HOSPITAL OR LAB ☐ WARE-HOUSE ☐ RESIDENCE OR APTS. ☐ OTHER (Specify)

PES OF EL USED	FUEL	GRADES	(x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft.³)	MAXIMUM FIRING RATE PER UNIT (Lbs., Gals., ft.³/hr.)	(BTU/hr.)	SEASONAL USE Month	Yr.	to	Month	Yr.	FUEL SUPPLIER Name	City or Town
	COAL ☐	Bituminous		. %	. %						—				
		Anthracite		. %							—				
	OIL ☑	Kerosene		. %							—				
		2	✓	[illegible] %		[illegible]	[illegible]				—			[illegible]	[illegible]
		4		. %							—				
		5		. %							—				
		6		. %							—				
	NAT. GAS ☐			. %	. %						—				
	OTHER ☐										—				

EL USAGE EAKDOWN	% OF FUEL USED FOR HEATING	% OF FUEL USED FOR COOLING	% OF FUEL USED FOR POWER	% OF FUEL USED FOR PROCESS
	[illegible] %	%	%	[illegible] %

IRNER UIPMENT	ARE OIL HEATERS USED?	OIL TEMPERATURE BEFORE INJECTION	BURNER MANUFACTURER	DATE OF BURNER INSTALLATION	BURNER MODEL NO.
	☐ YES ☑ NO	[illegible] °F	[illegible]	[illegible]	[illegible]

PE OF COAL IRNER: ☐ HAND FIRED ☐ UNDERFEED STOKER ☐ TRAVELING GRATE ☐ CHAIN GRATE ☐ SPREADER STOKER ☐ STOKER WITH GAS REINJECTION ☐ CYCLONE FURNACE ☐ PULVERIZED COAL

PE OF OIL IRNER: ☑ PRESSURE OR GUN ☐ ROTARY CUP ☐ STEAM ATOMIZER ☐ AIR ATOMIZER ☐ TANGENTIALLY FIRED ☐ OTHER (Specify)

OMBUSTION: OVERFIRE AIR CONTROL ☐ YES ☐ NO ____ °F | TYPE OF DRAFT ☐ FORCED ☐ INDUCED ☑ NATURAL | TYPE OF AIR FUEL RATIO CONTROL SYSTEM ☐ ON-OFF ☐ LOW FIRE ☐ HIGH-LOW FIRE ☐ HAND CONTROLLED ☐ FULL AUTOMATIC

UIPMENT FORMATION:
BREACHING GAS TEMPERATURE °F | DATE EQUIPMENT WAS PUT IN SERVICE MONTH [illegible] YEAR [illegible]
EXHAUST GAS FLOW RATE (ACFM): NORMAL MAXIMUM
STACK GAS VELOCITY IN FEET PER SECOND | EQUIPMENT OPERATING HOURS HOURS PER YEAR [illegible]
FACILITY OPERATING HOURS HOURS/DAY ____ DAYS/WEEK ____ WEEKS/YEAR ____

15. STACK TEST RESULTS

TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST

ACK FORMATION:
STACK EXIT DIRECTION ☐ HORIZ. ☑ VERT. | SIZE OF STACK EXIT ROUND STACK Inside Diameter In. / RECTANGULAR STACK [illegible] In. By [illegible] In. | STACK HEIGHT (FEET) [illegible] | IS STACK EQUIPPED WITH RAIN HAT? ☐ YES ☑ NO | TEMPERATURE AT STACK EXIT ____ °F
SMOKE INDICATOR IN STACK ☐ YES ☐ NO | MAKE AND MODEL NO. OF SMOKE INDICATOR | STACK LINING ☐ METAL ☐ REFRACTORY ☐ OTHER (Specify)

ACK ICATION: NAME OF NEAREST INTERSECTING STREET: [illegible] | DISTANCE TO STACK FROM INTERSECTION: [illegible] | DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE S SW W NW

RTIFICATION: I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).

SIGNED	TITLE	DATE
	[illegible]	[illegible]

APPLICANT

BOR-3-74-001602

DAVID STANDLEY
Commissioner
727-5194

The Commonwealth of Massachusetts

Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
600 Washington Street, Boston, Ma. 02111

January 1978

Mailed April 18, 1978

Gentlemen:

The Division of Air and Hazardous Materials must develop regulations limiting the quantities of volatile organic compounds emitted from sources in the Commonwealth in order to achieve compliance with applicable ambient air standards.

It is the Division's desire to develop regulations that will provide for the necessary reduction in volatile organic compound emissions without imposing undue economic hardship on the industries in the Commonwealth utilizing these compounds. Toward this end, the Metropolitan Boston Region must update its inventory of commercial and industrial facilities within the Region to determine the types and quantities of volatile organic compounds presently being utilized.

The Region has determined that the nature of operations at your facility involves the use of volatile organic compounds. Your cooperation is requested in completing all applicable parts of the enclosed questionnaire. This is a requirement of the Department's Regulation 12, Registration, Record Keeping and Reporting, of the "Regulations for the Control of Air Pollution in the Metropolitan Boston Air Pollution Control District".

You are requested to complete and return the form within thirty (30) days. If you have any questions or need assistance, please do not hesitate to call, telephone number 727-4609.

Thank you in advance for your cooperation.

Very truly yours,

John A. Desmond

John A. Desmond
Chief
Air Quality Control Section

C- MBAPCD
C- R.E.E.

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
DIVISION OF AIR AND HAZARDOUS MATERIALS

FORM FOR THE REGISTRATION OF HYDROCARBON EMISSIONS

Please complete and return this form to the Metropolitan Boston Air Quality Control Region, Room 320, 600 Washington Street, Boston, MA. 02111. Should you have any questions, call 727-4609, 5195

Comapny Name EMERSON & CUMING INC.

Plant Address 869 WASHINGTON ST, CANTON, MASS. 02021

Mailing Address " " "

Contact JOHN HAGEN Title SAFETY DIRECTOR

Telephone Number 828-3300

Approximate number of employees at this plant address 85

Normal Operating Schedule of this facility 8 hr/day 5 days/wk. 52 wk/yr

Indicate the percentage of annual production produced per quarter:

First 25 Second 25 Third 25 Fourth 25

How many gallons of material containing velatile hydrocarbons such as cleaning fluids, coatings, adhesives, inks, or solvents are purchased by this facility annually? 6000+ GAL ASSORTED SOLVENTS

Supplier	Address of Supplier	Type of Materials
AXTON CROSS	CROSS ST. HOLLISTON, MASS.	METHYLENE CHLORIDE
DOE & INGALLS	25 COMMERCIAL ST. MEDFORD, MASS.	TOLUENE
NEW ENGLAND CHEMICAL	P.O. BOX 38, MERRIMACK, N.H.	1,1,1 TRICHLOROETHANE

CERTIFICATION to be signed by responsible corporate official: I certify that I have examined the information on this form and that to the best of my knowledge, it is true and complete.

Signed J.B. Hagen Title Safety Director Date 3/28/75

INSTRUCTIONS

Everyone receiving this form should complete the first page and only those other sections pertaining to their company.

The information submitted should pertain to calendar year 1977 operations.

If the space provided is not adequate, feel free to either copy the form, use a separate sheet or request an additional copy.

Information contained in the Division's files is available to the general public upon request under the provisions of the Freedom of Information Act. Contact the Division (727-4609) immediately if you feel that completion of information requested would compromise proprietary data.

Supply a schematic of your facility indicating the location of all stacks and vents that emit volatile organic compounds.

Please supply as much information as possible to enable accurate calculations to be made and an accurate survey to be conducted.

Please also indicate if you have substituted compounds or installed control equipment in order to comply with the provisions of existing regulations.

STACK INFORMATIONAND HYDROCARBON CONTROL INFORMATION

Complete the table below for allstacks which exhaust volatile organic compounds and for all hydrocarbon collection equipment. Number the sources toagree with data submitted on the following pages of this form.

Stack data need not be submitted for stacks which do not emit hydrocarbons

				Hydrocarbon Control Equipment		Stack Information				
Source No.	Process or Operation	Type of Process Equipment	No. of Units	Type of Control Device	Estimated Control Efficiency	Exit Height above Ground (feet)	Inside Dia. (ft.)	Temp (°F)	Exhaust flowrate (CFM)	Stack Exit Velocity (ft./s)
1	PRODUCT. FORMULATION	MIXERS	8	EXHAUST SYSTEM	90%	60	10"	AMB.	UNKNOWN	UNKNOWN
2	CLEAN PIPING		3	EXHAUST SYSTEM	90%	8	N/A	AMB.	UNKNOWN	UNKNOWN
3	R&D		N/A	EXHAUST SYSTEM	90%	8	N/A	VARIOUS	"	"
4	FORMULATION MOLDING	MIXERS/MOLDS	3	EXHAUST SYSTEM	90%	20	6"	AMB.	"	"
5	FORMULATION	" / "	5	EXHAUST SYSTEM	90%	18	N/A	AMB	"	"
6	FORMULATION SMALL AMTS	MIXERS	5	EXHAUST SYSTEM	90%	18	8"	AMB	"	"
7	PAINT SPRAY	SPRAY	1	BOOTH EXHAUST	90%	12	N/A	AMB	"	"
8	FORMULATION PACKAGING	MIXER	1	EXHAUST SYSTEM	90%	15	N/A	AMB	"	"
9	FORMULATION	MIXERS	6	EXHAUST SYSTEM	90%	50	N/A	AMB	"	"

COLUMN HEADED. TYPE OF CONTROL DEVICE: ENTRY INDICATES ONLY THAT HYDROCARBON VAPORS ARE EXHAUSTED TO ATMOSPHERE.

SURFACE COATING

Complete this sheet for all painting, printing, treating or coating of paper, metals, fabric, etc. in which hydrocarbons are used. Should additional space be needed for reporting, submit addendum.

Source Number	Material being coated	Estimated Amount of Material Coated Annually	Coating Method Used	Type of Coating Applied	Amount of Coating applied/year in Pounds or Gallons
7	ABSORBERS	NEGLIGIBLE, R&D OPERATION	SPRAY	PLASTIC COMPOUNDS	2.5 GALS

SURFACE COATING

Temperature at Which coating is applied or cured	Type of Solvent in Undiluted Coating	Wt. Solvent in Undiluted Coating	Type of Solvent added to Coating	Amount of Solvent added per year, pounds or gallons

How much, if any, solvent is shipped out for recovery or disposal? 500 gal/yr.

What type(s) of cleaning solvent is(are) used? METHYLENE CHLORIDE/1,1,1 TRICHLOROETHANE

How much cleaning solvent is used per year? 1000 GAL.

CLEANING, DEGREASING AND/OR DRYCLEANING

Complete this page for operations such as cold solvent cleaning, hot solvent cleaning and vapor degreasing. Stoddard solvent, 1,1, 1 trichloroethane, perchloroethylene, methylene chloride and trichloroethylene are examples of solvents that must be reported.

Source Number	Operation	Type of Material Treated	Pounds of Material Treated Annually	Type of Solvent Used	Gallons Used Annually
2	RESIN SYSTEM PIPING CLEANING	RESIN SYSTEM TRANSFER PIPING	N/A	METHYLENE CHLORIDE	200
3/6	CLEANING/ DEGREASING	PARTS CLEANING	10,000	1,1,1 TRICHLOROETHANE	55 GAL

Temperature of Solvent in Use. °F.	Type of Emission Control Device	Estimated Control Efficiency	Waste Solvent Disposal Method	Gallons of Solvent Disposed of Annually
AMB.	EXHAUST SYSTEM	90%	LICENSED DISPOSAL	200
AMB	" "	90%	" "	50

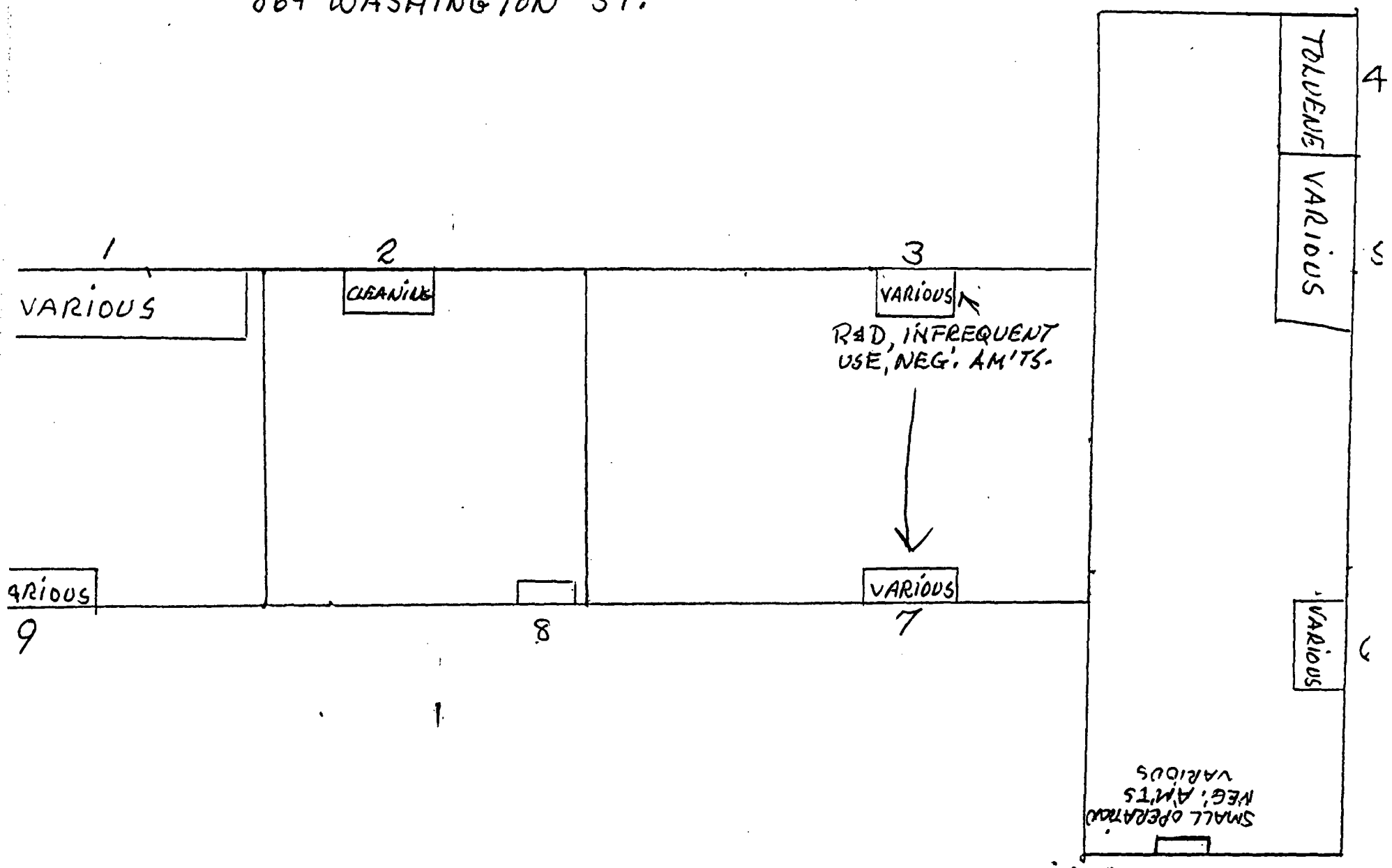
INSTRUCTIONS

Complete the sheet for all operations which utilize hydrocarbons as a raw material or which produce an end product containing hydrocarbons.

Brief Description of Process ALL ARE VARIOUS COMBINATIONS OF FORMULATION/MIXING/MOLDING AND/OR PACKAGING

Source No.	Process or operation using hydrocarbons	Type of Material Processed	Annual Process Thruput	Type & Weight of Violatile hydrocarbons in processed material	Quantity of Volatile Hydrocarbons lost to Atmosphere during processing lb/yr.	Method Used to determine Emission (est. (est. or material balance)
1	FORMULATION. MIXING PLASTICS	RESINS PLASTICS	750,000 LBS	32,000 lbs	640	EST
3	R&D	PLASTICS	NEGLIGIBLE	—	—	—
4	FORMULATION, MIXING/MOLDING	PLASTIC FOAMS				
5	FORMULATION/ MIXING/MOLDING	RESIN SYSTEMS	INCLUDED IN SOURCE No. 1 ABOVE	INCLUDED IN SOURCE No. 1 ABOVE	INCLUDED IN SOURCE No. 1 ABOVE	EST
6	FORMULATION MIXING	RESIN SYSTEMS	NEGLIGIBLE			
7	SPRAY	MICROWAVE ABSORBERS	NEGLIGIBLE PRIMARILY R&D			
8	FORMULATION. MIXING PACKAGING	RESIN SYSTEMS	SMALL AMOUNTS	INCLUDED AS PART OF No. 1 ABOVE	INCLUDED AS PART OF 640# LOSS	
9	FORMULATION MIXING	RESIN SYSTEMS	INCLUDED IN SOURCE No. 1 ABOVE	INCLUDED IN SOURCE No. 1 ABOVE	INCLUDED IN SOURCE No. 1 ABOVE	EST

869 WASHINGTON ST.



FORM AP-1

DEPARTMENT OF PUBLIC HEALTH

DIVISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

1. APPLICATION NO. 0111

2. STACK NO. 1

	LEGAL NAME	BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)	PHONE
1. FIRM	EMERSON & CUMMING, INC.	59 WALPOLE ST, CANTON, 02021	828-3300
1. DIVISION			
1. APPLICANT			
1. INSTALLATION			

2. EQUIPMENT BEING REGISTERED	TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)	BRAND NAME OF EQUIPMENT	MODEL NUMBER	NUMBER OF IDENTICAL UNITS ON THIS FORM	AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4) ☐ YES ☐ NO

3. MAJOR ACTIVITY OF FIRM: ☐ MFG. ☐ OFFICE ☐ RETAIL OR WHLSE. STORE ☐ SCHOOL OR CHURCH ☐ HOTEL/MOTEL ☐ HOSPITAL OR LAB ☐ WARE-HOUSE ☐ RESIDENCE OR APTS. ☐ OTHER (Specify)

4. TYPES OF FUEL USED

FUEL	GRADES	(x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft.³)	MAXIMUM FIRING RATE PER UNIT (Lbs., Gals., ft.³/hr.)	(BTU/hr.)	SEASONAL USE Month	Yr.	to	Month	Yr.	FUEL SUPPLIER Name	City or Town
COAL ☐	Bituminous		. %	. %						—				
	Anthracite		. %							—				
OIL ☐	Kerosene		. %							—				
	2		. %							—				
	4		. %							—				
	5		. %							—				
	6	X	1.0 %		226,380 GAL					—			WHITE FUEL	BOSTON
NAT. GAS ☐										—				
OTHER ☐			. %	. %						—				

5. FUEL USAGE BREAKDOWN: % OF FUEL USED FOR HEATING ___ % | % OF FUEL USED FOR COOLING ___ % | % OF FUEL USED FOR POWER ___ % | % OF FUEL USED FOR PROCESS ___ %

6. BURNER EQUIPMENT: ARE OIL HEATERS USED? ☐ YES ☐ NO | OIL TEMPERATURE BEFORE INJECTION ___ °F | BURNER MANUFACTURER | DATE OF BURNER INSTALLATION | BURNER MODEL NO.

7. TYPE OF COAL BURNER: ☐ HAND FIRED ☐ UNDERFEED STOKER ☐ TRAVELING GRATE ☐ CHAIN GRATE ☐ SPREADER STOKER ☐ STOKER WITH GAS REINJECTION ☐ CYCLONE FURNACE ☐ PULVERIZED COAL

8. TYPE OF OIL BURNER: ☐ PRESSURE OR GUN ☐ ROTARY CUP ☐ STEAM ATOMIZER ☐ AIR ATOMIZER ☐ TANGENTIALLY FIRED ☐ OTHER (Specify)

9. COMBUSTION: OVERFIRE AIR CONTROL ☐ YES ☐ NO ___ °F | TYPE OF DRAFT ☐ FORCED ☐ INDUCED ☐ NATURAL | TYPE OF AIR FUEL RATIO CONTROL SYSTEM ☐ ON-OFF ☐ LOW FIRE ☐ HIGH-LOW FIRE ☐ HAND CONTROLLED ☐ FULL AUTOMATIC

10. EQUIPMENT INFORMATION: BREACHING GAS TEMPERATURE °F | DATE EQUIPMENT WAS PUT IN SERVICE MONTH YEAR | EXHAUST GAS FLOW RATE (ACFM): NORMAL MAXIMUM | STACK GAS VELOCITY IN FEET PER SECOND | EQUIPMENT OPERATING HOURS HOURS PER YEAR | FACILITY OPERATING HOURS HOURS/DAY ___ DAYS/WEEK 1 WEEKS/YEAR ___

15. STACK TEST RESULTS

TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST

11. STACK INFORMATION: STACK EXIT DIRECTION ☐ HORIZ. ☐ VERT. | SIZE OF STACK EXIT: ROUND STACK Inside Diameter ___ In. | RECTANGULAR STACK ___ In. By ___ In. | STACK HEIGHT (FEET) | IS STACK EQUIPPED WITH RAIN HAT? ☐ YES ☐ NO | TEMPERATURE AT STACK EXIT ___ °F

SMOKE INDICATOR IN STACK ☐ YES ☐ NO | MAKE AND MODEL NO. OF SMOKE INDICATOR | STACK LINING ☐ METAL ☐ REFRACTORY ☐ OTHER (Specify)

12. STACK LOCATION: NAME OF NEAREST INTERSECTING STREET: WALPOLE ST. | DISTANCE TO STACK FROM INTERSECTION: 160 FT | DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE S SW W NW

13. CERTIFICATION: I certify that I have examined the above information and that, to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements). | SIGNED | TITLE | DATE

APPLICANT

108-3-74-001602

FORM AP-1

DEPARTMENT OF PUBLIC HEALTH

DIVISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

1. APPLICATION NO. 0111

2. STACK NO.

	LEGAL NAME	BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)	PHONE
FIRM	EMERSON + CUMMING, INC	869 WASHINGTON ST, CANTON, 02021	
DIVISION			
APPLICANT			
INSTALLATION			

EQUIPMENT BEING REGISTERED	TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)	BRAND NAME OF EQUIPMENT	MODEL NUMBER	NUMBER OF IDENTICAL UNITS ON THIS FORM	AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)
	BOILER			1	☐ YES ☒ NO

MAJOR ACTIVITY OF FIRM: ☒ MFG. ☐ OFFICE ☐ RETAIL OR WHLSE. STORE ☐ SCHOOL OR CHURCH ☐ HOTEL/MOTEL ☐ HOSPITAL OR LAB ☐ WAREHOUSE ☐ RESIDENCE OR APTS. ☐ OTHER (Specify)

TYPES OF FUEL USED

FUEL	GRADES	(x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft.³)	MAXIMUM FIRING RATE PER UNIT (Lbs., Gals., ft.³/hr.)	(BTU/hr.)	SEASONAL USE Month	Yr.	to	Month	Yr.	FUEL SUPPLIER Name	City or Town
COAL ☐	Bituminous		. %	. %						—				
	Anthracite		. %							—				
OIL ☒	Kerosene		. %							—				
	2	X	0.3 %		48352 gal.	14 gal/hr				—			WHITE FUEL	
	4		. %							—				
	5		. %							—				
	6		. %							—				
NAT. GAS ☐			. %	. %						—				
OTHER ☐														

FUEL USAGE BREAKDOWN: % OF FUEL USED FOR HEATING 90 % | % OF FUEL USED FOR COOLING % | % OF FUEL USED FOR POWER % | % OF FUEL USED FOR PROCESS %

BURNER EQUIPMENT: ARE OIL HEATERS USED? ☐ YES ☒ NO | OIL TEMPERATURE BEFORE INJECTION °F | BURNER MANUFACTURER | DATE OF BURNER INSTALLATION | BURNER MODEL NO.

TYPE OF COAL BURNER: ☐ HAND FIRED ☐ UNDERFEED STOKER ☐ TRAVELING GRATE ☐ CHAIN GRATE ☐ SPREADER STOKER ☐ STOKER WITH GAS REINJECTION ☐ CYCLONE FURNACE ☐ PULVERIZED COAL

TYPE OF OIL BURNER: ☐ PRESSURE OR GUN ☐ ROTARY CUP ☐ STEAM ATOMIZER ☐ AIR ATOMIZER ☐ TANGENTIALLY FIRED ☐ OTHER (Specify)

COMBUSTION: OVERFIRE AIR CONTROL ☐ YES ☐ NO ____ °F | TYPE OF DRAFT ☐ FORCED ☐ INDUCED ☐ NATURAL | TYPE OF AIR FUEL RATIO CONTROL SYSTEM ☐ ON-OFF ☐ LOW FIRE ☐ HIGH-LOW FIRE ☐ FULL AUTOMATIC ☐ HAND CONTROLLED

EQUIPMENT INFORMATION: BREACHING GAS TEMPERATURE °F | DATE EQUIPMENT WAS PUT IN SERVICE MONTH YEAR | EXHAUST GAS FLOW RATE (ACFM): NORMAL MAXIMUM | STACK GAS VELOCITY IN FEET PER SECOND | EQUIPMENT OPERATING HOURS HOURS PER YEAR | FACILITY OPERATING HOURS HOURS/DAY 24 DAYS/WEEK 7 WEEKS/YEAR 52

15. STACK TEST RESULTS

TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST

STACK INFORMATION: STACK EXIT DIRECTION ☐ HORIZ. ☒ VERT. | SIZE OF STACK EXIT ROUND STACK Inside Diameter in. | RECTANGULAR STACK in. By in. | STACK HEIGHT (FEET) | IS STACK EQUIPPED WITH RAIN HAT? ☐ YES ☒ NO | TEMPERATURE AT STACK EXIT ____ °F

SMOKE INDICATOR IN STACK ☐ YES ☐ NO | MAKE AND MODEL NO. OF SMOKE INDICATOR | STACK LINING ☐ METAL ☐ REFRACTORY ☐ OTHER (Specify)

STACK LOCATION: NAME OF NEAREST INTERSECTING STREET: WASHINGTON ST | DISTANCE TO STACK FROM INTERSECTION: 390 FT | DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE S SW W NW

CERTIFICATION: I certify that I have examined the above information and that, to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements.) | SIGNED | TITLE | DATE

APPLICANT

MB-9-74-051982

DATE RECEIVED	APPLICATION NUMBER	COORDINATES

APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
INFORMATION REQUESTED FOR CALENDAR YEAR 1975

AP-2 A. Process/Manufacturing Equipment
B. Process Fuel Burning Equipment

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGED

A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved In Process	Type Equipment Used	LOCATION OF EQUIPMENT Plant	Bldg	Floor	RAW MATERIALS Type	Max/ Hour	Total/ Year	FINISHED MATERIALS Type	Max/ DAY	Total/ Year
1. Dry Ceramic Microspheres	Rotary Ovens (3)	2		Basement	Fly Ash	ea. 250 lb	ea. oven 250,000#	Ceramic Microspheres	3000 lbs	750,000#
2.										
3.										

PART 2. OPERATING SCHEDULE PART 3. STACK/VENT DATA

Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside diameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velocity (ft/sec)	Does Stack have rain cap?
14 ea.	5	50	12	1,2,&3	Vert	14"	1&3-40' 2-30'	NA	NA		Yes
2.					Stacks	1,2,&3	for steam escape				
3.											

PART 4. PROCESS EMISSIONS

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.
1.	Fly Ash Dust	
2.		
3.		

PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Type	Manufacturer	Percent Efficiency	Date of Installation
Dust Collector	Deltair	98%	2/1978

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED:_____ TITLE:_____ DATE:_____

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT			Size of Unit (Indicate Btu/hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA		
	Plant	Bldg	Floor			Type Fuel	Amt/yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
1. Rotary Drying Oven	2		Basement	180,000 BTU/hr	Continous Line	Naturel Gas	174,000 cu.ft	175 cu ft.
2. "	2		"	"	"	"	"	"
3. "	2		"	"	"	"	"	"
4.								

PART 2. OPERATING SCHEDULE:

	Hrs. per day	Days per week	Wks per yr.	Months in Operation
1.	4	5	50	24
2.	4	5	50	24
3.	4	5	50	1
4.				

PART 3. STACK/VENT DATA:

	Stack No.	Stack Exit Direction (horiz-vert)	Inside Diameter at top (ft)	Height above ground (ft)	Exit gas Temp. (°F)	Quantity gaseous discharge (acfm)	Exit velocity (ft/sec)	Does stack have rain cap?
1.	1	Vert.	14"	40'				Yes
2.	2	"	14"	30'				"
3.	3	"	14"	40"		STEAM ESCAPE		"
4.								

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(s) AND VENT(s).

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED _____ TITLE _____ DATE _____

DATE RECEIVED	APPLICATION NUMBER	COORDINATES

APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
INFORMATION REQUESTED FOR CALENDAR YEAR 1975

AP-5 LIQUID ORGANIC MATERIAL STORAGE

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGE

LIQUID ORGANIC MATERIAL STORAGE

(see instructions, page 2)

APPLICATION NUMBER

PART 1. MATERIAL STORAGE DATA

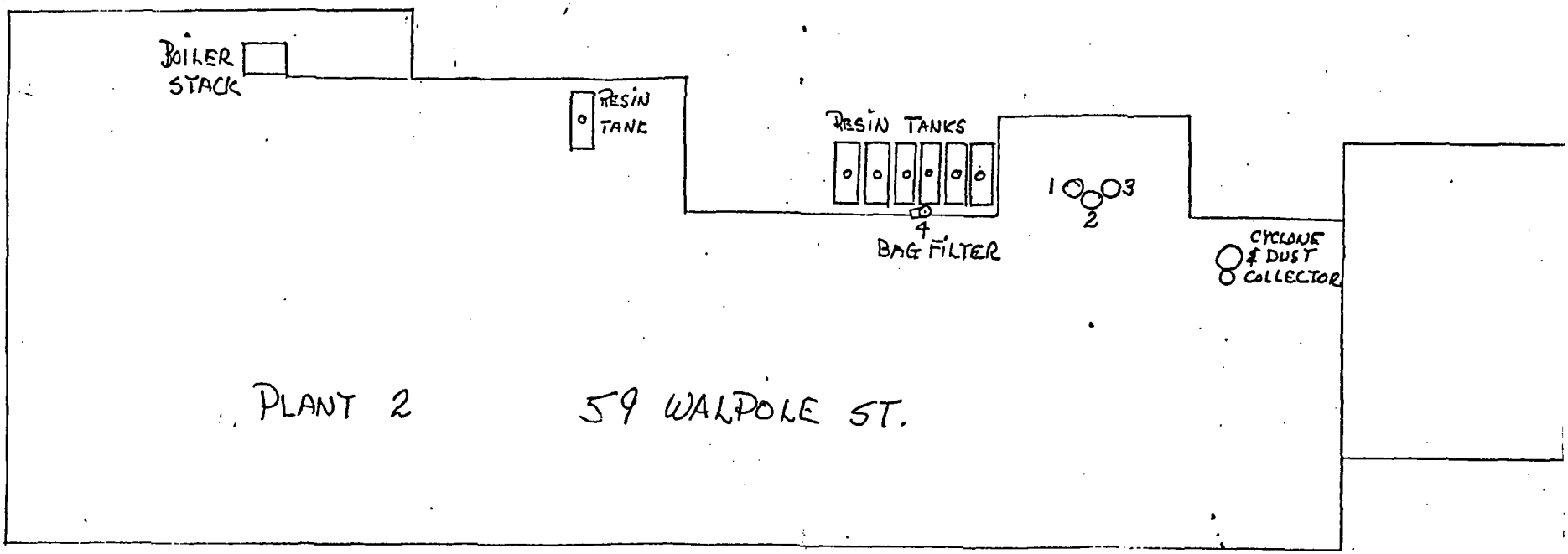
MATERIAL BEING STORED	Annual Thruput (gals)	TYPE OF STORAGE CONTAINER (tank, drum, etc.)	Size of Container (gals)	Number of Identical Containers	Location of Container (Inside or outside of bldg)
1. Resin 828	35,000	Tank	4000	7	6 outside 1 inside
2. Resin (Epoxite 8)	7,000	Drum	55	128	Outside
3.					
4.					

PART 2. STACK/VENT DATA

TYPE OF COVER ON CONTAINERS (none, floating roof, closed with vent to atmosphere, closed with vapor recovery system, other (specify)	STACK DATA: If container is served by a vent or if storage area is served by an area ventilation system, answer these items: Vent Exit Direction (horizontal-vertical)	Does vent have rain cap?	Height above ground (ft)	Quantity of Gaseous Discharge	EMISSION RATE
1. Closed Vented	Vertical	yes	8'	Unknown	Unknown
2.					
3.					
4.					

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED: _____ TITLE: _____ DATE: _____


BOILER STACK
RESIN TANK
RESIN TANKS
1
2
3
4
BAG FILTER
CYCLONE & DUST COLLECTOR
PLANT 2
59 WALPOLE ST.

DATE RECEIVED	APPLICATION NUMBER	COORDINATES

APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
INFORMATION REQUESTED FOR CALENDAR YEAR 1975

AP-5 LIQUID ORGANIC MATERIAL STORAGE

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGE

LIQUID ORGANIC MATERIAL STORAGE

(see instructions, page 2)

APPLICATION NUMBER

PART 1. MATERIAL STORAGE DATA

MATERIAL BEING STORED	Annual Thruput (gals)	TYPE OF STORAGE CONTAINER (tank, drum, etc.)	Size of Container (gals)	Number of Identical Containers	Location of Container (Inside or outside of bldg)
1. Resin 828	20,000	Tank	4000	4	Inside
2.					
3.					
4.					

PART 2. STACK/VENT DATA

TYPE OF COVER ON CONTAINERS (none, floating roof, closed with vent to atmosphere, closed with vapor recovery system, other (specify)	STACK DATA: If container is served by a vent or if storage area is served by an area ventilation system, answer these items: Vent Exit Direction (horizontal-vertical)	Does vent have rain cap?	Height above ground (ft)	Quantity of Gaseous Discharge	EMISSION RATE
1. Vented	Horizontal	NA	10	Unknown	Inknown
2.					
3.					
4.					

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED: _____ TITLE: _____ DATE: _____

DATE RECEIVED	APPLICATION NUMBER	COORDINATES

APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
INFORMATION REQUESTED FOR CALENDAR YEAR 1975

AP-2 A. Process/Manufacturing Equipment
B. Process Fuel Burning Equipment

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGED

A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved In Process	Type Equipment Used	LOCATION OF EQUIPMENT Plant	Bldg	Floor	RAW MATERIALS Type	Max/ Hour	Total/ Year	FINISHED MATERIALS Type	Max/ Hour	Total/ Year
1. Drying Microballoons	Oven	1	1	Basement	Glass Balloons			Micro Balloons	60 lbs	100,00
2. Mfg. Feed Stock	Spray Dryed	1	5	1	Sodium silicate boric acid, water, urea	60 gal	3000 gal	Feed stock	185lbs	75,00
3. Mfg. Glass Balloons	Ballooning furnace	1	5	1&2 c	Feed Stock			Micro Balloons		350,000

PART 2. OPERATING SCHEDULE / PART 3. STACK/VENT DATA

	Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside diameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velocity (ft/sec)	Does Stack have rain cap?
1.	8	3	52	12	10	Horiz.	6"x6"	10'	450°			NA
2.	8	1	52	12		SEE PART 4 BELOW - ITEM 2						
3.	8	5&3	52	12		" " "	"	"				

PART 4. PROCESS EMISSIONS / PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. 10	Flue Gas					
2. NA	Particulates (Glass)	less than 0.1lbs/hr	Baghouse(2)	Torit Div. Donaldson Co.	99.9%	1974
3. NA	" "	" "	" (3)	" "	99.9%	1975

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED: _____ TITLE: _____ DATE: _____

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT			Size of Unit (Indicate Btu/hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA		
	Plant	Bldg	Floor			Type Fuel	Amt/yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
1. Drying Oven	1	1	Base-ment	800,000 BTU/HR	Atmospheric Torch	Natural Gas	1,300,000 cuft	723 cu.ft
2. Spray Dryer	1	5	1	1,250,000 BTU/HR	" "	" "	476,000 cu.ft	1190 cu ft
6 3. Ballooning Furnace	1	5	1	310,000 BTU/HR	" "	" "	7,085,700 cu.ft	1770 cu.ft.
4 4. Ballooning Furnace	1	5	1	310,000 BTU/HR	" "	" "	1,400,000 cu.ft.	1180 cuft

PART 2. OPERATING SCHEDULE:

Hrs. per day	Days per week	Wks per yr.	Months in Operation
1. 8	3	52	12
2. 8	1	52	12
3. 8	5	52	12
4. 8	3	52	12

PART 3. STACK/VENT DATA:

Stack No.	Stack Exit Direction (horiz-vert)	Inside Diameter at top (ft)	Height above grount (ft)	Exit gas Temp. (°F)	Quantity gaseous discharge (acfm)	Exit velocity (ft/sec)	Does stack have rain cap?
10	Horiz.	6" sq.	10'	450°F	Unk		NA
NA	Exhausts to Dust Collectors						
"	" "	" "					
"	" "	" "					

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(s) AND VENT(s).

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED _____ TITLE _____ DATE _____

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

DATE RECEIVED	APPLICATION NUMBER	COORDINATES

APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
INFORMATION REQUESTED FOR CALENDAR YEAR 1975

AP-5 LIQUID ORGANIC MATERIAL STORAGE

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGE

AP-5

LIQUID ORGANIC MATERIAL STORAGE

(see instructions, page 2)

APPLICATION NUMBER

PART 1. MATERIAL STORAGE DATA

MATERIAL BEING STORED	Annual Thruput (gals)	TYPE OF STORAGE CONTAINER (tank, drum, etc.)	Size of Container (gals)	Number of Identical Containers	Location of Container (Inside or outside of bldg)
1. Resin 828	20,000	Tank	4000	4	Inside
2.					
3.					
4.					

PART 2. STACK/VENT DATA

TYPE OF COVER ON CONTAINERS (none, floating roof, closed with vent to atmosphere, closed with vapor recovery system, other (specify)	STACK DATA: If container is served by a vent or if storage area is served by an area ventilation system, answer these items: Vent Exit Direction (horizontal-vertical)	Does vent have rain cap?	Height above ground (ft)	Quantity of Gaseous Discharge	EMISSION RATE
1. Vented	Horizontal	NA	10	Unknown	Inknown
2.					
3.					
4.					

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED: _____ TITLE: _____ DATE: _____

DATE RECEIVED	APPLICATION NUMBER	COORDINATES

APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
INFORMATION REQUESTED FOR CALENDAR YEAR 1975

AP-2 A. Process/Manufacturing Equipment
B. Process Fuel Burning Equipment

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGED

A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION NUMBER 1

PART 1. EQUIPMENT DATA

Major Steps Involved In Process	Type Equipment Used	LOCATION OF EQUIPMENT Plant	Bldg	Floor	RAW MATERIALS Type	Max/ Hour	Total/ Year	FINISHED MATERIALS Type	Max/ Hour	Total/ Year
1. Drying Microballoons	Oven	1	1	Basement	Glass Balloons			Micro Balloons	60 lbs	100,000
2. Mfg. Feed Stock	Spray Dryed	1	5	1	Sodium silicate boric acid, water, urea	60 gal	3000 gal	Feed stock	185lbs	75,000
3. Mfg. Glass Balloons	Ballooning furnace	1	5	1&2 c	Feed Stock			Micro Balloons		350,000#

PART 2. OPERATING SCHEDULE / PART 3. STACK/VENT DATA

	Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside diameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velocity (ft/sec)	Does Stack have rain cap?
1.	8	3	52	12	10	Horiz.	6"x6"	10'	450°			NA
2.	8	1	52	12		SEE PART 4 BELOW - ITEM 2						
3.	8	5&3	52	12		" " "	"	"				

PART 4. PROCESS EMISSIONS / PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. 10	Flue Gas					
2. NA	Particulates (Glass)	less than 0.1lbs/hr	Baghouse(2)	Torit Div. Donaldson Co.	99.9%	1974
3. NA	" "	" "	" (3)	" "	99.9%	1975

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED: _____ TITLE: _____ DATE: _____

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT			Size of Unit (Indicate Btu/hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA		
	Plant	Bldg	Floor			Type Fuel	Amt/yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
1. Drying Oven	1	1	Base-ment	800,000 BTU/HR	Atmospheric Torch	Natural Gas	1,300,000 cuft	723 cu.ft
2. Spray Dryer	1	5	1	1,250,000 BTU/HR	" "	" "	476,000 cu.ft	1190 cu ft
(6) 3. Ballooning Furnace	1	5	1	310,000 BTU/HR	" "	" "	7,085,700 cu.ft	1770 cu.ft.
(4) 4. Ballooning Furnace	1	5	1	310,000 BTU/HR	" "	" "	1,400,000 cu.ft.	1180 cuft

PART 2. OPERATING SCHEDULE:

	Hrs. per day	Days per week	Wks per yr.	Months in Operation
1.	8	3	52	12
2.	8	1	52	12
3.	8	5	52	12
4.	8	3	52	12

PART 3. STACK/VENT DATA:

	Stack No.	Stack Exit Direction (horiz-vert)	Inside Diameter at top (ft)	Height above grount (ft)	Exit gas Temp. (°F)	Quantity gaseous discharge (acfm)	Exit velocity (ft/sec)	Does stack have rain cap?
1.	10	Horiz.	6" sq.	10'	450°F	Unk		NA
2.	NA	Exhausts to Dust Collectors						
3.	"	" "	" "					
4.	"	" "	" "					

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(s) AND VENT(s).

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED _____ TITLE _____ DATE _____

DATE RECEIVED	APPLICATION NUMBER	COORDINATES

APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
INFORMATION REQUESTED FOR CALENDAR YEAR 1975

AP-2 A. Process/Manufacturing Equipment
B. Process Fuel Burning Equipment

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGED

A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved In Process	Type Equipment Used	LOCATION OF EQUIPMENT Plant	Bldg	Floor	RAW MATERIALS Type	Max/ Hour	Total/ Year	FINISHED MATERIALS Type	Max/ Hour	Total/ Year
1. Blending	Mixer	1		1	Resins, Solvent Catalysts					
2. Blending	Mixer	1		2	Resins, Solvent, Catalysts					
3. Blending	Mixer	1		3	Resins, Solvents, Catalysts					

PART 2. OPERATING SCHEDULE / PART 3. STACK/VENT DATA

	Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside diameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velocity (ft/sec)	Does Stack have rain cap?
1.	8	5	52	12	4,5, 6,8	Horiz	N/A	15-20Ft	AMB	Unk	Unk	No (Shuttered fa
2.												
3.	8	5	52	12	1 & 9	1- Vert 9- Hort.	1	60 ft.	Amb.	Unk.	Unk	Vented Enclosure Shuttered Fan

PART 4. PROCESS EMISSIONS / PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. 4,5 &6	Organic Vapors/ Hydrocarbons	Unk.	None			
2. 8	Organic Vapors/ Hydrocarbons					
1 & 9	Organic Vapors/ Hydrocarbons	Unk	None			

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED: [illegible] TITLE: Plant Mgr. DATE: 5/15/78

DATE RECEIVED	APPLICATION NUMBER	COORDINATES

APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
INFORMATION REQUESTED FOR CALENDAR YEAR 1975

AP-2 A. Process/Manufacturing Equipment
B. Process Fuel Burning Equipment

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGED

A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved In Process	Type Equipment Used	LOCATION OF EQUIPMENT Plant	Bldg	Floor	RAW MATERIALS Type	Max/ Hour	Total/ Year	FINISHED MATERIALS Type	Max/ Hour	Total/ Year
1. Blending	Mixer	1		1	Resins, Solvent Catalysts					
2. Blending	Mixer	1		2	Resins, Solvent, Catalysts					
3. Blending	Mixer	1		3	Resins, Solvents, Catalysts					

PART 2. OPERATING SCHEDULE / PART 3. STACK/VENT DATA

	Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside diameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velocity (ft/sec)	Does Stack have rain cap?
1.	8	5	52	12	4,5, 6,8	Horiz	N/A	15-20Ft	AMB	Unk	Unk	No (Shuttered fan)
2.												
3.	8	5	52	12	1 & 9	1- Vert 9- Hort.	1	60 ft.	Amb.	Unk.	Unk	Vented Enclosure Shuttered Fan

PART 4. PROCESS EMISSIONS / PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. 4,5 &6	Organic Vapors/ Hydrocarbons	Unk.	None			
2. 8	Organic Vapors/ Hydrocarbons					
3. 1 & 9	Organic Vapors/ Hydrocarbons	Unk	None			

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED:_____ TITLE:_____ DATE:_____

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT			Size of Unit (Indicate Btu/hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA		
	Plant	Bldg	Floor			Type Fuel	Amt/yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
1.								
2.								
3.								
4.								

PART 2. OPERATING SCHEDULE:

Hrs. per day	Days per week	Wks per yr.	Months in Operation
1.			
2.			
3.			
4.			

PART 3. STACK/VENT DATA:

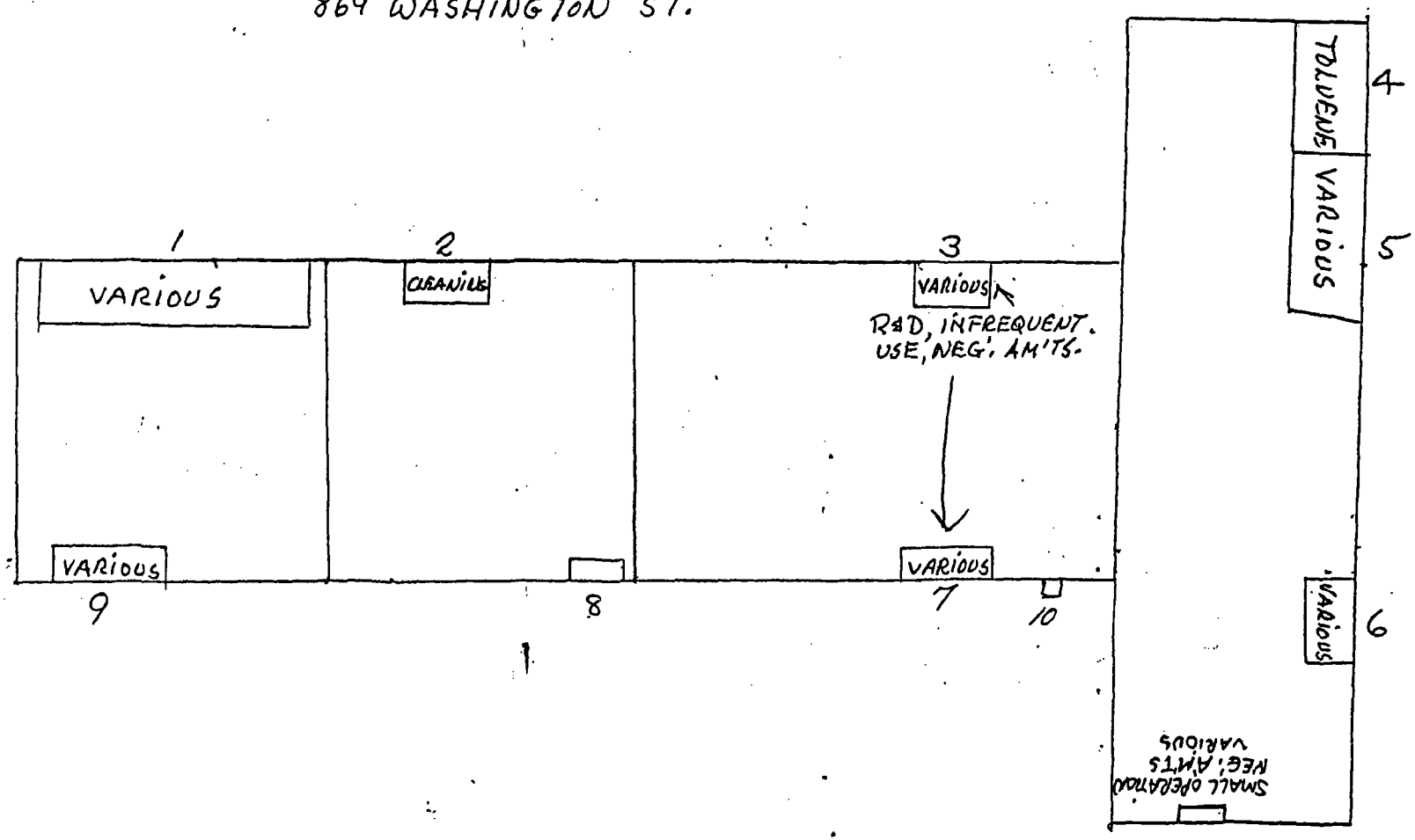
Stack No.	Stack Exit Direction (horiz-vert)	Inside Diameter at top (ft)	Height above grount (ft)	Exit gas Temp. (°F)	Quantity gaseous discharge (acfm)	Exit velocity (ft/sec)	Does stack have rain cap?
1.							
2.							
3.							
4.							

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(s) AND VENT(s).

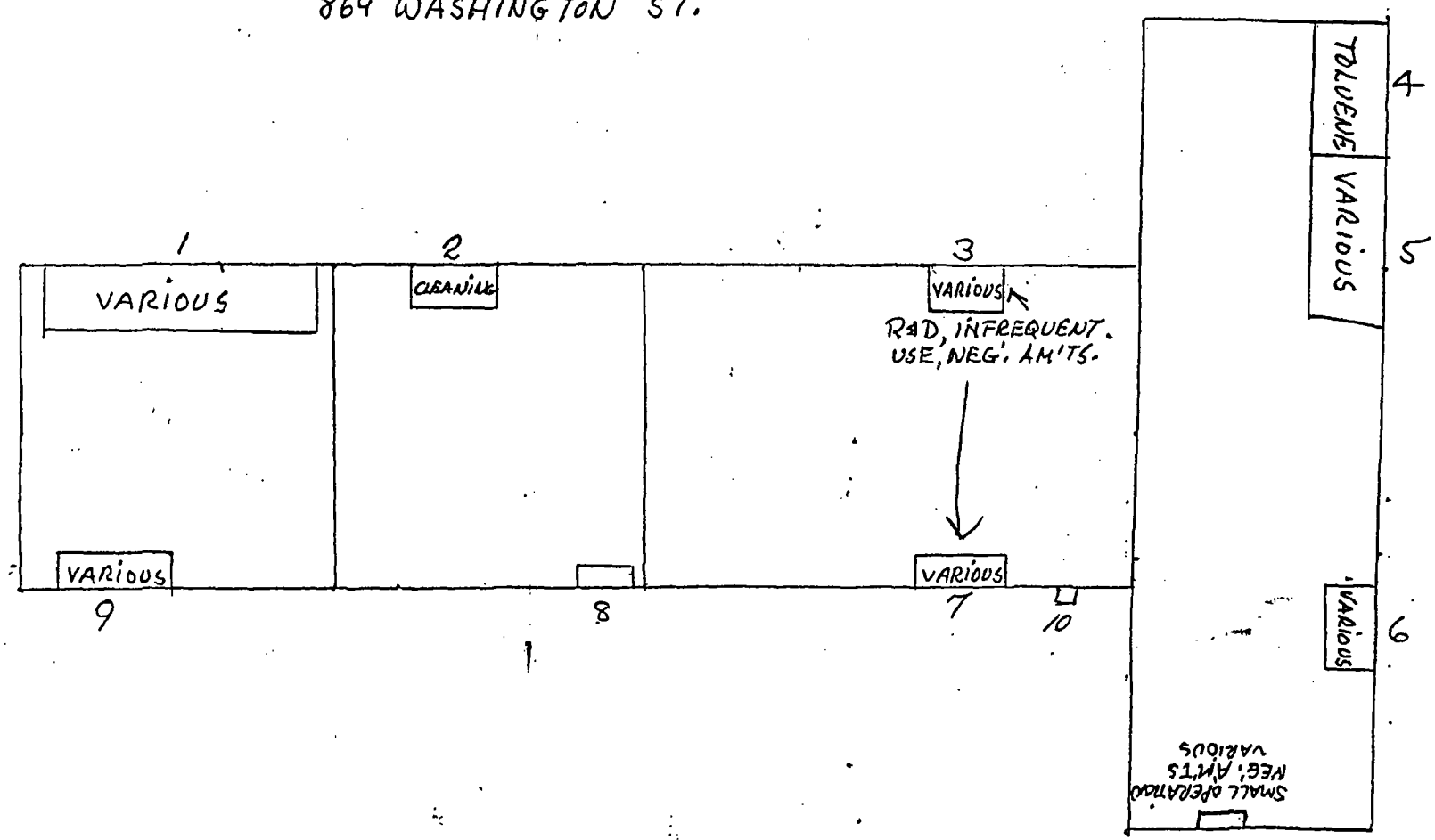
CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED_____ TITLE_____ DATE_____

869 WASHINGTON ST.



869 WASHINGTON ST.



MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast CPC 19 Part "A"

CHEMICAL FAMILY: Urethane-Polyether Based

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Available Aliphatic Isocyanate content	4.75				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	Not Known	SPECIFIC GRAVITY (H_2O=1)	1.03
VAPOR PRESSURE (mm Hg.)	N.A.	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	N.A.	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Insol		

APPEARANCE AND ODOR: Honey-colored liquid. Pungent odor. May irritate eyes and nose

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
>550°F (O.C.)			

EXTINGUISHING MEDIA: Standard types

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Diisocyanate TLV = 0.02 ppm

EFFECTS OF OVEREXPOSURE May cause irritation to skin, eyes and respiratory tract due to traces of diisocyanate

EMERGENCY AND FIRST AID PROCEDURES Wash skin with soap and water for 5 minutes, then wash again with tincture of green soap. Wash eyes in running water. For inhalation - get fresh air and contact physician.

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Moisture - Store in closed container in cool dry place
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Moisture, strong oxidizers, alcohols, amines

HAZARDOUS DECOMPOSITION PRODUCTS

Misc. fumes of nitrogen and hydrogen. Should be considered toxic.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Scrape up immediately and discard into vented can.

WASTE DISPOSAL METHOD

Burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Have respirators available should ventilation system fail

VENTILATION			
	LOCAL EXHAUST	Yes	SPECIAL
	MECHANICAL *(General)*	Yes	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Yes	Safety Glasses

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid contact with skin and eyes. Store in closed container in cool dry place

OTHER PRECAUTIONS

Use vented oven during heat cure

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 2741 LV
CHEMICAL FAMILY	Epoxy Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL	
FLAMMABILITY ____ HEALTH ____ REACTIVITY ____ SPECIFIC HAZARD ____	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	Trace		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.4
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR	Black Viscous Liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	± 465°F (Tag open cup)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT / UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA	Foam, CO_2, Dry Chemicals		
SPECIAL FIRE FIGHTING PROCEDURES	None - Avoid Breathing Smoke		
UNUSUAL FIRE AND EXPLOSION HAZARDS	None		

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly Irritating to Skin with Extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, Acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled Burning or Burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

Carry out fumes when heat curing in vented ovens

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 2741

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	Trace		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.4
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Black Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
‡ 465°F (Tag open cup)			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly Irritating to Skin with Extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, Acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled Burning or Burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

Carry out fumes when heat curing in vented ovens

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccocoat LN1853 (Part B)

CHEMICAL FAMILY: Aliphatic Amine

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Modified Aliphatic Amine			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	1.09
VAPOR PRESSURE (mm Hg.)	(at 100° C) <1	PRECENT VOLATILE BY VOLUME (%)	Nil
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE Butylac = 1)	<1
SOLUBILITY IN WATER	Appreciable		

APPEARANCE AND ODOR: Clear to pale amber liquid with ammonia odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
(COC) 220° F			

EXTINGUISHING MEDIA: Water, Foam, CO_2 Dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Inhalation may cause hazy vision and irritation of nose and throat. This material can cause severe injury to skin and eye tissues.

EMERGENCY AND FIRST AID PROCEDURES

Excessive inhalation - Remove to fresh air. In case of skin or eye contact: Flush with plenty of water. For eyes flush for 15 minutes. Get medical attention.

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Acids

HAZARDOUS DECOMPOSITION PRODUCTS

NH_3, CO, CO_2, by thermal decomposition

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush with plenty of water

WASTE DISPOSAL METHOD

Controlled burning

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER
	Acceptable	

PROTECTIVE GLOVES	EYE PROTECTION
Rubber	Splash-proof Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing at other than room temp. in vented oven

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson and Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington Street, Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccocoat TF-11Part A

CHEMICAL FAMILY: Epoxy resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	trace		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS	60-80	200	FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Epoxy resin	20-40				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	± 80 C	SPECIFIC GRAVITY (H_2O=1)	±1.0
VAPOR PRESSURE (mm Hg.)	71	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	2.4	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Red-amber colored liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
22 F		1.8%	11.5%

EXTINGUISHING MEDIA: CO_2, dry chemicals, carbon tetrachloride

SPECIAL FIRE FIGHTING PROCEDURES: Handle as a flammable liquid - avoid inhalation of smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: Explosion hazard - moderate when exposed to flame

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

-1 200

EFFECTS OF OVEREXPOSURE

mildly irritating to skin and eyes.

narcosis effect if sufficient amount is inhaled

EMERGENCY AND FIRST AID PROCEDURES

Skin - wash with soap and water

~~Eyes - wash with water~~

remove to fresh air after breathing vapors -- [illegible] - call M.D.

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	sparks and open flames

INCOMPATABILITY (Materials to avoid)

strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

acids aldehydes, etc,

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean with a solvent; then wash with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

canister mask

VENTILATION	LOCAL EXHAUST	SPECIAL
	yes	
	MECHANICAL (General) as required to maintain TLV	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
rubber gloves	goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store away from sparks and open flame-as a flammable liquid

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson and Cuming, Inc

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington Street, Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccocoat TF-11 Part B

CHEMICAL FAMILY: Anhydride

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	trace		BASE METAL		
CATALYST	anhydride 20-40		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS	60-80		FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	± 100 C	SPECIFIC GRAVITY (H_2O=1)	± 1.0
VAPOR PRESSURE (mm Hg.)	71	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	2.4	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: red liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
22 F		1.8%	11.5%

EXTINGUISHING MEDIA: CO_2, dry chemicals, carbon tetrachloride

SPECIAL FIRE FIGHTING PROCEDURES: Handle as a flammable liquid - avoid inhalation of smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: Explosion hazard - moderate when exposed to flame

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE ± 200

EFFECTS OF OVEREXPOSURE
Mildly irritating to skin and eyes

Narcosis effect if sufficient amount is inhaled

EMERGENCY AND FIRST AID PROCEDURES
Skin - wash with soap and water

Eyes - wash with water

Remove to fresh air after breathing vapors - call M.D.

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	sparks and open flames

INCOMPATABILITY (Materials to avoid) strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS acids, aldehydes, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

~~Clean with a solvent; then with water~~

WASTE DISPOSAL METHOD Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) canister mask

VENTILATION			
	LOCAL EXHAUST	yes	SPECIAL
	MECHANICAL (General)	as required to maintain TLV	OTHER

PROTECTIVE GLOVES rubber gloves

EYE PROTECTION goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store away from sparks and open flame - as a flammable liquid

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Eccocoat 909C
CHEMICAL FAMILY	Neoprene
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Aliphatic petroleum distillate	23	200* ppm
Hexane	23	100**ppm
Methyl ethyl ketone	10	200 ppm
Toluene	2	100 ppm
Acetone	17	1,000 ppm

SECTION III PHYSICAL DATA

BOILING POINT (°F.) IBP (Pct. Dist.)	140	SPECIFIC GRAVITY (H_2O=1)	0.83
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY ~~VOLUME~~ (%) weight	75
VAPOR DENSITY (AIR = 1)	> 1	EVAPORATION RATE (_____ = 1)	Slower
SOLUBILITY IN WATER	V Slight		

APPEARANCE AND ODOR

Thin red syrup - ketone odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	<0° F (C. C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT 1.0 / UPPER EXPLOSIVE LIMIT 7.0

EXTINGUISHING MEDIA CO_2 Foam, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

None

UNUSUAL FIRE AND EXPLOSION HAZARDS

None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

See Section II

EFFECTS OF OVEREXPOSURE

Irritating to eyes. May defat skin upon prolonged exposure. Vapors may be irritating to the upper respiratory system

EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: Immediately flush eyes with plenty of water. Obtain medical attention. Skin Contact: Wash with soap and water.

Inhalation: Provide fresh air. Ingestion: Do not induce vomiting. Call physic a

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Collect spilled material and store in closed metal container

WASTE DISPOSAL METHOD

Incinerate properly. Do not landfill.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION			
	LOCAL EXHAUST	X	SPECIAL
	MECHANICAL *(General)*		OTHER

PROTECTIVE GLOVES	EYE PROTECTION
PVA Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid all sources of ignition. Use only in areas adequately ventilated to prevent vapor buildup. Avoid eye contact. Avoid prolonged breathing of vapor and prolonged or repeated skin contact. Keep container closed.

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS: Epoxy Resin

TRADE NAME AND SYNONYMS: Eccocoat 582 (Part A)

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS Hydrocarbon	2.5-5	200	FILLER METAL PLUS COATING OR CORE FLUX		
SOLVENTS and Ketone	2.5-5	200			
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Solvent		

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	200	SPECIFIC GRAVITY (H_2O=1)	cured coat 2.3
VAPOR PRESSURE (mm Hg.)	54	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	2.78	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Black Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
31°F (CC)		1.54	9.3

EXTINGUISHING MEDIA: CO_2, Dry Chemicals, Carbon Tetrachloride

SPECIAL FIRE FIGHTING PROCEDURES: None - Treat as a Flammable Liquid

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

(Solvent) 200 PPM

EFFECTS OF OVEREXPOSURE

Slightly Irritating to skin with prolonged contact. Overexposure to vapors of solvent could cause headaches, dizziness, nausea

EMERGENCY AND FIRST AID PROCEDURES

Skin contact- wash with soap and water., When inhaled, remove to fresh air. If symptoms continue, obtain medical aid

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, Acids, Aldehydes, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Avoid breathing vapors; Avoid ignition sources; Dam and absorb on inert materials such as sand; place in containers

WASTE DISPOSAL METHOD

Controlled burning

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Self-contained breathing mask if exposed to fumes

VENTILATION		
	LOCAL EXHAUST: Adequate to keep below TLV & LEL	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Impervious Gloves	Splash Goggles

OTHER PROTECTIVE EQUIPMENT

Use hood when mixing and while curing at room temp.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep in closed containers away from heat, sparks, open flames; store below 80°F when curing at elevated temps. Use vented oven

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccocoat 582 (Part B)

CHEMICAL FAMILY: Modified aliphatic amine

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST mod. aliphatic amine	100		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	± 240°	SPECIFIC GRAVITY (H_2O=1)	1.00-1.03
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Mobile liquid - pink to amber

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
± 250°F (COC)			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: No special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		heating to decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

toxic fumes of nitrogen oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

wash with soap and water

WASTE DISPOSAL METHOD

controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
rubber gloves	goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

store at room temperature in closed containers

OTHER PRECAUTIONS

carry out fumes by means of oven vents, if oven curing

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington, Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccocoat SEC

CHEMICAL FAMILY: Latex

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS Water			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Carbon			OTHERS		
OTHERS Latex					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Black Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
None			

EXTINGUISHING MEDIA

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Not considered a hazardous material

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and Water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wash with soap and water

WASTE DISPOSAL METHOD

Burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS: Diglycidyl ether or Bisphenol A

TRADE NAME AND SYNONYMS: Eccocoat EP-3 (Part A)

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	>580	SPECIFIC GRAVITY (H_2O=1)	1.16
VAPOR PRESSURE (mm Hg.) 87°F	6	PRECENT VOLATILE BY VOLUME (%)	.3%
VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	None
SOLUBILITY IN WATER	INS.		

APPEARANCE AND ODOR: Clear liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
235°C TCC			

EXTINGUISHING MEDIA: CO_2, dry chemicals, Foam

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mild skin and eye irritant - skin sensitizer

EMERGENCY AND FIRST AID PROCEDURES

Skin contact-wash with soap and water

Eyes-flush with plenty of water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

CO, CO_2, Aldehydes and other organics

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with solvent; then wash with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Safety Glasses

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid skin and eye contact

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccocoat EP-3 (Part B)

CHEMICAL FAMILY: Aliphatic Amine

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS Aromatic Hydrocarbon			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Aliphatic Amine					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Solvent	Solvent	

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	210	SPECIFIC GRAVITY (H_2O=1)	0.97
VAPOR PRESSURE (mm Hg.)	21	PRECENT VOLATILE BY ~~VOLUME~~ Wt. (%)	60
VAPOR DENSITY (AIR = 1)	3.1	EVAPORATION RATE (Bu Ac =1)	1.9
SOLUBILITY IN WATER	Neg.		

APPEARANCE AND ODOR: Clear liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
38°F (TOC)		1.2	7.1

EXTINGUISHING MEDIA: Foam, CO_2, Dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: Wear goggles and a self-contained breathing apparatus when exposed to fumes, vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back

UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Not established

EFFECTS OF OVEREXPOSURE Solvent-Narcosis, Headache, Nausea, irritation of skin and mucous membranes. Possible eye burns due to slovent

EMERGENCY AND FIRST AID PROCEDURES Inhalation-Remove to fresh air - Use oxygen if indicated. Contact- Skin and eyes - Flush with water for 15 minutes, wash skin with soap and water. Call Physician

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

Nitric oxide fumes

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Avoid ignition sources; avoid breathing vapors, dry and absorb spills on inert material such as sand; place in containers.

WASTE DISPOSAL METHOD

Landfill, According to Federal, State, and local regulations

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Self-contained breathing apparatus if exposed to fumes.

VENTILATION	LOCAL EXHAUST	SPECIAL
	Adequate to keep below TLV and LEL	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Impervious Gloves	Splash Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep between 50°F and 100°F in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccocoat RTU (Part A)

CHEMICAL FAMILY: Urethane Polymer

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Available Isocyanate Content	4.75		OTHERS		
OTHERS Urethane Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	1.03
VAPOR PRESSURE (mm Hg.)	N.A.	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	N.A.	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Insol.		

APPEARANCE AND ODOR: Pale Amber Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
T.O.C. > 550°F			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

of Diisocyanate = 0.02 ppm

EFFECTS OF OVEREXPOSURE

Irritation of skin, eyes, respiratory tract

EMERGENCY AND FIRST AID PROCEDURES Skin- Wash with soap and water for 5 minutes; then wash again with tinct. of green soap. Wash eyes in running water. For inhalation - remove to fresh air and contact physician.

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Moisture
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Moisture, strong oxidizers, alcohols, amines

HAZARDOUS DECOMPOSITION PRODUCTS

Misc. fumes of nitrogen and hydrogen - toxic

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Scrape up and discard into vented can

WASTE DISPOSAL METHOD

Bury

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Have respirators available should ventilation system fail

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER
	Yes	

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Safety Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in closed container in cool, dry place

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccocoat RTU (Part B)

CHEMICAL FAMILY: Tertiary Amine

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Tertiary Amine	1-5		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS Hydrocarbon	95-98		FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Solvent		

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	230	SPECIFIC GRAVITY (H_2O=1)	0.866
VAPOR PRESSURE (mm Hg.)	36.7 (30° C)	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	3.14	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Pale Amber Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
40° F (CC)		1.27	7

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: Treat as a flammable liquid

UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Solvent 100 ppm on skin; 200 ppm - inhalation

EFFECTS OF OVEREXPOSURE

May cause impairment of coordination and reaction time, headache or nausia

EMERGENCY AND FIRST AID PROCEDURES

Remove to fresh air

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Keep away from heat or flames
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Blot with rags or sawdust and dispose of in closed containers

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER
	To maintain TLV	

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep in closed containers in a cool place away from heat or flames.

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Eccocoat 341
CHEMICAL FAMILY	Epoxy Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS Ketone		200 ppm	FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Silver Mineral			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Solvent	Solvent	

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	80°C	SPECIFIC GRAVITY (H_2O=1)	0.81
VAPOR PRESSURE (mm Hg.)	71.2 mm	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	2.41	EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR
Metallic Gray Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
22°F (T.O.C.)		1.8%	11.5%

EXTINGUISHING MEDIA
CO_2 Dry Chemicals, Foam

SPECIAL FIRE FIGHTING PROCEDURES
None

UNUSUAL FIRE AND EXPLOSION HAZARDS
None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Solvent 200 ppm

EFFECTS OF OVEREXPOSURE

Irritation - Nose, Throat, Eyes, Headache, Nausea

EMERGENCY AND FIRST AID PROCEDURES

Remove to fresh air and call physician. Flush skin and eye contact with water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO_2 Aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Eliminate all sources of ignition; Flush with water

WASTE DISPOSAL METHOD

Controlled Burning

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Canister Mask

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Face Shield or Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep in closed containers away from heat, sparks, flames, use with adequate ventilation.

OTHER PRECAUTIONS Prolonged breathing of vapors, avoid contact with eyes. Avoid ~~prolonged~~ contact with skin

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccospheres EP 1500

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY_____ HEALTH_____ REACTIVITY_____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	0.32
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Cured Hollow Epoxy Spheres - 0.25" To 0.50" Diam.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA: CO_2 Foam, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

This is not a
Hazardous Material

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY (*Materials to avoid*)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (*Specify type*)

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (*General*)	OTHER

PROTECTIVE GLOVES	EYE PROTECTION

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccospheres EP

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Cured Hollow epoxy Spheres

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA: CO_2, Foam, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

This is not a Hazardous material

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM *(Federal Supply Code for Manufacturers)*: Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS *(Number, Street, City, State, and ZIP Code)*: 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccospheres

CHEMICAL FAMILY: Glass

FORMULA: Proprietary

FEDERAL STOCK NUMBER *(FSN)*:

GROSS WEIGHT *(LBS)*:

OUTSIDE PACKAGE DIMENSIONS *(Inches)*:

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY_____ HEALTH_____ REACTIVITY_____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE *(Units)*	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE *(Units)*
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE *(Units)*

SECTION III PHYSICAL DATA

BOILING POINT *(°F.)*		SPECIFIC GRAVITY *(H_2O=1)*	
VAPOR PRESSURE *(mm Hg.)*		PRECENT VOLATILE BY VOLUME *(%)*	
VAPOR DENSITY *(AIR = 1)*		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: White - Very Fine Free-Flowing Powder

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT *(Method used)*	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

If any particles should get in the eyes, have them removed by a physician

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Vacuum or sweep up

WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Dust Mask

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
	Safety Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep Dry

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccospheres IG101

CHEMICAL FAMILY: Glass

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: White-very fine free-flowing powder

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

If any particles should get in the eyes, have them removed by a physician

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Vacuum or sweep up

WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Dust mask

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
	Safety goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep dry

OTHER PRECAUTIONS

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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MATERIAL SAFETY DATA SHEET

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Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccospheres VT

CHEMICAL FAMILY: Glass

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: White - Very Fine Free-Flowing Powder

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

If any particles should get in the eyes, have them removed by a physician

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Vacuum or sweep up

WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* Dust Mask

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION Safety Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep Dry

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccospheres FTD-202

CHEMICAL FAMILY: Glass

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: White - Very Fine Free-Flowing Powder

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

If any particles should get in the eyes, have them removed by a physician

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Vacuum or sweep up

WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* Dust Mask

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION Safety Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep Dry

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Catalyst 9

CHEMICAL FAMILY: Modified Aliphatic Amine

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST mod. aliphatic amine	100		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	> 330°C	SPECIFIC GRAVITY (H_2O=1)	< 1.0
VAPOR PRESSURE (mm Hg.)	.01	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Viscous liquid (pink to amber)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
T. O. C. 325°F			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Irritating to skin

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic fumes of nitrogen oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wash with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	X	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in unopened containers below 80°F

OTHER PRECAUTIONS

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Emerson & Cuming, Inc.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Catalyst 11

CHEMICAL FAMILY: Modified Aromatic Amine

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST mod. aromatic amine	100		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	274°F	SPECIFIC GRAVITY (H_2O=1)	1.12
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: light tan to dark brown liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
280°F (C.O.C.)			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Irritating to skin. Also, it is a powerful dye - avoid contact with skin, clothes, etc

EMERGENCY AND FIRST AID PROCEDURES

Wash

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

toxic fumes of oxides of nitrogen

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	
	WILL NOT OCCUR		

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wash

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in unopened containers below 80°F

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED; FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Catalyst 11M
CHEMICAL FAMILY	Cyclic-Primary Amine
FORMULA	Prop ietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Cyclic-Primary amine	100		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	263°C	SPECIFIC GRAVITY (H_2O=1)	0.91
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Mobile Liquid, Yellow Amber

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
482F TOC			

EXTINGUISHING MEDIA: Foam, CO_2 dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Irritating to skin

EMERGENCY AND FIRST AID PROCEDURES

Wash (with soap and water)

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic fumes of nitrogen oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wash with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	X	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in unopened containers below 80°F

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Catalyst 14
CHEMICAL FAMILY	Acid anhydride
FORMULA	
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Acid anhydride			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	± 570	SPECIFIC GRAVITY (H_2O=1)	1.5
VAPOR PRESSURE (mm Hg.)	1	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	5.1	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: White powder

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	305°F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT 1.7 / UPPER EXPLOSIVE LIMIT 10.4

EXTINGUISHING MEDIA: CO_2 Foam, Dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Irritating to skin and eyes after extended contact. When inhaled-vapors irritating to mucous membranes

EMERGENCY AND FIRST AID PROCEDURES

Skin-wash with soap and water. Eyes- wash with water. When inhaled-remove to fresh air.

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Acids, Aldehydes, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Sweep up

WASTE DISPOSAL METHOD

controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Canister mask

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes to maintain TLV	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in closed containers at room temperature

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Catalyst 15 Clear

CHEMICAL FAMILY: Polyamide

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Polyamide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	.91
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Clear syrup

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
354°F T.O.C.			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin and eyes with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Skin - wash with soap and water

Eyes - wash with water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic fumes of nitrogen oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in unopened containers below 80°F

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Catalyst 15LV

CHEMICAL FAMILY: Polyamide

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches): -

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	trace		BASE METAL		
CATALYST Polyamide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	.97
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Black syrup (like light oil)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
354° F T. O. C.			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin and eyes with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Skin - Wash with soap and Water

Eyes - Wash with Water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic Fumes of Nitrogen Oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Safety Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in unopened containers

OTHER PRECAUTIONS

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SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin and eyes with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Skin - Wash with soap and Water

Eyes - Wash with Water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic Fumes of Nitrogen Oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if heated	-
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Safety Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in unopened containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson and Cuming, Inc.
EMERGENCY PHONE NO.	828-3390
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington Street, Canton, Mass. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Catalyst 17
CHEMICAL FAMILY	Modified anhydride
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST mod. anhydride	100		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	240 C	SPECIFIC GRAVITY (H_2O=1)	1.3-1.5
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Blue-gray slurry at 65 C

EXPLOSION HAZARD DATA

FLASH POINT (Method used)	High	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT: UPPER EXPLOSIVE LIMIT:

EXTENGUISHING MEDIA: Co_2, foam. dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Irritating to skin and eyes after extended contact

When inhaled vapors are irritating to mucous membranes

EMERGENCY AND FIRST AID PROCEDURES

Skin- wash with soap and water

Eyes wash with water

when inhaled - remove to fresh air

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Acids, aldehydes, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Canister mask

VENTILATION	LOCAL EXHAUST	SPECIAL
	yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in closed cans at room temperature

OTHER PRECAUTIONS

Harold T. Brown

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Catalyst 7
CHEMICAL FAMILY	MEK Peroxide
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS N/A			BASE METAL N/A		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Methyl Ethyl Ketone Peroxide	50-60	Unk.
Di-Methyl Phthalate	40	5 mg/m^2
Hydrogen Peroxide	0-5	1ppm

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	1.168
VAPOR PRESSURE (mm Hg.)	Unk.	PRECENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR = 1)	N/A	EVAPORATION RATE (_____ = 1)	N/A
SOLUBILITY IN WATER	Insol.		

APPEARANCE AND ODOR

Clear, Colorless liquid, slight odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)		FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
Open Cup	225°F			

EXTINGUISHING Media Use large amounts of H_2O preferably applied as spray or Fog. Use dry chemicals (Foam or CO_2) on small fires

SPECIAL FIRE FIGHTING PROCEDURES If fire occurs near peroxide, spray H_2O on containers to keep temp. down. Continued exposure to heat can result in formation of flammable vapors.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Peroxide can also be ignited by acids, strong oxidizers or reducing agents including accelerators.

SECTION V HEALTH HAZARD DATA

Unknown

EFFECTS OF OVEREXPOSURE

Unknown

EMERGENCY AND FIRST AID PROCEDURES

Skin- Wash with soap and water. Eyes-Wash with plenty of H_2O and immediately consult physician

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE	X	Avoid overheating
	STABLE		

INCOMPATABILITY *(Materials to avoid)*

Acids, oxidizing agents, reducing agents including accelerators

HAZARDOUS DECOMPOSITION PRODUCTS

Unknown

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	N/A	
	WILL NOT OCCUR	N/A	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Spilled material must be absorbed onto vermiculite, perlite or absorbent earth and disposed of immediately. See Waste Disposal Methods

WASTE DISPOSAL METHOD

Using a non-sparking shovel, collect the saturated vermiculite and deposit in small shallow piles on newspapers located in an open safe place. Ignite with newspapers with a lighted torch having a long handle and back away. No more than 1 pound should be burned at a time.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Use a combination chemical cartridge and mechanical filter respirator

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Yes	Yes

OTHER PROTECTIVE EQUIPMENT

None

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Materials such as brass, stainless, iron and rubber can not be used as containers. Use Polyethylene

OTHER PRECAUTIONS

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VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED; FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Catalyst 12-6H, 12-2H, 12-4H, 12-10H

CHEMICAL FAMILY: Polyester Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST amine	trace		ALLOYS		
~~VEHICLE~~ water	trace		METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Polyester resin	90-98				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.16
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: red viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
High			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: No special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes - when curing with Part A	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: CATALYST 12-12HFR

CHEMICAL FAMILY: Polyester Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST amine	trace		ALLOYS		
~~xxxxxx~~ water	trace		METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Polyester resin	90-98				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.16
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: red viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
High			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: No special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY (Materials to avoid)

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

not ordinarily required

VENTILATION		
	LOCAL EXHAUST Yes - when curing with Part A	SPECIAL
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Catalyst 24LV

CHEMICAL FAMILY: Modified aliphatic amine

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Modified aliphatic amine	100		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	240°F	SPECIFIC GRAVITY (H_2O=1)	1.00 - 1.03
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: mobile liquid - pink to amber

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
250°F C. O. C.			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: no special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		heating to decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic fumes of nitrogen oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wash with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes by means of oven vents, if oven curing

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Catalyst 50

CHEMICAL FAMILY: Organo Tin Complex

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Metallic Tin Salt			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	250°	SPECIFIC GRAVITY (H_2O=1)	1.2
VAPOR PRESSURE (mm Hg.)	< 10	PRECENT VOLATILE BY VOLUME (%)	40
VAPOR DENSITY (AIR = 1)	5	EVAPORATION RATE (_____ = 1)	20
SOLUBILITY IN WATER	Neg.		

APPEARANCE AND ODOR: Yellow liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
115°F (T.O.C.)		1.4	11.2

EXTINGUISHING MEDIA: CO_2, Dry Chemicals, Water

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: Toxic Fumes of Hydrogen Chloride formed on combustion

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Unknown

EFFECTS OF OVEREXPOSURE

Irritating to eyes and skin on contact. Vapors somewhat irritating.

EMERGENCY AND FIRST AID PROCEDURES

Eyes - Wash well with water. If irritation should persist, seek medical aid.

Skin - Wash well with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong acids. Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic fumes of Hydrochloric acid

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb promptly with paper towels or rags. Remove last traces with a nonflammable solvent

WASTE DISPOSAL METHOD

Burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Safety goggles if there is a chance of splashing

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store away from heat and open flame in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Catalyst 15

CHEMICAL FAMILY: Polyamide

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	trace		BASE METAL		
CATALYST Polyamide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	.91
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Black syrup

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
354 °F T. O. C.			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

- Mildly irritating to skin and eyes with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Skin - wash with soap and water

Eyes - wash with water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic fumes of nitrogen oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in unopened containers below 80°F

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.	EMERGENCY PHONE NO.: 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021	
CHEMICAL NAME AND SYNONYMS:	TRADE NAME AND SYNONYMS: Eccofoam VIP - Part B
CHEMICAL FAMILY: Polylol	FORMULA: Proprietary
FEDERAL STOCK NUMBER (FSN):	GROSS WEIGHT (LBS): / OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS Polylol			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Organic Filler			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	313°C	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Neg.		

APPEARANCE AND ODOR: White viscous liquid (Light in Weight)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): 445°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

CO, Aldehydes, Acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent, then wash with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION		
	LOCAL EXHAUST Yes if heat curing	SPECIAL
	MECHANICAL *(General)* To maintain TLV - if heat curing	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Safety Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in closed containers

OTHER PRECAUTIONS

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccofoam VIP - Part A

CHEMICAL FAMILY: Polyurethane Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Diisocyanate		.02	OTHERS		
OTHERS Polyurethane Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.06
VAPOR PRESSURE (mm Hg.)	.01	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	6	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Light Amber Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

.02

EFFECTS OF OVEREXPOSURE

Irritating to skin and eyes

Prolonged inhalation of vapors may be injurious to lungs

EMERGENCY AND FIRST AID PROCEDURES

Skin - Wash well with soap and water

Eyes - Wash with water , then seek medical attention

After prolonged inhalation - Bring to Fresh air and seek medical attention

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Water, Alcohols, Strong Bases, Metallic Catalysts

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	Contact with compounds containing active "H" may cause uncontrdlable polymerization of the isocyanate
	WILL NOT OCCUR		

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb in sawdust and treat with isopropyl alcohol - ammonia solution in an open container

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Canister Mask

VENTILATION		
	LOCAL EXHAUST	~~XXXXXX~~
	MECHANICAL *(General)*	~~XXXX~~

Mix Resin and Catalyst under a hood or in a well ventilated area if heat curing if necessary to keep under TLV

PROTECTIVE GLOVES	EYE PROTECTION
Rubber	Safety Goggles

OTHER PROTECTIVE EQUIPMENT

Safety showers and eye-wash stations

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in tightly closed containers and protect from moisture at temperatures between 50°F and 90°F

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccofoam EFF-14

CHEMICAL FAMILY: Epoxy Resin & Amine Hardner

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Mod. Aromatic Amine			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES ~~Light Wt.~~ Inorganic Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	0.22
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Pale Yellow Free-Flowing Fine Powder

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
440°F			

EXTINGUISHING MEDIA: CO_2 Foam, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin and eyes on extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water - skin. Wash eyes with water and seek medical aid

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Acids, Aldehydes, nitrogen oxide fumes

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Safety goggles

OTHER PROTECTIVE EQUIPMENT

Use vented oven when curing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.	EMERGENCY PHONE NO.: 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021	
CHEMICAL NAME AND SYNONYMS:	TRADE NAME AND SYNONYMS: Eccofoam FPH-FR
CHEMICAL FAMILY: Urethane Foam Prepolymer	FORMULA: Proprietary
FEDERAL STOCK NUMBER (FSN):	GROSS WEIGHT (LBS): / OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Polyurethane Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Toluene Diisocyanate	25-30	0.02

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	484	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)	.01	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	6	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Pink Liquid; Pungent Odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
270°F (T.O.C.)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

Irritating to skin and eyes. Prolonged inhalation of vapors may be injurious to lungs

EMERGENCY AND FIRST AID PROCEDURES

Skin - Wash well with soap and water

Eyes - Wash with water; then get medical attention

After prolonged inhalation - bring to fresh air and get medical attention

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Water, alcohols, strong bases, metallic catalysts

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	Contact with compounds containing active "H" may cause uncontrolable polymerization of the isocyanate
	WILL NOT OCCUR		

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb in sawdust and treat ~~with isopropyl alcohol~~ - ammonia solution in an open container

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Canister Mask

VENTILATION		
	LOCAL EXHAUST: Mix resin and catalyst under a fume hood or in a well ventilated area	SPECIAL
	MECHANICAL *(General)*: If necessary to keep under TLV	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

Safety showers and eye wash stations

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Must be stored in tightly closed containers and protected from moisture.

Store at temperatures between 50°F and 90°F

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Eccofoam FPH
CHEMICAL FAMILY	Urethane Foam Prepolymer
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Polyurethane Resin	100				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Toluene Diisocyanate	25-30	0.02 PPM

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	484	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)	.01	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	6	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Pink Liquid; Pungent Odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
270°F (T. O. C.)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

.02 PPM

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

Irritating to skin and eyes. Prolonged inhalation of vapors may be injurious to lungs

EMERGENCY AND FIRST AID PROCEDURES

Skin - Wash well with soap and water

Eyes - Wash with water; then get medical attention

After prolonged inhalation - bring to fresh air and get medical attention

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Water, alcohols, strong bases, metallic catalysts

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	Contact with compounds containing active "H" may cause uncontrolable polymerization of the isocyanate
	WILL NOT OCCUR		

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb in sawdust and treat ~~with isopropyl alcohol~~ - ammonia solution in an open container

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Canister Mask

VENTILATION		
	LOCAL EXHAUST: Mix resin and catalyst under a fume hood or in a well ventilated area	SPECIAL
	MECHANICAL *(General)*: If necessary to keep under TLV	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

Safety showers and eye wash stations

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Must be stored in tightly closed containers and protected from moisture.

Store at temperatures between 50°F and 90°F

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccofoam FPF

CHEMICAL FAMILY: Urethane Foam Prepolymer

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Polyurethane Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Toluene Diisocyanate	25-30	0.02

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	484	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)	.01	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	6	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Pink Liquid; Pungent Odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
270°F (T.O.C.)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

.02

EFFECTS OF OVEREXPOSURE

Irritating to skin and eyes. Prolonged inhalation of vapors may be injurious to lungs

EMERGENCY AND FIRST AID PROCEDURES

Skin - Wash well with soap and water

Eyes - Wash with water; then get medical attention

After prolonged inhalation - bring to fresh air and get medical attention

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Water, alcohols, strong bases, metallic catalysts

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	Contact with compounds containing active "H" may cause uncontrolable polymerization of the isocyanate
	WILL NOT OCCUR		

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb in sawdust and treat ~~with isopropyl alcohol~~ - ammonia solution in an open container

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Canister Mask

VENTILATION		
	LOCAL EXHAUST: Mix resin and catalyst under a fume hood or in a well ventilated area	SPECIAL
	MECHANICAL *(General)*: If necessary to keep under TLV	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

Safety showers and eye wash stations

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Must be stored in tightly closed containers and protected from moisture.

Store at temperatures between 50°F and 90°F

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.	EMERGENCY PHONE NO.: 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021	
CHEMICAL NAME AND SYNONYMS:	TRADE NAME AND SYNONYMS: Eccofoam FP
CHEMICAL FAMILY: Urethane Foam Prepolymer	FORMULA: Proprietary
FEDERAL STOCK NUMBER (FSN):	GROSS WEIGHT (LBS): / OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Polyurethane Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Toluene Diisocyanate	25-30	0.02

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	484	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)	.01	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	6	EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Pink Liquid; Pungent Odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
270°F (T.O.C.)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

Irritating to skin and eyes. Prolonged inhalation of vapors may be injurious to lungs

EMERGENCY AND FIRST AID PROCEDURES

Skin - Wash well with soap and water

Eyes - Wash with water; then get medical attention

After prolonged inhalation - bring to fresh air and get medical attention

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Water, alcohols, strong bases, metallic catalysts

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	Contact with compounds containing active "H" may cause uncontrolable polymerization of the isocyanate
	WILL NOT OCCUR		

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb in sawdust and treat ~~with isopropyl alcohol~~ ammonia solution in an open container

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Canister Mask

VENTILATION		
	LOCAL EXHAUST: Mix resin and catalyst under a fume hood or in a well ventilated area	SPECIAL
	MECHANICAL *(General)*: If necessary to keep under TLV	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

Safety showers and eye wash stations

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Must be stored in tightly closed containers and protected from moisture.

Store at temperatures between 50°F and 90°F

OTHER PRECAUTIONS

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccosil 4553

CHEMICAL FAMILY: Organopolysiloxane

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Silicone Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.6
VAPOR PRESSURE (mm Hg.)	1	PRECENT VOLATILE BY VOLUME (%)	NEG
VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	NIL
SOLUBILITY IN WATER	Neg.		

APPEARANCE AND ODOR: White Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
400°F (C. O. C.)			

EXTINGUISHING MEDIA: Water Spray, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: Water may cause Frothing

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

Slight or none on normal contact

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

None Required

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Scoop up gross quantities. Cover with a dry powder; Brush in; and sweep up.

Remove remaining dust or powder with a sawdust-type sweeping compound

WASTE DISPOSAL METHOD

Incineration

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

None

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
None	None

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.	EMERGENCY PHONE NO.: 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021	
CHEMICAL NAME AND SYNONYMS:	TRADE NAME AND SYNONYMS: Eccosil 4966
CHEMICAL FAMILY: Organopolysiloxane	FORMULA: Proprietary
FEDERAL STOCK NUMBER (FSN):	GROSS WEIGHT (LBS): / OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Silicone Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	~~1.7~~ 1.5
VAPOR PRESSURE (mm Hg.)	1	PRECENT VOLATILE BY VOLUME (%)	NEG
VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	NIL
SOLUBILITY IN WATER	Neg.		

APPEARANCE AND ODOR: Red Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
400°F (C. O. C.)			

EXTINGUISHING MEDIA: Water Spray, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: Water may cause Frothing

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

Slight or none on normal contact

EMERGENCY AND FIRST AID PROCEDURES

None Required

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Scoop up gross quantities. Cover with a dry powder; Brush in; and sweep up.

Remove remaining dust or powder with a sawdust-type sweeping compound

WASTE DISPOSAL METHOD

Incineration

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

None

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
None	None

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccosil 4952

CHEMICAL FAMILY: Poly Dimethyl Siloxane

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Silicone					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Contains no hazardous ingredients		

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	N.A.	SPECIFIC GRAVITY (H_2O=1)	2.28
VAPOR PRESSURE (mm Hg.)	Low	PRECENT VOLATILE BY VOLUME (%)	Less than 1%
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Negligible		

APPEARANCE AND ODOR: Red Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
Greater than 400°F		NA	NA

EXTINGUISHING MEDIA: All standard fire fighting agents are OK

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

No known Health Hazard

EFFECTS OF OVEREXPOSURE

N. A.

EMERGENCY AND FIRST AID PROCEDURES

Eye contact may cause slight irritation. Flush eyes with water. If irritation should persist, seek medical aid

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

None

HAZARDOUS DECOMPOSITION PRODUCTS

CO_2 S_2O_2

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

None

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

None required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER
	N. A.	

PROTECTIVE GLOVES	EYE PROTECTION
None required	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature (between freezing and 80°F)

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.	EMERGENCY PHONE NO.: 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021	
CHEMICAL NAME AND SYNONYMS:	TRADE NAME AND SYNONYMS: Eccosil 4850
CHEMICAL FAMILY: Organopolysiloxane	FORMULA: Proprietary
FEDERAL STOCK NUMBER (FSN):	GROSS WEIGHT (LBS): / OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Silicone Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.7
VAPOR PRESSURE (mm Hg.)	1	PRECENT VOLATILE BY VOLUME (%)	NEG
VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	NIL
SOLUBILITY IN WATER	Neg.		

APPEARANCE AND ODOR: White Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
400°F (C. O. C.)			

EXTINGUISHING MEDIA: Water Spray, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: Water may cause Frothing

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

Slight or none on normal contact

EMERGENCY AND FIRST AID PROCEDURES

None Required

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY (*Materials to avoid*)

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Scoop up gross quantities. Cover with a dry powder; Brush in; and sweep up.

Remove remaining dust or powder with a sawdust-type sweeping compound

WASTE DISPOSAL METHOD

Incineration

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (*Specify type*)

None

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (*General*)	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
None	None

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Eccosil 4640
CHEMICAL FAMILY	Organopolysiloxane
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL	
FLAMMABILITY	
HEALTH	
REACTIVITY	
SPECIFIC HAZARD	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Silicone Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	0.75
VAPOR PRESSURE (mm Hg.)	1	PRECENT VOLATILE BY VOLUME (%)	Neg.
VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	Nil
SOLUBILITY IN WATER	Neg		

APPEARANCE AND ODOR: White Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	400°F (C. O. C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT / UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA: Water Spray, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: Water May cause frothing

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Slight or none on normal contact

EMERGENCY AND FIRST AID PROCEDURES

None required

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Scoop up gross quantities. Cover with a dry powder; brush in and sweep up.
Remove remaining dust or powder with a sawdust-type sweeping compound

WASTE DISPOSAL METHOD

Incineration

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

None

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
None	None

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS: Room Temp. Vulcanizing Silicone Rubber

TRADE NAME AND SYNONYMS: Eccosil 1776

CHEMICAL FAMILY:

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Eccosil 1776 contains no hazardous ingredients		

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	NA	SPECIFIC GRAVITY (H_2O=1)	1.1
VAPOR PRESSURE (mm Hg.)	NA	PRECENT VOLATILE BY VOLUME (%)	NA
VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	NA
SOLUBILITY IN WATER	Negligable		

APPEARANCE AND ODOR: Translucent (colorless) Paste-Acetic acid, Odor may be present

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
NA			

EXTINGUISHING MEDIA: All standard firefighting agents are suitable

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Eye contact - May cause some irritation

EMERGENCY AND FIRST AID PROCEDURES

Flush eyes with water for 15 minutes; then have eye examined by a physician.

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY (*Materials to avoid*)

HAZARDOUS DECOMPOSITION PRODUCTS

Temps. above 400°F may produce CO_2 and SiO_2

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

No special precaution necessary

WASTE DISPOSAL METHOD

No special method

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (*Specify type*)

None - Unless normal ventilation is inadequate

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL (*General*)	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
	Safety Glasses

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Minor concentrations of acetic acid vapor may be produced, only during applic. of and curing period for 1776. Adequate ventilation needed when applied in a confined area.

OTHER PRECAUTIONS

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Eccosil 2CN
CHEMICAL FAMILY	Organopolysiloxane
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Silicone Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	0.99
VAPOR PRESSURE (mm Hg.)	1	PRECENT VOLATILE BY VOLUME (%)	Neg.
VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	Nil
SOLUBILITY IN WATER	Neg		

APPEARANCE AND ODOR
Clear, Slightly Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
400°F (C. O. C.)			

EXTINGUISHING MEDIA
Water Spray, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES
Water May cause frothing

UNUSUAL FIRE AND EXPLOSION HAZARDS
None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Slight or none on normal contact

EMERGENCY AND FIRST AID PROCEDURES

None required

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Scoop up gross quantities. Cover with a dry powder; brush in and sweep up.
Remove remaining dust or powder with a sawdust type sweeping compound

WASTE DISPOSAL METHOD

Incineration

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

None

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
None	None

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS: Epoxy Resin

TRADE NAME AND SYNONYMS: Eccomold L28

CHEMICAL FAMILY: Epichlor Hydrin - Bisphenol A

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	580 +	SPECIFIC GRAVITY (H_2O=1)	1.16
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	.3% Max
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Insul		

APPEARANCE AND ODOR: Translucent red viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
235°C T.C.C.		NA	NA

EXTINGUISHING MEDIA: CO_2 Dry Chemicals, Foam

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin and eyes on extended contact

EMERGENCY AND FIRST AID PROCEDURES

Skin - Wash with soap and water

Eyes - Wash several times with water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO_2, Aldehydes, Acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only while heating with curing agent	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place

Keep containers tightly closed

OTHER PRECAUTIONS

Carry out fumes (while heating with curing agent) in vented oven

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS: Bis-phenol/Epichlor Hydrin Resin

TRADE NAME AND SYNONYMS: Eccobond 51

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.5
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Black Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
Coc 480°F			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Primary skin irritation on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Remove from skin with water or waterless skin cleaner

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO_2, Aldehydes, Acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean with a cloth with solvents; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers.

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS: Epichlorohydrin/Bisphenol A-Type

TRADE NAME AND SYNONYMS: Eccobond 24

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.2
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Clear viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F COC			

EXTINGUISHING MEDIA: Water, spray, Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: No. Special procedures - Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

None Established

EFFECTS OF OVEREXPOSURE

Primary irritation of skin on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap or water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO_2, Aldehydes, Acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 26 - Part A

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A		BASE METAL		
CATALYST Phosphite			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.4
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Off white Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
± 480°F (C. O. C.)			

EXTINGUISHING MEDIA: Water, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: No special procedure

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

None established

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin on extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, Aldehydes, Acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent, then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place. Keep caps on tubes tightly closed

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (*Federal Supply Code for Manufacturers*): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (*Number, Street, City, State, and ZIP Code*): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 26 - Part B

CHEMICAL FAMILY: Mod. Aliphatic Amido-Amine

FORMULA: Proprietary

FEDERAL STOCK NUMBER (*FSN*):

GROSS WEIGHT (*LBS*):

OUTSIDE PACKAGE DIMENSIONS (*Inches*):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (*Units*)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (*Units*)
PIGMENTS			BASE METAL		
CATALYST Mod. Aliph. Amido-Amine			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (*Units*)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.4
VAPOR PRESSURE (*mm Hg.*)	Nil	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (*AIR = 1*)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Off-white paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (*Method used*)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
460°F (C. O. C.)			

EXTINGUISHING MEDIA: Water, CO_2, Dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: No special procedure

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin on extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Nitrogen oxide fumes

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place. Keep caps on tubes tightly closed

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 55

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.2
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0.3% Max
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	nil		

APPEARANCE AND ODOR: viscous liquid - milky haze

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F		NA	NA

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: no special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

none established

EFFECTS OF OVEREXPOSURE

Primary irritation of skin on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Mass. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Eccobond 45
CHEMICAL FAMILY	Epoxy Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL	FLAMMABILITY____ HEALTH____ REACTIVITY____ SPECIFIC HAZARD____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	trace		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	460°F	SPECIFIC GRAVITY (H_2O=1)	1.4
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Black viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	465°F (Tag open cup)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT / UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin and eyes

EMERGENCY AND FIRST AID PROCEDURES

Skin - wash with soap and water

Eyes - Wash with water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, Acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII • SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 45-Clear

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	460°F	SPECIFIC GRAVITY (H_2O=1)	1.2
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Clear viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
465°F (Tag open cup)			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin and eyes

EMERGENCY AND FIRST AID PROCEDURES

Skin - wash with soap and water

Eyes - wash with water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place

OTHER PRECAUTIONS

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 45LV

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	Trace		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.2
VAPOR PRESSURE (mm Hg.)	Low	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Black viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
465°F (T. O. C.)			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Primary irritation of skin on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, Aldehydes, Acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if Heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Solder 56C

CHEMICAL FAMILY: Epoxy Adhesive

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Metallic Filler Silver			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	460°F	SPECIFIC GRAVITY (H_2O=1)	3.45
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Silver Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
High			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

Controlled Burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

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Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Solder 57C (Part A)

CHEMICAL FAMILY: Epoxy Adhesive

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Metallic Filler (Silver)			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Silver Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V — HEALTH HAZARD DA

EXPOSURE

Mildly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI — REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide Aldehydes, Acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	X	SPECIAL
	MECHANICAL *(General)*		OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.,
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Eccobond Solder 57C (Part B)
CHEMICAL FAMILY	Polyamide
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY_____ HEALTH_____ REACTIVITY_____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Polyamide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Metallic Filler (Silver)			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	.91
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR
Silver Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
470°F (Tag open cup)			

EXTINGUISHING MEDIA
Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES
None - Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS
None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin and eyes with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Skin – wash with soap and water

Eyes – wash with water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic fumes of nitrogen oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII • SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	-
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in unopened containers below 80°F

OTHER PRECAUTIONS

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Solder 58C

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Non Polymeric Amide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Silver Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	3.8
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Silver Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F COC			

EXTINGUISHING MEDIA: Water, CO_2 Foam, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO Aldehydes, Acids, NH_3

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent, then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing in vented ovens

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MATERIAL SAFETY DATA SHEET

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Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.	EMERGENCY PHONE NO.: 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021	
CHEMICAL NAME AND SYNONYMS:	TRADE NAME AND SYNONYMS: Eccobond Solder 59C
CHEMICAL FAMILY: Organopolysiloxane	FORMULA: Proprietary
FEDERAL STOCK NUMBER (FSN):	GROSS WEIGHT (LBS): / OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS Toluene		200 PPM	FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Silver Filler			OTHERS		
OTHERS Silicone Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Solvent		

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	230	SPECIFIC GRAVITY (H_2O=1)	0.866
VAPOR PRESSURE (mm Hg) At 30°C	36.7	PRECENT VOLATILE BY VOLUME (%)	60
VAPOR DENSITY (AIR = 1)	3.14	EVAPORATION RATE (_____ = 1)	1.9
SOLUBILITY IN WATER	Neg.		

APPEARANCE AND ODOR: Silver Liquid — Aromatic odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): 40°F (CC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT: 1.27	UPPER EXPLOSIVE LIMIT: 7

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals, Water, Fog

SPECIAL FIRE FIGHTING PROCEDURES: Wear Goggles and a self-contained breathing apparatus when exposed to fumes. Vapors are heavier than air and may travel a considerable distance to a source of ignition and Flash Back.

UNUSUAL FIRE AND EXPLOSION HAZARDS: ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXX~~

SECTION V — HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

(Solvent) 200 PPM

EFFECTS OF OVEREXPOSURE

Narcosis, Headache, Nausea, irritation of skin and mucous membranes;
Possible eye burns due to toluene solvent

EMERGENCY AND FIRST AID PROCEDURES

Inhalation- Remove to fresh air. Use oxygen if indicated
Skin- Wash with soap and water
Eyes- Flush with water for 15 minutes. Call physician

SECTION VI — REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heat and open flame
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

CO, CO_2, Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Avoid ignition sources.
Avoid breathing vapors. Dam and absorb on inert material such as sand.
Place in containers.

WASTE DISPOSAL METHOD

Land fill according to Federal, State and Local regulations

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Self-contained breathing apparatus if exposed to fumes

VENTILATION	LOCAL EXHAUST	SPECIAL
	Adequate to keep below TLV & LEL	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Impervious Gloves	Splash Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep between 50°F and 100°F in closed containers, away from open flame

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

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SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Solder 66C

CHEMICAL FAMILY: Epoxy Adhesive

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Metallic Filler Silver			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	460°F	SPECIFIC GRAVITY (H_2O=1)	3.45
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Silver Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
High			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

Controlled Burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

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SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Solder 68C

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Non Polymeric Amide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Silver Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	3.8
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Silver Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F COC			

EXTINGUISHING MEDIA: Water, CO_2 Foam, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO Aldehydes, Acids, NH_3

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent, then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing in vented ovens

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SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Conductive Adhesive 60L Part A

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Carbon			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	> 580°	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Black Paste with Silvery Particles

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA: CO_2 Foam, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

None Established

EFFECTS OF OVEREXPOSURE

Primary irritation of skin on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, Aldehydes, Acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then wash with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

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SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

wash w th soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong ox dizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids, nitrogen oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then w th soap and water

WASTE DISPOSAL METHOD

controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in closed containers below 80°F

OTHER PRECAUTIONS

Carry out fumes when curing in vented oven

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 145

CHEMICAL FAMILY: Epoxy Resin and Non polymeric amide curing agent

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST Non Polymeric amide	2-10		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler-Silicate	55-60		OTHERS		
OTHERS Epoxy Resin	35-40				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)	Neg	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Neg		

APPEARANCE AND ODOR: Black thixotropic paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
460° F (COC)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

ANSI Class-2

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Produces a mild Lachrymatory and irritant effect on the mucous membranes of the nose and eyes

EMERGENCY AND FIRST AID PROCEDURES

Eyes - Flush immediately with water. Because of the rapid polynerization contact could result in firm adherence of the lids and irritation of eyes and cornea. Seek medical aid. Skin-wash immediately with water as material will adhere to skin and vigorous attempts to remove it by mechanical means can result in skin injury.

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with N, N-Dimethylformamide

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	-
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Safety Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep containers tightly closed

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS: Methyl 2 Cyanoacrylate

TRADE NAME AND SYNONYMS: Eastman 910

CHEMICAL FAMILY: Cyanoacrylate

FORMULA:

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE Thickening Agent Plasticizer Stabilizer	10		METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Cyanoacrylate	90				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	48 - 49°C	SPECIFIC GRAVITY (H_2O=1)	1.0959
VAPOR PRESSURE (mm Hg.)	2.2	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Cloudy colorless liquid with pungent odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
180°F COC			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

100 ppm

EFFECTS OF OVEREXPOSURE

Prolonged inhalation may cause headache and drowsiness. Narcosis and anesthesia may occur.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - Remove from area, apply artificial respiration. Call physician

Contact with eyes - Flush well with water, call physician

Ingestion - Induce vomiting, call physician

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE	<100°F	Excessive heat
	STABLE	<100°F	

INCOMPATABILITY *(Materials to avoid)*

Polymerizable materials

HAZARDOUS DECOMPOSITION PRODUCTS

Chlorine gas if exposed to high temperatures

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		Polymerizable materials
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with paper towel or clean cloth.

WASTE DISPOSAL METHOD

Dispose with solvents (excluding polymerizable monomers)

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Face mask for continuous exposure to vapors

VENTILATION	LOCAL EXHAUST	SPECIAL
	Positive fresh air exhause desirable	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves desirable	desirable

OTHER PROTECTIVE EQUIPMENT

None

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at temperature below 100°F. Do not store in steel containers, use glass or aluminum

OTHER PRECAUTIONS

None

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 300 (Part B)

CHEMICAL FAMILY:

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches): -

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Peroxide Organic			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS MCL, TCE MIBK			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Film former			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	106°F (MCL)	SPECIFIC GRAVITY (H_2O=1)	1.32 (MCL)
VAPOR PRESSURE (mm Hg.)	N/A	PRECENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR = 1)	N/A	EVAPORATION RATE (_____ = 1)	N/A
SOLUBILITY IN WATER	N/A		N/A

APPEARANCE AND ODOR: Clear liquid in appearance. Odor predominately chlorinated solvent

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
None		None	

EXTINGUISHING MEDIA: Carbondioxide, dry chemicals, foam

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Monomer. 100 ppm

EFFECTS OF OVEREXPOSURE

Irritating when prolonged inhalation occurs - causes eyes to water

EMERGENCY AND FIRST AID PROCEDURES

Eye irritation - flush thoroughly with water

If swallowed - induce vomiting with heavy doses of salt water or soapy water.

Call physician immediately

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Temperatures greater than 100° F
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

None

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		Temperature greater than 100° F -
	WILL NOT OCCUR	X	Direct sunlight

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Lift as much material as possible, clean remainder with solvent. Chlorinated solvents recommended due to non-flammability

WASTE DISPOSAL METHOD

Remove with solid waste materials - avoid mixing with oxidizing agents.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Face mask (vapor & partical type) for continuous exposure

VENTILATION	LOCAL EXHAUST	SPECIAL
Yes	Forced air best	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Desirable if using large amounts	Yes

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in cool, dry spot. Avoid temperatures greater than 100° F

OTHER PRECAUTIONS

Read label and product literature prior to working with material

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 300 (Part A)

CHEMICAL FAMILY: Acrylic Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Reactive Monomers	<40	
Polyacrylates	<40	

SECTION III PHYSICAL DATA

BOILING POINT (°F.) Monomer	200°F	SPECIFIC GRAVITY (H_2O=1)	1.03
VAPOR PRESSURE (mm Hg.)	N/A	PRECENT VOLATILE BY VOLUME (%)	40%
VAPOR DENSITY (AIR = 1) Heavier than air		EVAPORATION RATE (_____ = 1)	N/A
SOLUBILITY IN WATER Negligible			

APPEARANCE AND ODOR: Syrup consistency - acrylic monomer odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
Seta Flash Closed Cup 56°F		Monomer	

EXTINGUISHING MEDIA: Carbon Dioxide, Dry Chemical, Vapor Liquids or Foam

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin and eyes with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Skin - wash with soap and water

Eyes - Wash with Water

SECTION VI REACTIVITY DATA

STABILITY.			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic fumes of nitrogen oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in unopened containers below 80°F

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.,

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Aluminum Part B

CHEMICAL FAMILY: Polyamide

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Polyamide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Aluminum Powder			OTHERS		
OTHERS Mineral Filler					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.6
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Silvery Grey Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
470°F (TOC)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Primary irritation of skin - on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS: Bisphenol A/epichlor Hydrin type

TRADE NAME AND SYNONYMS: Eccobond Aluminum Part A

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
~~XXXXXX~~ Mineral Filler			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Aluminum Powder			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.6
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	<.2%		

APPEARANCE AND ODOR: Silvery Grey viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None-Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to Decomposition
	STABLE	X	

INCOMPATABILITY (Materials to avoid)

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic fumes of Nitrogen oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wash with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

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VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 286 - Part B

CHEMICAL FAMILY: Mod. Aliphatic Amine

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Mod. Aliphatic Amine			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Mineral Filler					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	± 310	SPECIFIC GRAVITY (H_2O=1)	1.07
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Off-white paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
327°F COC			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

None Established

EFFECTS OF OVEREXPOSURE

Primary irritation of skin - on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then wash with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

Store at room temperature in closed containers

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 286-Part A

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Epoxy Resin			OTHERS		
OTHERS Mineral Filler					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.2
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Off-white paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F COC			

EXTINGUISHING MEDIA: Water Spray, Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None-Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Irritating to skin and eyes

EMERGENCY AND FIRST AID PROCEDURES

skin - wash with soap and water

eyes - wash with water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Acids, Aldehydes, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Sweep up; then wash with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 104 Part B

CHEMICAL FAMILY: Anhydride

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Anhydride			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: White finely-divided powder

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA:

SPECIAL FIRE FIGHTING PROCEDURES: Foam, CO_2, dry chemicals

UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to Decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

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SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to Decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

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Solvent

SECTION V — HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

200 PPM

EFFECTS OF OVEREXPOSURE

Irritating to eyes and mucous membranes. Narcotic in high concentrations

EMERGENCY AND FIRST AID PROCEDURES

Eyes- Wash with water

Inhalation- Remove to fresh air and seek medical aid

SECTION VI — REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	Strong oxidizing agents

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

Emits toxic fumes

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with rag; then wash with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Safety Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in tightly closed containers at room temperatures

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Solder V91 (Part B)

CHEMICAL FAMILY: Aliphatic Amine (Mod.)

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN): -

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Modified Aliphatic Amine			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS AN Ether		200 PPM	FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Solvent		

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	150	SPECIFIC GRAVITY (H_2O=1)	0.89
VAPOR PRESSURE (mm Hg.) 15°C	114	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	2.5	EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Clear Mobile Liquid-Ether-Like Odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
1°F (TCC)		2.3%	11.8%

EXTINGUISHING MEDIA: Foam, Dry Chemicals, CO_2. Carbon Tetrachloride

SPECIAL FIRE FIGHTING PROCEDURES: Emits toxic fumes when heated to decomposition

UNUSUAL FIRE AND EXPLOSION HAZARDS: Moderate explosion hazard (as ethers) on exposure to air

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing Agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, Aldehydes, Acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Solder V91)Part A)

CHEMICAL FAMILY: Epoxy Adhesive

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Metallic Filler (Silver)			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	460°F	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Silver Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
High			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Irritating to skin on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Nitrogen oxide fumes, CO, Aldehydes, Acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR		

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wash with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes by means of oven vents; if oven curing

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Solder 72C Part B

CHEMICAL FAMILY: Modified Aliphatic Amine

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Mod. Aliphatic Amine			ALLOYS		
VEHICLE Epoxy Resin			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	± 240°F	SPECIFIC GRAVITY (H_2O=1)	1.00 - 1.03
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Amber viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
± 250°F (COC)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, Acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent then wash with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

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Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Solder 70C

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Polyamide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Silver coated Metallic Filler			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	4.3
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Silvery - Black Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
High			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Slightly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to Decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing Agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes Acids, NH_3

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing in vented ovens

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MATERIAL SAFETY DATA SHEET

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Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 99

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST Non-Polymeric Amide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.3
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Black Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA: Foam, Carbon Monoxide, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None-Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

Toxicity- Not established Carcinogenic - Not indicated

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

See Section II

EFFECTS OF OVEREXPOSURE

Impairment of judgment and coordination due to anesthetic properties of vapors. Exposure to high vapor concentrations may wresult in irritation of the respiratory tract.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation: Remove to fresh air. Contact with skin: Wash with soap and water. Eye Contact: Flush eyes with water for 15 minutes; call a physician.

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

None

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon combustion products, HCl

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Provide adequate ventilation. Scoop bulk of material into container for disposal. Clean up with rags and solvent.

WASTE DISPOSAL METHOD

Allow solvent to evaporate; dispose of solids in landfill.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
To maintain TLV	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Impervious	Goggles or face shield

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid prolonged and repeated breathing of vapor or contact with skin or eyes. Use with adequate ventilation. Keep container closed.

OTHER PRECAUTIONS

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Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 87-H (NF)

CHEMICAL FAMILY: Neoprene/resin solution

FORMULA: *Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)
Methylene chloride	*	500 ppm
1, 1, 1-Trichloroethane	*	350 ppm 1900 mg/m^3
Toluene	*	200 ppm
Chlorobenzene	*	75 ppm 350 mg/m^3
Isopropanol	*	400 ppm 980 mg/m^3

SECTION III PHYSICAL DATA

BOILING POINT (°F.) estimated	40° C (104° F)	SPECIFIC GRAVITY (H_2O=1)	1.24
VAPOR PRESSURE (mm Hg.)	220 mm Hg (est.)	PRECENT VOLATILE BY VOLUME (%) Wt.	85%
VAPOR DENSITY (AIR = 1)	3.4 (estimated)	EVAPORATION RATE (_____ = 1)	NA
SOLUBILITY IN WATER	Insoluble		

APPEARANCE AND ODOR: Yellow solution. Solvent odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
NA			

EXTINGUISHING MEDIA: NA

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Acute Oral LD. -50, 4000 mg/kg

Not a skin sensitizer

EMERGENCY AND FIRST AID PROCEDURES

Skin Contact - Wash with soap and water

Eyes - Flush with water for at least 15 minutes. Get medical attention

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

CO, CO_2, Aldehydes and other organics

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Soak up spills promptly

WASTE DISPOSAL METHOD

Bury or controlled burning

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Approved organic mask

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid unnecessary personal contact

OTHER PRECAUTIONS

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SECTION I

MANUFACTURER'S NAME AND FSCM (*Federal Supply Code for Manufacturers*): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (*Number, Street, City, State, and ZIP Code*): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond PDQ (Part B)

CHEMICAL FAMILY: MOD Lewis Acid

FORMULA: Proprietary

FEDERAL STOCK NUMBER (*FSN*):

GROSS WEIGHT (*LBS*):

OUTSIDE PACKAGE DIMENSIONS (*Inches*):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (*Units*)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (*Units*)
PIGMENTS			BASE METAL		
CATALYST MOD Lewis Acid			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (*Units*)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	1.2
VAPOR PRESSURE (mm Hg.) 20°C	1-2	PRECENT VOLATILE BY VOLUME (%)	<0.1
VAPOR DENSITY (*AIR*=1)	N/A	EVAPORATION RATE (_____ =1)	<1
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Dark Brown Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (*Method used*)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
350°F C.O.C.			

EXTINGUISHING MEDIA: Dry Chemical, CO_2, H_2O

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildy irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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SECTION I

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EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond PDQ Part A

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Thick Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
C. O. C. high (480°F)			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: no special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Primary irritation of skin - on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 276

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.3
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Black viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
± 480°F			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids, nitrogen oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarilly required

VENTILATION	LOCAL EXHAUST	SPECIAL
	while heating	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in closed containers below 80°F

OTHER PRECAUTIONS

Carry out fumes when curing in vented oven

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED; FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 144A

CHEMICAL FAMILY: Epoxy Resin
Polyamide Curing Agent

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST Polyamide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)	Neg	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Neg		

APPEARANCE AND ODOR: Black thixotropic paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
460°F (COC)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None- avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: none

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to Decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.
VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 285

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.3
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	nil		

APPEARANCE AND ODOR: Black Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
C. O. C. 480°F			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: No special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to Decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids, Nitric Oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond 281

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Non-Polymeric Amide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.3
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	nil		

APPEARANCE AND ODOR: Black Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F COC			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: No special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Slightly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, Aldehydes Acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII • SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing in vented ovens

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Paste E

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Black Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA: Foam, Carbon Monoxide, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Slightly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to Decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, Acids, NH_3

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing in vented ovens

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Paste 88 T

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST Non-Polymeric Amide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Black Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA: Foam, Carbon Monoxide, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Slightly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to Decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, Acids, NH_3

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing in vented ovens

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Paste 88

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST Non-Polymeric Amide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Black Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA: Foam, Carbon Monoxide, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Irritating to Skin

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to Decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong Oxidizing Agents

HAZARDOUS DECOMPOSITION PRODUCTS

Toxic Fumes of Nitrogen Oxides

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wash up with soap and water

WASTE DISPOSAL METHOD

Burial or Controlled Burning

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not Ordinarily Required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if Heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

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VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Eccobond Conductive Adhesive 60L Part B

CHEMICAL FAMILY: Modified Aliphatic Amine

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST Modified Aliphatic Amine			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Carbon			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	> 625	SPECIFIC GRAVITY (H_2O=1)	< 1.0
VAPOR PRESSURE (mm Hg.)	< 0.01	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Black Paste

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
325°F (COC)			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 35
CHEMICAL FAMILY	Polystyrene Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY_____ HEALTH_____ REACTIVITY_____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	293	SPECIFIC GRAVITY (H_2O=1)	1.05
VAPOR PRESSURE (mm Hg.) 68° F	4.5	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	3.6	EVAPORATION RATE (Ether =1)	< 1
SOLUBILITY IN WATER 68° F	0.029%		

APPEARANCE AND ODOR

Clear Liquid with aromatic odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
TOC 98° F		1.1	6.1

EXTINGUISHING MEDIA

Dry chemical, water fog, foam or CO_2

SPECIAL FIRE FIGHTING PROCEDURES

Equipment which contains this material should be cooled by water stream

UNUSUAL FIRE AND EXPLOSION HAZARDS

if exposed to fire

SECTION V — HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE 100 ppm Irritation to eyes and respiratory tract normally provides good warning above 400 ppm and systemic injury unlikely unless concentration extremely high (1% can be fatal in 30-60 min.)

EMERGENCY AND FIRST AID PROCEDURES Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation- Lie down and keep warm; O_2 relieves coughing. Eye Contact- Irrigate 15 min. with water. Skin- Wash thoroughly with soap and water

SECTION VI — REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY (Materials to avoid) Alkylation Catalysts (H_2SO_4, H_3PO_4, BF_3, $AlCl_3$) Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)

HAZARDOUS DECOMPOSITION PRODUCTS Acrid fumes on heating

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	Excessive heat will deplete inhibitor runaway polymerization usually requires >150°F
	WILL NOT OCCUR		

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35D may be absorbed by dry earth or equivalent and hauled to a disposal area.

WASTE DISPOSAL METHOD All quantities of Stycast 35D or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Bureau of Mines approved industrial canister gas masks up to 2%. Air or O_2 supplied full face masks above 2%

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER Good natural ventilation normally sufficient

PROTECTIVE GLOVES	EYE PROTECTION
Rubber or insoluble plastic	Chemical safety goggles if eye contact possible

OTHER PROTECTIVE EQUIPMENT Rubber boots and slicker suit if splashing likely

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Storage temp. below 70°F. Do not use copper or copper alloys while using Stycast 35D

OTHER PRECAUTIONS Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestion.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 35D
CHEMICAL FAMILY	Polystyrene Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	293	SPECIFIC GRAVITY (H_2O=1)	1.05
VAPOR PRESSURE (mm Hg.) 68°F	4.5	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	3.6	EVAPORATION RATE (Ether = 1)	< 1
SOLUBILITY IN WATER 68°F	0.029%		

APPEARANCE AND ODOR
Clear Liquid with aromatic odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) TOC 98°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT 1.1	UPPER EXPLOSIVE LIMIT 6.1

EXTINGUISHING MEDIA
Dry chemical, water fog, foam or CO_2

SPECIAL FIRE FIGHTING PROCEDURES
Equipment which contains this material should be cooled by water stream

UNUSUAL FIRE AND EXPLOSION HAZARDS
if exposed to fire

SECTION V — HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE 100 ppm Irritation to eyes and respiratory tract normally provides good warning above 400 ppm and systemic injury unlikely unless concentration extremely high (1% can be fatal in 30-60 min.)

EMERGENCY AND FIRST AID PROCEDURES Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation- Lie down and keep warm; O_2 relieves coughing. Eye Contact- Irrigate 15 min. with water. Skin- Wash thoroughly with soap and water

SECTION VI — REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY (*Materials to avoid*) Alkylation Catalysts (H_2SO_4, H_3PO_4, BF_3, $AlCl_3$) Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)

HAZARDOUS DECOMPOSITION PRODUCTS Acrid fumes on heating

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	Excessive heat will deplete inhibitor runaway polymerization usually requires >150°F
	WILL NOT OCCUR		

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35D may be absorbed by dry earth or equivalent and hauled to a disposal area.

WASTE DISPOSAL METHOD All quantities of Stycast 35D or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (*Specify type*) Bureau of Mines approved industrial canister gas masks up to 2%. Air or O_2 supplied full face masks above 2%

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (*General*)	OTHER Good natural ventilation normally sufficient

PROTECTIVE GLOVES	EYE PROTECTION
Rubber or insoluble plastic	Chemical safety goggles if eye contact possible

OTHER PROTECTIVE EQUIPMENT Rubber boots and slicker suit if splashing likely

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Storage temp. below 70°F. Do not use copper or copper alloys while using Stycast 35D

OTHER PRECAUTIONS Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestion.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	EMERGENCY PHONE NO
Emerson & Cuming, Inc.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	
869 Washington St., Canton, Ma. 02021	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
	Stycast 35DA
CHEMICAL FAMILY	FORMULA
Polystyrene Resin	Proprietary

FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	293	SPECIFIC GRAVITY (H_2O=1)	3.55
VAPOR PRESSURE (mm Hg.) 68° F	4.5	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	3.6	EVAPORATION RATE (Ether =1)	< 1
SOLUBILITY IN WATER 68° F	0.029%		

APPEARANCE AND ODOR

White opaque with aromatic odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
TOC 98° F		1.1	6.1

EXTINGUISHING MEDIA

Dry chemical, water fog, foam or CO_2

SPECIAL FIRE FIGHTING PROCEDURES

Equipment which contains this material should be cooled by water stream

UNUSUAL FIRE AND EXPLOSION HAZARDS

if exposed to fire

SECTION V — HEALTH HAZARD DATA

100 ppm

EFFECTS OF OVEREXPOSURE: Irritation to eyes and respiratory tract normally provides goc warning above 400 ppm and systemic injury unlikely unless concentration extremel high (1% can be fatal in 30-60 min.)

EMERGENCY AND FIRST AID PROCEDURES: Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation- Lie down and keep warm; O_2 relieves coughing. Eye Contact- Irrigate 15 min. with water. Skin- Wash thoroughly with soap and water

SECTION VI — REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY (*Materials to avoid*): Alkylation Catalysts (H_2SO_4, H_3PO_4, BF_3, $AlCl_3$) Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)

HAZARDOUS DECOMPOSITION PRODUCTS: Acrid fumes on heating

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	Excessive heat will deplete inhibitor runaway polymerization usually requires >150°F
	WILL NOT OCCUR		

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35D may be absorbed by dry earth or equivalent and hauled to a disposal area.

WASTE DISPOSAL METHOD: All quantities of Stycast 35D or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (*Specify type*): Bureau of Mines approved industrial canister gas masks up to 2%. Air or O_2 supplied full face masks above 2%

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (*General*)	OTHER: Good natural ventilation normally sufficient

PROTECTIVE GLOVES	EYE PROTECTION
Rubber or insoluble plastic	Chemical safety goggles if eye contact possible

OTHER PROTECTIVE EQUIPMENT: Rubber boots and slicker suit if splashing likely

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Storage temp. below 70°F. Do not use copper or copper alloys while using Stycast 35D

OTHER PRECAUTIONS: Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestion.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 35DT
CHEMICAL FAMILY	Polystyrene Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL	
FLAMMABILITY ____ HEALTH ____ REACTIVITY ____ SPECIFIC HAZARD ____	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	293	SPECIFIC GRAVITY (H_2O=1)	1.5
VAPOR PRESSURE (mm Hg.) 68°F	4.5	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	3.6	EVAPORATION RATE (Ether =1)	< 1
SOLUBILITY IN WATER 68°F	0.029%		

APPEARANCE AND ODOR
White Opaque [illegible] with aromatic odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
TOC 98°F		1.1	6.1

EXTINGUISHING MEDIA
Dry chemical, water fog, foam or CO_2

SPECIAL FIRE FIGHTING PROCEDURES
Equipment which contains this material should be cooled by water stream

~~UNUSUAL FIRE AND EXPLOSION HAZARDS~~
if exposed to fire

100 ppm

SECTION V — HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: Irritation to eyes and respiratory tract normally provides goo warning above 400 ppm and systemic injury unlikely unless concentration extremel high (1% can be fatal in 30-60 min.)

EMERGENCY AND FIRST AID PROCEDURES: Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation- Lie down and keep warm; O_2 relieves coughing. Eye Contact- Irrigate 15 min. with water. Skin- Wash thoroughly with soap and water

SECTION VI — REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY (*Materials to avoid*): Alkylation Catalysts (H_2SO_4, H_3PO_4, BF_3, $AlCl_3$) Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)

HAZARDOUS DECOMPOSITION PRODUCTS: Acrid fumes on heating

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	Excessive heat will deplete inhibitor runaway polymerization usually requires >150°F
	WILL NOT OCCUR		

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35D may be absorbed by dry earth or equivalent and hauled to a disposal area.

WASTE DISPOSAL METHOD: All quantities of Stycast 35D or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (*Specify type*): Bureau of Mines approved industrial canister gas masks up to 2%. Air or O_2 supplied full face masks above 2%

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (*General*)	OTHER Good natural ventilation normally sufficient

PROTECTIVE GLOVES	EYE PROTECTION
Rubber or insoluble plastic	Chemical safety goggles if eye contact possible

OTHER PROTECTIVE EQUIPMENT: Rubber boots and slicker suit if splashing likely

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Storage temp. below 70°F. Do not use copper or copper alloys while using Stycast 35D

OTHER PRECAUTIONS: Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestior

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MATERIAL SAFETY DATA SHEET

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SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 35DS

CHEMICAL FAMILY: Polystyrene Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Silica Microballoons			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	293	SPECIFIC GRAVITY (H_2O=1)	0.7
VAPOR PRESSURE (mm Hg.) 68° F	4.5	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	3.6	EVAPORATION RATE (Ether =1)	< 1
SOLUBILITY IN WATER 68° F	0.029%		

APPEARANCE AND ODOR: White opaquewith an aromatic odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
TOC 98° F		1.1	6.1

EXTINGUISHING MEDIA: Dry chemical, Water fog, Foam or CO_2

SPECIAL FIRE FIGHTING PROCEDURES: Equipment which contains this material should be cooled by water stream if exposed to fire

UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE Irritation to eyes and respiratory tract normally provides good warning above 400 ppm and systemic injury unlikely unless concentration extremely high (1% can be fatal in 30-60 min.)

EMERGENCY AND FIRST AID PROCEDURES Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation: Lie down and keep warm; O_2 relieves coughing. Eye contact: Irrigate 15 min. with water. Skin: Wash thoroughly with soap and water.

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)* Alkylation Catalysts (H_2SO_4, BF_3, $AlCl_3$), Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)

HAZARDOUS DECOMPOSITION PRODUCTS Acrid fumes on heating

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	Excessive heat will deplete inhibitor runaway polymerization usually requires >150°F)
	WILL NOT OCCUR		

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35DS may be absorbed by dry earth or equivalent and hauled to a disposal area.

WASTE DISPOSAL METHOD All quantities of Stycast 35DS or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* Bureau of Mines approved industrial canister gas masks upto 2%. Air or O_2 supplied full face masks above 2%

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER Good natural ventilation normally sufficient

PROTECTIVE GLOVES Rubber or insoluble plastic

EYE PROTECTION Chemical safety goggles if eye contact pos

OTHER PROTECTIVE EQUIPMENT Rubber boots and slicker suit if splashing likely.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Storage temp. below 70°F. Do not use copper or copper alloys while using Stycast 35DS

OTHER PRECAUTIONS Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestion.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED; FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 35PE
CHEMICAL FAMILY	Polystyrene Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	293	SPECIFIC GRAVITY (H_2O=1)	1.0
VAPOR PRESSURE (mm Hg.) 68° F	4.5	PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	3.6	EVAPORATION RATE (Ether =1)	< 1
SOLUBILITY IN WATER 68° F	0.029%		

APPEARANCE AND ODOR

White Opaque - Liquid with aromatic odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
TOC 98° F		1.1	6.1

EXTINGUISHING MEDIA

Dry chemical, water fog, foam or CO_2

SPECIAL FIRE FIGHTING PROCEDURES

Equipment which contains this material should be cooled by water stream

~~UNUSUAL FIRE AND EXPLOSION HAZARDS~~

if exposed to fire

100 ppm

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE Irritation to eyes and respiratory tract normally provides good warning above 400 ppm and systemic injury unlikely unless concentration extremely high (1% can be fatal in 30-60 min.)

EMERGENCY AND FIRST AID PROCEDURES Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation- Lie down and keep warm; O_2 relieves coughing. Eye Contact- Irrigate 15 min. with water. Skin- Wash thoroughly with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY (*Materials to avoid*) Alkylation Catalysts (H_2SO_4, H_3PO_4, BF_3, $AlCl_3$) Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)

HAZARDOUS DECOMPOSITION PRODUCTS Acrid fumes on heating

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR	X	Excessive heat will deplete inhibitor runaway polymerization usually requires >150°F
	WILL NOT OCCUR		

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35D may be absorbed by dry earth or equivalent and hauled to a disposal area.

WASTE DISPOSAL METHOD All quantities of Stycast 35D or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (*Specify type*) Bureau of Mines approved industrial canister gas masks up to 2%. Air or O_2 supplied full face masks above 2%

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (*General*)	OTHER Good natural ventilation normally sufficient

PROTECTIVE GLOVES	EYE PROTECTION
Rubber or insoluble plastic	Chemical safety goggles if eye contact possible

OTHER PROTECTIVE EQUIPMENT Rubber boots and slicker suit if splashing likely

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Storage temp. below 70°F. Do not use copper or copper alloys while using Stycast 35D

OTHER PRECAUTIONS Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestion.

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 2762

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Aluminum Hydroxide	70-80		OTHERS		
OTHERS Bisphenol "A" Epichlorhydrin type Epoxy Resin	20-30				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.3
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: thick liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
C. O. C. 480° F			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritat ng to skin and eyes with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldenhydes, Acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	X	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Use a vented oven when curing at elevated tempeatures

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 3020

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.68
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Maroon Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
140°F (COC)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Primary irritation of skin on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, Aldehydes, Acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

Store at room temperature in closed containers

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

Carry out fumes when curing in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast HiK

CHEMICAL FAMILY: Styrene

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	± 2.2
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: White, Hard, Cured Styrene material in Sheet, Rod or Bar Form

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
NA			

EXTINGUISHING MEDIA: CO_2 Foam, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0335

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS: Bisphenol A/epichlor Hydrin type

TRADE NAME AND SYNONYMS: Stycast Aluminum

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Aluminum Powder			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.6
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	<.2%		

APPEARANCE AND ODOR: Silvery Grey viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None-Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Primary irritation of skin - on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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EMERGENCY PHONE
828-3300

...St., Canton, Ma. 02021

...D SYNONYMS	TRADE NAME AND SYNONYMS
	Stycast 3050

SECTI

CHEMICAL FAMILY	FORMULA
Epoxy Resin	Proprietary

FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

...L DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.55
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR
Maroon viscous liquid

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
140° F C.O.C.			

EXTINGUISHING MEDIA
Foam, CO_2, Dry Chemicals

PECIAL FIRE FIGHTING PROCEDURES
None - Avoid breathing smoke

USUAL FIRE AND EXPLOSION HAZARDS
None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

500 PPM

EFFECTS OF OVEREXPOSURE

Primary to moderate irritation of skin on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, Aldehydes, Acids etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes - to maintain TLV	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 2058

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.59
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Black viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
490°F			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Primary irritation of skin - on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide; aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (*Federal Supply Code for Manufacturers*): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (*Number, Street, City, State, and ZIP Code*): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS: Bisphenol A/Epichlor Hydrin Type

TRADE NAME AND SYNONYMS: Stycast 1970

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (*FSN*):

GROSS WEIGHT (*LBS*):

OUTSIDE PACKAGE DIMENSIONS (*Inches*):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (*Units*)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (*Units*)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Inorganic Filler & Silver			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (*Units*)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.9
VAPOR PRESSURE (*mm Hg.*)	NIL	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (*AIR = 1*)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	< .2%		

APPEARANCE AND ODOR: Silvery Grey Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (*Method used*)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

PRimary irritation of skin - on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing Agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, Acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled Burning or Burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 2662
CHEMICAL FAMILY	Epoxy Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral filler			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.5
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	nil		

APPEARANCE AND ODOR: thick liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	COC 480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA: Foam, CO_2 dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: no special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: none

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent then soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 2762

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.3
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Black viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
± 480°F			

EXTINGUISHING MEDIA: Foam, CO_2 dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Primary irritation of skin - on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 2762FT

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.3
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: thick liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
C. O. C. 480°F			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin and eyes with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

controlled burning or burial

SECTION VIII • SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	X	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 2057

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.55
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Black Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
490°F			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Primary irritation of skin - on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide; aldehydes, acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing ; in vented ovens

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

ER'S NAME AND FSCM (Federal Supply Code for Manufacturers): son & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

nber, Street, City, State, and ZIP Code): ashington St.. Canton, Ma. 02021

ME AND SYNONYMS

TRADE NAME AND SYNONYMS: Stycast 2057 FR

MILY: Resin

FORMULA: Proprietary

OCK NUMBER (FSN)

GROSS WEIGHT (LBS)

OUTSIDE PACKAGE DIMENSIONS (Inches)

NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

ITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

RESERVATIVES, SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
			BASE METAL		
			ALLOYS		
oxy Resin			METALLIC COATINGS		
			FILLER METAL PLUS COATING OR CORE FLUX		
Mineral Filler			OTHERS		
ominated Organic osphated Organic					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

IT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.70
URE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
TY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
N WATER	Nil		

AND ODOR: Black Viscous Liquid

(Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
°F (C. O. C.)			

G MEDIA: Foam, CO_2 Dry Chemicals

FIGHTING PROCEDURES: None - Avoid Breathing Smoke

AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA: THRES; EFFEC; Pr; EMERGE; Wa

SECTION VI REACTIVITY DATA: STABILI; INCOMP; HAZARD; HAZARD POLYME

SECTION VII SPILL OR LEAK PROCEDURES: STEPS T; (; WASTE D

SECTION VIII - SPECIAL PROTECTION INFORMATION: RESPIRAT; VENTILA; PROTECTI; OTHER PR

SECTION IX SPECIAL PRECAUTIONS: PRECAUTI; St; OTHER PRE; Ca

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

500 PPM

EFFECTS OF OVEREXPOSURE

Primary to moderate irritation of skin on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, Aldehydes, Acids, Methyl Halides, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent, then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes to maintain TLV	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 1495

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	trace		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.91
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	nil		

APPEARANCE AND ODOR: Viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
C.D.C 480°F			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: no special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: none

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin on extended contact

EMERGENCY AND FIRST AID PROCEDURES

skin - wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY (*Materials to avoid*)

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (*Specify type*)

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL (*General*)	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place

Keep containers tightly closed

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 1467

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE Epoxy Resin			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler Halogenated Fillers			OTHERS		
OTHERS Brominated organic					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.65
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Black Viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
140° F			

EXTINGUISHING MEDIA: Foam, CO_2 Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None Avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

500 ppm

EFFECTS OF OVEREXPOSURE

Primary to moderate irritation of skin on prolonged or repeated contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, aldehydes, acids, methyl halides, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent, then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes to maintain TLV	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when heat curing, in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	Diglycidyl Ether or Bisphenol
TRADE NAME AND SYNONYMS	Stycast 1217
CHEMICAL FAMILY	Epoxy Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL	FLAMMABILITY ____ HEALTH ____ REACTIVITY ____ SPECIFIC HAZARD ____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Epoxy Resin	100				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	>580	SPECIFIC GRAVITY (H_2O=1)	1.16
VAPOR PRESSURE (mm Hg.) 87°F	6	PRECENT VOLATILE BY VOLUME (%)	.3%
VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (____ = 1)	None
SOLUBILITY IN WATER	Ins.		
APPEARANCE AND ODOR	Clear Amber liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	235°C TCC	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT / UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA	CO_2, Dry Chemicals, Foam		
SPECIAL FIRE FIGHTING PROCEDURES	None		
UNUSUAL FIRE AND EXPLOSION HAZARDS	None		

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mild Skin and eye irritant. Skin Sensitizer

EMERGENCY AND FIRST AID PROCEDURES

Skin contact - Wash with soap and Water

Eyes - Flush with plenty of water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

CO, CO_2, Aldehydes and other organics

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with solvent; then wash with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Safety Glasses

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid skin and eye contact

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 1095

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	.88
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	nil		

APPEARANCE AND ODOR: thick liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
COC 580°F			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: no special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: none

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 1090
CHEMICAL FAMILY	Epoxy Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY_____ HEALTH_____ REACTIVITY_____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	0.88
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	nil		

APPEARANCE AND ODOR: thick liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)		FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
COC	480°F			

EXTINGUISHING MEDIA: Foam, CO_2 dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: no special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 1090SI

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	0.78
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	nil		

APPEARANCE AND ODOR: thick liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
COC 480°F			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: no special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: none

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing, in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington, St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 2851GT
CHEMICAL FAMILY	Epoxy Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY_____ HEALTH_____ REACTIVITY_____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST Non-Polymeric Amid			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.3
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR
Black Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA
Foam, Carbon Monoxide, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES
None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS
None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Slightly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, Acids, NH_3

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.	EMERGENCY PHONE NO.: 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington, St., Canton, Ma. 02021	
CHEMICAL NAME AND SYNONYMS:	TRADE NAME AND SYNONYMS: Stycast 2851 MT
CHEMICAL FAMILY: Epoxy Resin	FORMULA: Proprietary
FEDERAL STOCK NUMBER (FSN):	GROSS WEIGHT (LBS): / OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST Non-Polymeric Amid			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.72
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Black Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA: Foam, Carbon Monoxide, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V — HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Slightly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI — REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to decomposition
	STABLE	X	

INCOMPATABILITY (*Materials to avoid*)

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, Acids, NH_3

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (*Specify type*)

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL (*General*)	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington, St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 2851KT
CHEMICAL FAMILY	Epoxy Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST Non-Polymeric Amid			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.8
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR
Black Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA
Foam, Carbon Monoxide, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES
None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS
None

SECTION V — HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE
Slightly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES
Wash with soap and water

SECTION VI — REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*
Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon Monoxide, Aldehydes, Acids, NH_3

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD
Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store at room temperature in closed containers

OTHER PRECAUTIONS
Carry out fumes when curing in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington, St., Canton, Ma. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 2851 FT
CHEMICAL FAMILY	Epoxy Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST Non-Polymeric Amid			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.3
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR
Black Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			

EXTINGUISHING MEDIA
Foam, Carbon Monoxide, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES
None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS
None

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

Slightly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, Acids, NH_3

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yes	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

Carry out fumes when curing in vented ovens

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington, St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 2850KT

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.8
VAPOR PRESSURE (mm Hg.)		PRECENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: Blue Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
C.O.C. 480°F			

EXTINGUISHING MEDIA: Foam, Carbon Monoxide, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

- Slightly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to Decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes, Acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yel	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures

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VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 2850GT

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS Epoxy Resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2. 3
VAPOR PRESSURE (mm Hg.)	Nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: Black Viscous Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
C. O. C. 480°F			

EXTINGUISHING MEDIA: Foam, Carbon Monoxide, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None - Avoid Breathing Smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Slightly irritating to skin with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES

Wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heating to Decomposition
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldehydes Acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wipe up with a solvent; then with water

WASTE DISPOSAL METHOD

Controlled Burning or Burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

Not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	Yel	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperatures in closed containers

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.	EMERGENCY PHONE NO.: 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021	
CHEMICAL NAME AND SYNONYMS:	TRADE NAME AND SYNONYMS: Stycast 2850FT
CHEMICAL FAMILY: Epoxy Resin	FORMULA: Proprietary
FEDERAL STOCK NUMBER (FSN):	GROSS WEIGHT (LBS): / OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	2.3
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR: thick liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
C. O. C. 480°F			

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemicals

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

mildly irritating to skin and eyes with extended contact

EMERGENCY AND FIRST AID PROCEDURES

Wash

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Aldenhydes, Acids, etc.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	X	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber Gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at Room Temperature in closed containers

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.

EMERGENCY PHONE NO.: 828-3300

ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: Stycast 2651MM

CHEMICAL FAMILY: Epoxy Resin

FORMULA: Proprietary

FEDERAL STOCK NUMBER (FSN):

GROSS WEIGHT (LBS):

OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	trace		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.55
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	nil		

APPEARANCE AND ODOR: Viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)		FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
C.O.C	480°F			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: no special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: none

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin on extended contact

EMERGENCY AND FIRST AID PROCEDURES

skin - wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place

Keep containers tightly closed

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

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VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

Emerson & Cuming, Inc. **MATERIAL SAFETY DATA SHEET**

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Mass. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 2651-40
CHEMICAL FAMILY	Epoxy Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL	FLAMMABILITY ____ HEALTH ____ REACTIVITY ____ SPECIFIC HAZARD ____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.5
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER	nil		
APPEARANCE AND ODOR	thick liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	C. O. C. 480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT / UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA	Foam, CO_2, dry chemicals		
SPECIAL FIRE FIGHTING PROCEDURES	no special procedures - avoid breathing smoke		
UNUSUAL FIRE AND EXPLOSION HAZARDS	none		

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS OTHERWISE CAUSED BY THE MATERIAL IF REASONABLE SAFETY PRECAUTIONS ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ALSO, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS OTHERWISE CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PRECAUTIONS ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN THE USE OF THE MATERIAL.

Emerson & Cuming, Inc. **MATERIAL SAFETY DATA SHEET**

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): Emerson & Cuming, Inc.	EMERGENCY PHONE NO.: 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code): 869 Washington St., Canton, Mass. 02021	
CHEMICAL NAME AND SYNONYMS:	TRADE NAME AND SYNONYMS: Stycast 2651
CHEMICAL FAMILY: Epoxy Resin	FORMULA: Proprietary
FEDERAL STOCK NUMBER (FSN):	GROSS WEIGHT (LBS): / OUTSIDE PACKAGE DIMENSIONS (Inches):

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.5
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	nil		

APPEARANCE AND ODOR: thick liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
(TCC) 460°F			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: no special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: none

Emerson & Cuming, Inc. **MATERIAL SAFETY DATA SHEET**

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)	Emerson & Cuming, Inc.
EMERGENCY PHONE NO.	828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)	869 Washington St., Canton, Mass. 02021
CHEMICAL NAME AND SYNONYMS	
TRADE NAME AND SYNONYMS	Stycast 2651
CHEMICAL FAMILY	Epoxy Resin
FORMULA	Proprietary
FEDERAL STOCK NUMBER (FSN)	
GROSS WEIGHT (LBS)	
OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL	

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS Epoxy resin					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H_2O=1)	1.5
VAPOR PRESSURE (mm Hg.)	nil	PRECENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	nil		

APPEARANCE AND ODOR: thick liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
(TCC) 460°F			

EXTINGUISHING MEDIA: Foam, CO_2, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: no special procedures - avoid breathing smoke

UNUSUAL FIRE AND EXPLOSION HAZARDS: none

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Mildly irritating to skin with extended contact

EMERGENCY AND FIRST AID PROCEDURES

wash with soap and water

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

CO, aldehydes, acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Clean up with a solvent; then with soap and water

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

not ordinarily required

VENTILATION	LOCAL EXHAUST	SPECIAL
	only if heated	
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool place in closed containers

OTHER PRECAUTIONS

Use a vented oven when curing at elevated temperatures

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VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS [illegible] CAUSED BY THE MATERIAL IF REASONABLE SAFETY PRECAUTIONS ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. [illegible] VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR [illegible] CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN [illegible] PRECAUTIONS ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN THE USE OF THE MATERIAL.

GRACE

W. R. Grace & Co.
62 Whittemore Avenue
Cambridge, MA 02140

(617) 876-1400

February 1, 1989

U.S. Environmental Protection Agency, Region 1
Waste Management Division
Post Office Box 6222
Boston, MA 02114

RE: W.R. Grace & Co. - Conn.
Washington Street, Canton, Massachusetts
EPA I.D. No: MAD000843920

Dear Sir or Madam:

This letter and enclosed documents are submitted on behalf of W.R. Grace & Co. - Conn. (Grace) in response to a request for information dated November 25, 1988 and supplemented by a letter dated December 30, 1988 (together hereinafter referred to as the "request"), from Mr. Merrill S. Hohman, Director, Waste Management Division, relating to the above-referenced Grace operation in Canton, Massachusetts. The letter dated December 30, 1988 extended the time for Grace to respond to the "request" until February 1, 1989.

Preliminary Statement

Grace will answer in this letter the questions posed by the EPA information request in accordance with its understanding of that request. Nevertheless, Grace wishes to note that by doing so it does not in any way concede or admit that EPA has authority or jurisdiction to require corrective action in connection with its Canton operation. For the reasons described below, among others, Grace believes that it is not subject to EPA's corrective action permitting or enforcement authority.

We understand from those two letters that EPA's intent in requesting answers to these questions is to identify any releases of hazardous waste or constituents from facilities qualifying for interim status under RCRA Section 3005 that treat, store for 90 days or more, or dispose of hazardous waste, including so-called Solid Waste Management Units (SWMUs), as well as releases of hazardous waste or constituents from facilities which had interim status or should have had interim status as a result of their treatment, storage or disposal activities. We further understand that EPA seeks this information in order to determine the need for response or for enforcement of the corrective action provision of RCRA, as added by the Hazardous and Solid Waste Amendments of 1984 (HSWA), RCRA Sections 3004(u) and 3008.

To the extent that the request is premised on the proposition that the Grace operations are subject to RCRA corrective action, Grace disputes that premise. Simply put, under the Hazardous and Solid Waste Amendments of 1984 (HSWA), EPA may impose corrective action requirements in two circumstances. The first is where there have been releases of hazardous wastes or constituents from any solid waste management unit at a facility "seeking a permit" under RCRA Section 3005(c), 42 U.S.C. Section 6925(c). See RCRA Section 3004(u), 42 U.S.C. Section 6924(u). Because Grace is not seeking a permit under Section 3005(c), as described below, Section 3004(u) does not apply.

Corrective action may also be required under RCRA Section 3008(h), 42 U.S.C. Section 6928(h), where there has been a release from "a facility authorized to operate under Section 3005(e) of this subtitle", 42 U.S.C. Section 6925(e). Grace has not been authorized to operate as an interim status facility since at least 1983, when it withdrew its Part A permit application, as described below. Therefore, this section also does not apply.

The above-referenced Grace operations are not RCRA-permitted or interim status facilities. Grace did submit to EPA a Notification of Hazardous Waste Activity, and under date of November 18, 1980 a General information form, EPA Form 3510-1 (6/80), and a Part A Hazardous Waste Permit Application, EPA Form 3510-3 (6/80), with respect to its operations then existing in Canton. However, on March 29, 1984 Grace submitted to EPA. A copy of the letter requesting change of status is enclosed herewith. In addition, on February 10, 1984 Grace submitted to DEQE on a form approved by DEQE for that purpose a signed certification confirming, among other things, that thenceforward it would not store, treat, or dispose of hazardous waste. A copy of this

letter and certification is enclosed herewith. Grace is advised both by the DEQE Division of Hazardous Waste and by EPA that Grace's change of status request, as to its Canton facility, was granted by DEQE and approved be EPA. Acknowledgment of the change of status was received from the Department of Environmental Quality Engineering on December 27, 1988. We are unable at this time to locate the official documentation from EPA confirming the change of status but will provide you with copies as soon as they have been located.

Since Massachusetts has (then and now) a delegated program under RCRA, EPA approval was not required for a change of status. This was confirmed in the Memorandum of Understanding (MOU) dated March 25, 1986, which specifies procedures for certain federal/state interactions under RCRA. These procedures state that DEQE had authority in the first instance to approve a change in status. Moreover, the MOU states that when DEQE notifies EPA of a decision to approve a change in status, EPA must inform DEQE within two weeks of any disagreement with DEQE's decision; otherwise DEQE's decision stands. Grace is not aware that EPA ever expressed any disagreement with DEQE's decision to approve Grace's change of status. Therefore, since DEQE recognized Grace's change of status and EPA in effect approved it, Grace has not been authorized to operate as an interim status facility since 1984, and it is not subject to the RCRA corrective action provision.

Since neither DEQE nor EPA had taken any administrative action to grant Grace's Part A permit application, we understand that Grace's withdrawal of that application was effective in any event to terminate its previous interim status for its operations covered by the Part A permit application as of the date of withdrawal, which was prior to the enactment of the corrective action provision of HSWA. In short, Grace's Canton operation does not meet the definition of "facility" set forth in the request, because that operation is not conducted on property " on which units subject to RCRA permitting are located."

Response

Grace understands that the information request was issued pursuant to the authority of Section 3007(a) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Section 6927(a), and pursuant to Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. Section 960(e). The request sets forth a number of definitions of terms used in the individual

questions, and the questions themselves request specific information regarding the Grace operations in accordance with their terms and the definitions provided. In those instances where the questions may not be clear, we have been guided by our understanding of statutory and regulatory definitions, by interpretations set forth in EPA's preambles to proposed and final rules as published from time to time in the Federal Register, and by the statement of EPA's purpose in requesting answers to these questions as described in the letters of November 25 and December 30, 1988 and summarized above. We understand that we are not required to provide information that was not requested in those letters, and we have not attempted to do so.

Grace notes in particular that the definition of "Solid Waste Management Unit" (SWMU) which is the subject of question 1, and the description of an "other" unit set forth in question 2, are very precise and limited. Grace understands that a SWMU, for purposes of this request, is a unit which contains or contained solid or hazardous waste, not hazardous constituents nor hazardous substances. Further, a SWMU is understood to be such a unit "from which hazardous waste or hazardous constituents might migrate;" that is, a unit which poses a present threat of release of hazardous waste or hazardous constituents. Accordingly, a unit which no longer contains solid or hazardous waste poses no such threat and therefore is not considered a SWMU. Neither is a unit considered a SWMU, even if it does contain solid or hazardous waste, if there is believed to be no significant threat of release of hazardous waste or hazardous constituents in this connection, Grace understands the term "might migrate" as used in the request to mean a substantial probability or migration and not merely a theoretical possibility of migration.

Grace understands that an "other" unit, on the other hand, is a unit which holds or held hazardous substances, not hazardous waste or hazardous constituents. Further, an "other" unit as described in question 2 is understood to be such a unit form which there has been an actual release of hazardous waste or hazardous constituents. However, we note that RCRA Section 3008(h), on which question 2 is apparently modeled, applies only to releases of hazardous waste, not hazardous constituents.

These disparate definitions correspond roughly to the different terminology used in RCRA Sections 3004(u) and 3008(h), respectively, the two authorities cited by the EPA in the request.

Finally, we note that the definition of "release" in the request excludes "releases otherwise permitted or authorized under the law".

Based on these understanding and the above-described investigation, Grace makes the following response to the items of the request.

REQUEST 1 (a)- (g)

The Canton facility contains no solid waste management units from which there is believed to be a significant threat of the release and migration of hazardous waste or hazardous constituents.

The Canton facility uses, and or, has used the hazardous waste management areas in the locations indicated on the plan of the facility which is attached hereton. Grace will supplement this response by providing the topographical map requested.

The hazardous waste management areas located at the Canton facility, are described as follows:

Waste Management Area #1.

Waste Management Area #1 is an indoor storage unit approximately 16' by 51'. The unit has been in use from 1984 until the present. Wastes generated at the facility are described by type and quantity in the annual report on hazardous wastes submitted to the Massachusetts Department of Environmental Quality Engineering attached hereto.

In 1985 1 gallon of acid was spilled as a result of the breakage of a bottle. The spill was contained within the area, neutralized with calcium carbonate and cleaned up. The Canton Fire was notified of the spill.

In 1986 there was a spill of an epoxy - polyamid mix which was contained in a 5 gallon pail.

Upon information and belief there have been no known releases of hazardous wastes from this unit.

Waste Management Area #2.

Waste Management Area #2 was approximately 15' by 20'. The unit was in use from 1981 to 1985. Wastes generated at the

facility are described by type and quantity in the annual report on hazardous wastes submitted to the Massachusetts Department of Environmental Quality Engineering attached hereton.

In 1983 there was a spill of 5 gallons of epoxy resin in the unit. The spill was contained in the unit, cleaned up with speed-dry absorbant and disposed of.

In 1983 there was also a reaction of an epoxy/urethan mix in a 55 gallon drum. All but a few gallons were contained in the drum. The overflow was cleaned up with absorbant and disposed of.

Upon information and belief there have been no known releases of hazardous wastes from this unit.

Waste Management Area #3.

Waste management area #3 was approximately 15' by 20'. The unit was used during 1983 and 1984. Wastes generated at the facility are described by type and quantity in the annual report on hazardous wastes submitted to the Massachusetts Department of Environmental Quality Engineering attached hereto.

Upon information and belief there have been no known releases of hazardous waste from this unit.

Waste Management Area #4.

Waste management area #4 was approximately 10' by 15'. The unit was used from 1982 until 1984. Wastes generated at the facility are described by type and quantity in the annual report on hazardous wastes submitted to the Massachusetts Department of Environmental Quality Engineering attached hereto.

Upon information and belief there have been no known releases of hazardous waste from this unit.

Waste Management Area #5.

Waste management area #5 was a temporary storage trailer approximately 10' by 40' which was used by a waste disposal firm in 1986.

Upon information and belief there have been no known releases of hazardous waste from this unit.

Waste Accumulation Areas

The facility uses the following satellite accumulation sites:

Location	Wastes Accumulated	Container type
Compressor Room	water & oil	55 gal. drum
Polymer Dept.	styrene monomer	5 gal. drum
	vacuum pump oil	5 gal pail
QC Lab	epoxy, silicone	5 gal pail
	1,1,1-trichloroethane	5 gal pail
Resins	1,1,1-trichloroethane	55 gal drum
	water & amine catalyst	55 gal drum
Silver Production	1,1,1-trichloroethane	55 gal drum
Catalyst Room	water and anhydride	55 gal drum
Special Package	1,1,1-trichloroethane	55 gal drum
Gimble Rings	water and neoprene	55 gal drum
	1,1,1-trichloroethane	5 gal pail

Upon information and belief there have been no known releases of wastes from these satellite accumulation sites.

REQUEST 2 (a) - (g)

Upon information and belief there are no known units at the facility, which hold or have held hazardous substances and from which there have been releases of hazardous waste or hazardous constituents.

Information pertaining to the discovery on November 30, 1987 of an oily product floating on groundwater at the facility is attached hereto, as is the report prepared by Roy Weston entitled "Investigation of Petroleum Contamination at the Emerson & Cuming, Inc. Facilty, 869 Washington Street, Canton, Massachusetts. The Weston investigation concluded that the petroleum products are migrating on to the property and as such, are not the result of the past or present operations conducted by Emerson & Cuming on the Washington Street Site.

Present facility contact person:

Thomas Phair
Plant Manager
(617) 828 -3300.

Unless otherwise indicated, this response is not made on the basis of personal knowledge. This response was prepared by or with the assistance of agents, employees, representatives, or attorneys of Grace, or others believed to have relevant information, and with the advice of counsel, which has been relied upon herein. The answers set forth herein, subject to inadvertent or undiscovered errors or omissions, are based on and therefore necessarily limited by the records and information still in existence, presently recollected, thus far discovered in the course of the preparation of these answers, and currently available to Grace. Grace reserves its right to supplement this response if discovery of additional information makes such supplementation appropriate.

Very truly yours,

Marcia Seeler

Marcia Seeler
Assistant Environmental Counsel

3430
3420

GRACE MEMO

to: Plant 1 Foremen

date: 7-13-83

from: Bob Marshall

cc: F. Sheehan
F. Fitts
R. Winterson

subject: Sewer Sampling

Beginning at 7:00 a.m. Thursday, July 14, we will conduct sewer sampling for the MDC. Samples will be taken over a 16 hour period beginning at 7:00 a.m. each day. Frank Sheehan and Frank Fitts will conduct the testing and record meter readings on the attached schedule. We will run the test Thursday, July 14, and Friday, July 15.

Samples will be taken by taking a gallon can and dipping it into the manhole on the far southeast corner of the property (fill can approximate 1/2 full). Seal the can immediately after taking sample. Each shift will accumulate their eight samples, shake thoroughly and pour into a five gallon pail and seal it. The two five gallon pails from each day will be shaken thoroughly and combined into a third five gallon pail. From this third pail, a quart sample will be taken and labelled as follows:

COMPOSITE SEWER SAMPLE
JULY ____, 1983
EMERSON & CUMING
869 WASHINGTON STREET
CANTON, MA
PREPARED BY _____

Remember that samples should always be thoroughly shaken while transferring to ensure that any settled solids are dispersed. Also when the gallon cans, five gallon pails or quart plastic jars are being stored they should be tightly sealed to prevent any evaporation.

Bob Marshall

Bob Marshall

Emerson & Cuming

Dewey and Almy Chemical Division
W. R. Grace & Co.
Canton, Mass. 02021

(617) 828-3300

August 22, 1983

Mr. Wayne T. Grandin
Chief Engineer of Industrial Waste
Metropolitan District Commission
Sewerage Division
20 Somerset Street
Boston, MA 02108

Subject: Permit No. 10-005724

Dear Sir:

Enclosed you will find an analysis of our sewer effluent from the 14th and 15th of July, 1983. The analysis was performed by Arnold Greene Testing Laboratories of Natick, Massachusetts. The first day of sampling, we discharged 5453 gallons. The second day of sampling, we discharged 6665 gallons.

I have also enclosed copies of the test methods that Arnold Greene used and the sampling instructions and operator log sheets for the two days.

Since our neighbor, Brooks Adhesives, discharges into our sewer and the two combine in a common line to discharge to MDC, our operators were instructed to attempt to take the sample between the periodic discharges of Brooks Adhesives. We, therefore, believe the analysis should be representative of our effluent.

I apologize for the tardiness of this report. I misread your letter of October 13, 1982, and thought we were supposed to test every July.

Sincerely,
EMERSON & CUMING

Robert Marshall

Robert R. Marshall
Plant Manager

RRM:pg

Testing Laboratories Incorporated
East Natick Industrial Park
6 Huron Drive • Natick, MA 01760
(617) 235-7330, 653-5950
Telex 948459 GREENELAB NTIK

Chemical • Physical • Metallurgical
Inspection • Evaluation • Analysis
Research • Development

Branch Laboratories:
Springfield, Mass. 01104
(413) 734-6548

Auburn, Mass. 01501
(617) 832-5500

TEST REPORT

TO: Emerson & Cuming, Inc.
Div. of W.R. Grace & Co.
869 Washington Street
Canton, MA 02184

ATT:

DATE 7/26/83
JOB NO. 38489-1
LAB. NO. 0108
ORDER NO. 1-46409

MATERIAL
HEAT NO. None
SPECIFICATIONS: None

Sample ID: 2 Sewer Water Composites 7/19/83

Sample #1 14 July 1983
Composite Sewer Sample
Emerson & Cuming
869 Washington Street
Canton, MA 02021
Prepared by F. Sheehan

pH	7.4
Ammonia (mg/l)	12
Total Kjeldahl-Nitrogen (mg/l)	13
Total Cyanide, (mg/l)	<0.10
Cyanide, Ammen to Cl (mg/l)	<0.10
Total Suspended Solids (mg/l)	507
Settleable Solids, (ml/l/hr)	<0.4
Total Solids (mg/l)	848
Silver (mg/l)	<0.02

RECEIVED AUG 15 1983 EMERSON & CUMING CANTON, MASS. 02021

SUBSCRIBED TO AND SWORN TO BEFORE ME THIS
DAY OF 19

NOTARY PUBLIC

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
26th DAY OF July 83
ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril, Manager

UNLESS STIPULATED IN WRITING BY YOU, ALL SAMPLES WILL BE RETAINED FOR 30 DAYS AND THEN DISPOSED OF.

THIS REPORT IS RENDERED UPON THE CONDITION THAT IT IS NOT TO BE REPRODUCED WHOLLY OR IN PART FOR ADVERTISING AND/OR OTHER PURPOSES OVER OUR SIGNATURE OR IN CONNECTION WITH OUR NAME WITHOUT OUR SPECIAL PERMISSION IN WRITING.

NONDESTRUCTIVE TESTING: MAGNAFLUX • ZYGLO • MILLION VOLT & LOW VOLTAGE X-RAY • ULTRASONIC FLAW DETECTION • AUDIGAGE THICKNESS MEASUREMENT • BORESCOPE • GAMMA-RAY • FILM INTERPRETATION & CONSULTATION

DESTRUCTIVE TESTING: FATIGUE TESTING • METALLURGICAL INVESTIGATIONS • WET CHEMICAL ANALYSIS • SALT SPRAY • ACID ETCH SPECTROGRAPHIC ANALYSIS • PROCEDURE & WELDER QUALIFICATION • IMPACT • STRESS RUPTURE • ROCKWELL SUPERFICIAL • BRINELL • MICROHARDNESS • MICROPHOTOGRAPHY

12 - 2M 3CA

Testing Laboratories Incorporated
East Natick Industrial Park
6 Huron Drive • Natick, MA 01760
(617) 235-7330, 653-5950
Telex 948459 GREENELAB NTIK

Inspection • Evaluation • Analysis
Research • Development

Branch Laboratories:
Springfield, Mass. 01104
(413) 734-6548

Auburn, Mass. 01501
(617) 832-5500

TEST REPORT

TO: Emerson & Cuming, Inc.
Div. of W.R. Grace & Co.
869 Washington Street
Canton, MA 02184

ATT:

DATE 7/26/83
JOB NO. 38489-1
LAB. NO. 0108
ORDER NO. 1-46409

MATERIAL
HEAT NO. None
SPECIFICATIONS: None

Sample ID: #2 Sewer Water Composites 7/19/83

Sample #2 15 July 1983
Composite Sewer Sample
Emerson & Cuming
869 Washington Street
Canton, MA 02021
Prepared by F. Sheehan

pH	7.3
Ammonia (mg/l)	7.5
Total Kjeldahl-Nitrogen (mg/l)	9
Total Cyanide, (mg/l)	<0.10
Cyanide, Ammen to Cl (mg/l)	<0.10
Total Suspended Solids (mg/l)	1,080
Settleable Solids, (ml/l/hr)	2.0
Total Solids (mg/l)	1,438
Silver (mg/l)	<0.02

SUBSCRIBED TO AND SWORN TO BEFORE ME THIS
DAY OF 19

NOTARY PUBLIC

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26th DAY OF July 83
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DESTRUCTIVE TESTING: FATIGUE TESTING • METALLURGICAL INVESTIGATIONS • WET CHEMICAL ANALYSIS • SALT SPRAY • ACID ETCH SPECTROGRAPHIC ANALYSIS • PROCEDURE & WELDER QUALIFICATION • IMPACT • STRESS RUPTURE • ROCKWELL SUPERFICIAL • BRINELL • MICROHARDNESS • MICROPHOTOGRAPHY

12 - 2M 3CA

3437

A-2442 CUSTOMFORMS, INC. • P.O. BOX 210 • NEWTON HIGHLANDS, MA 02161 • TEL. 444-5370

Arnold Greene Testing Laboratories Incorporated
East Natick Industrial Park
6 Huron Drive • Natick, MA 01760
(617) 235-7330, 653-5950
Telex 948459 GREENELAB NTIK

Nondestructive • Chemical • Pollution • Metallurgical
Inspection • Evaluation • Analysis
Research • Development

Branch Laboratories:
Springfield, Mass. 01104
(413) 734-6548

Auburn, Mass. 01501
(617) 832-5500

TEST REPORT

TO: Emerson & Cuming, Inc.
Div. of W.R. Grace & Co.
869 Washington Street
Canton, MA 02184

ATT:

DATE 8/03/83
JOB NO. 38489-2
LAB. NO. 0108
ORDER NO. 1-46409

MATERIAL Water
HEAT NO. None
SPECIFICATIONS None

Purpose: To determine the presence of methylene chloride and toluene in two water samples submitted for analysis.

Method: The water was quantitatively analyzed for organic contaminants by gas chromatographic/mass spectrometric (GC/MS) technique. The instrument was equipped with a purge and trap concentrator for the analysis of volatile organic contaminants.

Results:	1) July 14, 1983	2) July 15, 1983
Methylene Chloride	3,463 ug/l	952 ug/l
Toluene	None Detected	7,085 ug/l
Others found		
Trichloroethane	245 ug/l	8,772 ug/l
Trichloroethene	3 ug/l	188 ug/l
Tetrachloroethene	None Detected	59 ug/l

Comment: The samples were received 7/19/83 in jars with large head space.

SUBSCRIBED TO AND SWORN TO BEFORE ME THIS
DAY OF 19

NOTARY PUBLIC

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
3rd DAY OF August 83 19
ARNOLD GREENE TESTING LABORATORIES, INC.
James J. Baril, Manager

UNLESS STIPULATED IN WRITING BY YOU, ALL SAMPLES WILL BE RETAINED FOR 30 DAYS AND THEN DISPOSED OF.

THIS REPORT IS RENDERED CONDITION THAT IT IS NOT TO BE REPRODUCED WHOLLY OR IN PART FOR ADVERTISING AND/OR OTHER PURPOSES OVE RE OR IN CONNECTION WITH OUR NAME WITHOUT OUR SPECIAL PERMISSION IN WRITING.

3437

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Auburn, Mass. 01501
(617) 832-5500

TEST REPORT

TO: Emerson & Cuming, Inc.
Div. of W.R. Grace & Co.
869 Washington Street

Canton, MA 02184

ATT:

DATE: 8/03/83
JOB NO. 38489-2
LAB NO. 0108
ORDER NO. 1-46409

MATERIAL: Water
HEAT NO. None
SPECIFICATION: None

Purpose: To determine the presence of dioctylphthalate in two water samples submitted for analysis.

Method: The samples were first pH adjusted to greater than 12 and then extracted with methylene chloride according to EPA procedure. The extract was concentrated and analyzed by Gas Chromatography.

Results:	July 14, 1983	July 15, 1983
Dioctylphthalate	<1 ug/l	<1 ug/l

SUBSCRIBED TO AND SWORN TO BEFORE ME THIS
DAY OF 19

NOTARY PUBLIC

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
3rd DAY OF August 83 19
ARNOLD GREENE TESTING LABORATORIES, INC.
James J. Baril
James J. Baril, Manager

UNLESS STIPULATED IN WRITING BY YOU, ALL SAMPLES WILL BE RETAINED FOR 30 DAYS AND THEN DISPOSED OF.

THIS REPORT IS RENDERED ON THE CONDITION THAT IT IS NOT TO BE REPRODUCED WHOLLY OR IN PART FOR ADVERTISING AND/OR OTHER PURPOSES WITHOUT OUR WRITTEN SIGNATURE OR IN CONNECTION WITH OUR NAME.

The Commonwealth of Massachusetts
Metropolitan District Commission
20 Somerset Street, Boston 02108
SEWERAGE DIVISION

RECEIVED
SEP 27 1983
EMERSON & CUMING
CANTON, MASS. 02021

September 26, 1983

EMERSON AND CUMING
Dewey and Almy Chemical Division
W. R. Grace and Company
869 Washington Street
Canton, MA 02021

ATTENTION: Robert Marshall

Dear Mr. Marshall:

SUBJECT: Analytical Data

We are in receipt of the recent analysis submitted by your company as performed by Arnold Greene Testing Laboratories of Natick, MA.

The analysis as submitted indicates concentrations of toluene and trichloroethane which are considered by this office to be excessive and in violation of Metropolitan District Commission Rules and Regulations, Article III, Section 2(i).

Therefore, the Division is requiring at this time that your company take all necessary steps to eliminate the concentrations of the aforementioned constituents either by inhouse process modification or by preparing pretreatment plans.

Notification as to your intended action is anticipated prior to October 21, 1983 so that this Division can determine if the Industrial User Discharge Permit which has expired as of August 31, 1983 can be reissued.

If this office can be of further assistance or clarification, please do not hesitate to contact Charles W. Lombardi at 727-1024.

Very truly yours,

WAYNE T. GRANDIN
Chief Engineer of Industrial Waste

JPV/kw
cc: H. Bonne, DWPC
H. Munson, DPW, Canton

3430

GRACE MEMO

to: Distribution

date: September 28, 1983

from: R. R. Marshall

cc:

subject: Plant 1's MDC Industrial User Permit

We submitted a composite sample of Plant 1's sewer effluent for July 14 and 15 to meet the annual requirements for renewing our Industrial User Permit.

As a result of this annual sample, we received a letter from the Chief Engineer of the Metropolitan District Commission notifying us that our levels of toluene and trichloroethane are considered to be excessive and in violation of our Industrial User Permit.

The letter notifies us that we must make in-house process revisions or establish pretreatment facilities to remove the toluene and trichloroethane.

I contacted the MDC and stated that we wished to resample. I explained that our sewer effluent was combined with Brooks Adhesives and that there was no good way to segregate the two, or, therefore, to take an independent sample of Emerson & Cuming's effluent. During our resampling, we will be taking a sample of Brooks effluent prior to combining with Emerson & Cuming's, and then a combined sample downstream. With this manner of sampling, we would hope to show that the source of some of the contaminants could be Brooks Adhesive. The MDC engineer that I spoke to was receptive to this approach.

The only other means for toluene or trichloroethane to enter our sewer effluent would be for an individual to illegally dispose of something. I would hope that our people have been educated enough to realize that <u>any</u> liquid chemical that has to be disposed of must go to a hazardous landfill. Brian Fitzpatrick and Frank Sheehan coordinate this disposal effort.

We will be resampling the week of October 3. Prior to this sampling, we will have notices posted in all production areas to remind our employees of the proper disposal method for <u>any</u> liquid waste as well as the consequences for not adhering to the proper procedure. I would suggest that all R&D and Quality Control employees also be advised of the correct disposal procedures for <u>any</u> liquid chemical.

You will all be advised of the actual date and times that sampling will begin. Needless to say, if our resample uncovers a problem that can not be traced to Brooks Adhesive, we stand a chance of losing our permit to discharge to the MDC sewer. Obviously, this is a worst case scenario, but it does indicate the gravity of the situation, and the need to insure that all of our employees have been informed about proper methods of disposal and are adhering to them.

Bob

Bob Marshall

pg

Distribution

L. W. Watkins
G. F. Winterson
W. A. Mischel
T. J. Phair
E. A. Dahlquist, Sr.
K. King
J. P. Uliano
D. H. Russell
G. A. Peavey
R. Doucette
P. J. Pasquarose
M. J. Micchelli
E. A. Dahlquist, Jr.
B. A. Fitzpatrick

BROOKS ADHESIVES CORPORATION
875 WASHINGTON ST., P.O. BOX 244
CANTON, MASSACHUSETTS 02021-0244
TELEPHONE: 617 / 828-1150

BROOKS
ADHESIVES / COATINGS

cc. GFW
WAM
PEF
3430

October 3, 1983

Mr. Bob Marshall, Plant Manager
Emerson & Cuming
59 Walpole Street
Canton, Massachusetts 02021

Dear Bob,

Enclosed is a copy of a memo from our Chief Chemist, Mr. Jack Loftus, to me regarding waste water analysis.

As you can see, we will comply with the standard as set by the M.D.C. effective immediately.

Very truly yours,

A. E. Jerome

AEJ/sed

Enclosure

BROOKS ADHESIVES CORPORATION

INTER-OFFICE MEMO

TO: Al Jerome

FROM: Jack Loftus

SUBJECT: WASTE WATER

DATE: October 3, 1983

Mr. Bob Marshall, of Emerson & Cuming, called to advise us that the M. D. C. had found high levels of toluol and trichloroethane in the sewer waste water, a sample of which was taken by them on July 15, 1983.

I called Mr. Charles Lombardi, of the M.D.C., and advised him of Bob's call. He said they found 700 parts per billion, which is over the limit. The allowed limit is 10 parts per billion (the drinking water standard).

I see no reason why we cannot be below this allowed limit with only a minor change in our manufacturing procedure.

I thanked Mr. Lombardi for the information and assured him we would comply with the standard.

JL/sed

CC: Mr. Bob Marshall ✓

3430

GRACE MEMO

to: Al Jeroma, Brooks Adhesives

date: October 5, 1983

from: Bob Marshall, Emerson & Cuming

cc:

subject: Our Telephone Conversation October 3

To confirm our telephone conversations of October 3, we will be sampling our sewer effluent on Friday, October 7. Due to our inability to obtain a discreet sample representing Emerson & Cuming's discharge without including Brooks Adhesives's discharge, we will be sampling your effluent at the point that it enters our sewer main and also sampling the combined flows further downstream prior to the point where the combined flows enter the MDC system.

We plan on presenting the two samples to the MDC with the argument that our contribution to the combined effluent is the difference between the two.

Respectfully,
EMERSON & CUMING

Robert Marshall

Robert R. Marshall
Plant Manager

RRM:pg

bcc:

W. A. Mischel
M. Stoler (Cambridge)
G. F. Winterson

3430

GRACE MEMO

to: Plant 1 Supervisors

from: Bob Marshall

subject: Sewer Effluent

date: October 5, 1983

cc: W. A. Mischel
L. W. Watkins
G. F. Winterson

We will be sampling our sewer effluent on Friday, October 7, 1983, beginning at 7:30 a.m. and continuing until 11:00 p.m. that night.

Bob

Bob Marshall

pg

Arnold Greene Testing Laboratories Incorporated
East Natick Industrial Park
6 Huron Drive • Natick, MA 01760
(617) 235-7330, 653-5950
Telex 948459 GREENELAB NTIK

Nondestructive • Chemical • Pollution • Metallurgical
Inspection • Evaluation • Analysis
Research • Development

Branch Laboratories:
Springfield, Mass. 01104
(413) 734-6548

Auburn, Mass. 01501
(617) 832-5500

To: Emerson & Cumings
Div. of W.R. Grace & Co.
869 Washington Street

Canton, MA 02184

Attn: Anne Herrinton

Date 10/28/83

Job No. 41041-2

Lab No. 0398

Order No. 1-47523

Material: Water sample

Heat No. None

Specifications: None

Purpose: To determine the presence of volatile solvents in two water samples submitted for analysis.

Procedure: The water was quantitatively analyzed for organic contaminants by Gas Chromatographic/Mass Spectrometric (GC/MS) technique. The instrument was equipped with a purge and trap concentrator for the analysis of volatile organic contaminants. (EPA Method 624.)

Received: 10/10/83 Date analyzed: 10/25/83

Results: #1 Labeled Brooks Glue - October 7, 1983

	ug/l
Methylene Chloride	1,832
1,1 Dichloroethane	221
Trichloroethane	3,234
Trichloroethene	365
Toluene	58.4

#2 Labeled Emerson & Cumings-Brooks Glue Combined-October 7, 1983

Methylene Chloride	1,607
1,1 Dichloroethane	21.7
Trichloroethane	7,486
Trichloroethene	141
Toluene	39.6

Detection Limit: 5ppb

Comment: The presence of other non-prority pollutants is idicated in the analysis.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
28th DAY OF OCTOBER 1983
ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril

James J. Baril, Manager

UNLESS STIPULATED IN WRITING BY YOU, ALL SAMPLES WILL BE RETAINED FOR 30 DAYS AND THEN DISPOSED OF.
THIS REPORT IS RENDERED UPON THE CONDITION THAT IT IS NOT TO BE REPRODUCED WHOLLY OR IN PART FOR ADVERTISING AND / OR OTHER PURPOSES OVER OUR SIGNATURE OR IN CONNECTION WITH OUR NAME WITHOUT OUR SPECIAL PERMISSION IN WRITING.

Arnold Greene Testing Laboratories Incorporated
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6 Huron Drive • Natick, MA 01760
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(617) 832-5500

To: Emerson & Cuming, Inc.
Div. of W.R. Grace & Co.
869 Washington Street

Canton, MA 02184

Attn: Anne Herrington

Date: 10/31/83

Job No. 41041-1

Lab No. 0398

Order No. 1-47523

Material: Water sample

Heat No. None

Specifications: None

Sample ID: 2 Water samples 10/10/83

	Brooks Glue Oct 7, 1983 Sample #1	Brooks Combined Oct 7, 1983 Sample #2
Settleable Solids, (ml/l/hr)	6.9	8.0
Ammonia (mg/l)	<0.1	<0.1
Total Solids (mg/l)	16,952	5,402
Total Suspended Solids (mg/l)	13,200	3,920
Total Kjeldahl-Nitrogen (mg/l)	32	49
Cyanide (mg/l)	<0.050	<0.04
Silver (mg/l)	0.05	0.03

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
31st DAY OF OCTOBER 1983
ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril / DBB
James J. Baril, Manager

UNLESS STIPULATED IN WRITING BY YOU, ALL SAMPLES WILL BE RETAINED FOR 30 DAYS AND THEN DISPOSED OF.
THIS REPORT IS RENDERED UPON THE CONDITION THAT IT IS NOT TO BE REPRODUCED WHOLLY OR IN PART FOR ADVERTISING AND / OR OTHER PURPOSES OVER OUR SIGNATURE OR IN CONNECTION WITH OUR NAME WITHOUT OUR SPECIAL PERMISSION IN WRITING.

To: Bob Marshall
From: Bill Callahan

11/14

Subject: Raw Material Purchases

	1980	1981	1982	1983
1,1, Trichloroethane	5,840#	NONE	NONE	NONE
1, Dichloroethane	NONE	NONE	NONE	NONE
Toluene	220 gals.	275 gals.	165 gals.	165 gals
Trichloroethene	NONE	NONE	NONE	NONE

BEC
11/14/83

WAM

The Commonwealth of Massachusetts

Metropolitan District Commission

20 Somerset Street, Boston 02108

SEWERAGE DIVISION

RECEIVED
DEC 3 1981
EMERSON & CUMING
CANTON, MASSACHUSETTS

December 1, 1981

9290

EMERSON & CUMING, INC.
869 Washington Street
Canton, MA 02021

ATTENTION: K. F. Kozik

Gentlemen:

The attached Industrial User Discharge Permit has been prepared on the basis of all available information obtained from correspondence and from the investigation of your industry by Metropolitan District Commission personnel. The Permit is valid as long as all stipulated conditions are complied with and is subject to renewal and change as stated in the Rules and Regulations.

If for any reason you disagree with any conditions set forth in the attached permit, written notification must be submitted to the Commission's Sewerage Division within 10 working days from the date of this letter. The letter shall contain details and facts supporting your disagreement with the permit condition.

If you have questions pertaining to the permit conditions or any information set forth in this letter, please contact R.D. Kubit, Sanitary Engineering Section,

Very truly yours,

Wayne T. Grandin

WAYNE T. GRANDIN
Chief Engineer of Industrial Waste

RDK/dmw

Attachment

The Commonwealth of Massachusetts

SEWERAGE DIVISION

The Town of
Canton, Massachusetts
and
The Metropolitan
District Commission

INDUSTRIAL USER DISCHARGE PERMIT

Number: 10 005 724-7

Category: 1

Expiration Date: August 31, 1983

EMERSON & CUMING, INC.
869 Washington Street
Canton, MA 02021

Gentlemen:

Pursuant to federal, State, and local regulations EMERSON & CUMING, INC. (Industrial User) is hereby authorized to discharge sanitary sewage into the MDC sewerage system through the Canton sewerage system subject to the conditions set forth in Paragraphs 1, 2, 3, 4, 7, and 8 on the back of this permit.

This permit may be modified by the Metropolitan District Commission (MDC) and the Municipality, acting jointly, as required or authorized by the MDC Sewer User Rules and Regulations, or as required by the federal government or agencies thereof.

Failure on the part of the Industrial User to fulfill any of the specified conditions shall be sufficient cause for immediate revocation of this permit. This permit is further subject to termination upon thirty (30) days written notice to the Industrial User by an authorized representative of the Commission.

Any assignment or transfer of this permit shall automatically make it void.

APPROVED:
Town of Canton, Massachusetts

JOHN J. McSWEENEY
Authorized Municipal Official

Superintendent of Public Works
Title

Signature
Acting Supt. Public Works

11-2-81
Date

APPROVED:
Metropolitan District Commission

WAYNE T. GRANDIN
Name

Chief Engineer of Industrial Waste
Title

Signature 11-12-81
Date

1010

The Commonwealth of Massachusetts

SEWERAGE DIVISION

INDUSTRIAL USER DISCHARGE PERMIT

Number: 10 005 724-7

Category: 1

Expiration Date: August 31, 1983

ATTACHMENT B

REPORTING REQUIREMENTS

Discharge Reports. Discharge Reports as described below are to be submitted for effluent from the microballoon washing process discharging to the Sanitary Sewerage system free of any uncontaminated water and/or sanitary wastes.

Schedule. Discharge reports described in this Attachment shall be submitted to the MDC annually. The first report shall be submitted within six weeks of receipt of this permit, and reports shall be submitted thereafter by the fifteenth day of September during each year.

Discharge reports for the microballoon washing process shall contain the following information:

Flow Records. Daily records of average flow shall be provided for a period of one day when wastewater flows are truly representative of the Industrial User's normal discharge.

Analytical Data. Analysis for the wastewater parameters and constituents listed below shall be conducted on a composite sample which would represent a typical work day in accordance with Standard Methods. Samples are to be taken after the pretreatment system. All sampling is to be conducted during periods when the flow measurements required by this Attachment are taken.

Total Suspended Solids (TSS)	Total Solids
Settleable Solids	pH
Temperature	Ammonia Nitrogen
Kjeidahl Nitrogen	

The Industrial User shall maintain accurate records of all monitoring activities including: a) the date, exact location, method, and time of sampling and flow measurements, and the names of the person or persons taking such samples and flow measurements; b) the date analyses were performed; c) name of person(s) performing such analyses; d) the analytical techniques/ methods used; and e) the results of those analyses. Copies of these records are to be submitted with the required reports.

All samples collected for the purposes of this permit shall be truly representative of the Industrial User's normal discharge and shall be free of any uncontaminated water and/or sanitary waste.

All sampling and analyses shall be performed in accordance with the MDC Rules and Regulations, Article II, Section 7(c).

PERMIT CONDITIONS*

1. The Industrial User shall comply with the "Rules and Regulations Covering Discharge of Sewage, Drainage, Substances, or Wastes to Sewerage Works Within the Metropolitan Sewerage District" or with Federal Regulations if more stringent. (Article II, Section 4 and Article IV, Section 4)**

2. The Industrial User shall allow Metropolitan District Commission (MDC) and Municipal personnel access to premises for inspection or sampling related to conditions of this permit. (Article II, Section 7(b))

3. The Industrial User shall promptly report to the MDC any changes in location, industrial processes, discharges (quantity or quality), or chemical storage procedures. (Article IV, Section 2)*

4. The Industrial User shall notify the MDC immediately in the event of any accident, negligence or other occurrence that results in discharge to the public sewerage system of any wastes or process wastewaters not covered by this permit; notification shall be made immediately by phoning the MDC at 727-5253, 7:45 AM to 5:00 PM, Monday through Friday and 523-1212 at all other times and by submitting a written report *within 24 hours,* addressed to the Metropolitan District Commission, Sewerage Division, 20 Somerset Street, Boston, Massachusetts 02108. (Article II, Section 8)

5. The Industrial User shall discharge wastewater in conformance with the information contained in the permit application on file with the MDC Sewerage Division. (Article IV, Section 2)

6. The Industrial User's discharge shall conform to the wastewater flows and characteristics listed in Attachment "A". (Article IV, Section 2(c))

7. The Industrial User shall submit a signed Report as described in Attachment "B" to the municipality and the MDC according to the schedule stated in Attachment "B". (Article IV, Section 2(c))

8. The Industrial User shall comply with the pretreatment requirements and schedule in Attachment "C". (Article II, Section 4 and Article IV, Section 2(c))

* Only the paragraphs cited in the Permit letter are applicable.

** References are to the MDC Rules and Regulations.

The Commonwealth of Massachusetts

SEWERAGE DIVISION

INDUSTRIAL USER DISCHARGE PERMIT

Number: 10 005 724-7

Category: 1

Expiration Date: August 31, 1983

ATTACHMENT C

COMPLIANCE SCHEDULE

The following time period(s) shall be allowed for the industrial user to assure compliance with the MDC Rules and Regulations.

The Industrial User shall within six weeks of receiving this permit submit an Industrial User Permit Application.

The Commonwealth of Massachusetts
Metropolitan District Commission
20 Somerset Street, Boston 02108

SEWERAGE DIVISION

October 13, 1982

EMERSON and CUMING
869 Washington Street
Canton MA. 02021

ATTENTION: Paul Firestone

Dear Mr. Firestone:

SUBJECT: Revisions To Industrial User Permit

The enclosed Industrial User Discharge Permit Attachment B has been revised in accordance with the most current information available. The attachment supersedes all previously issued information.

The new attachment should be incorporated in the Industrial User Discharge Permit issued to EMERSON and CUMING on December 1, 1981 and should replace the corresponding material issued at that time.

If you or anyone on your staff have questions pertaining to this matter, please contact John P. Vetere at 727-6570/1.

Very truly yours,

Wayne T. Grandin

WAYNE T. GRANDIN
Chief Engineer of Industrial Waste

WTG/dmw

Enclosure

cc: R. Marshall
W. Mirchal
T. Rhein
G. Winterson

The Commonwealth of Massachusetts

SEWERAGE DIVISION

INDUSTRIAL USER DISCHARGE PERMIT

Number: 10 005 724-7

Category: 1

Expiration Date: August 31, 1983

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Metropolitan District Commission
20 Somerset Street, Boston 02108

SEWERAGE DIVISION

October 13, 1982

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Very truly yours,

Wayne T. Grandin

WAYNE T. GRANDIN
Chief Engineer of Industrial Waste

WTG/dmw

Enclosure

cc: R. Marshall
W. Mischal
T. Rhaii
D. Winterson

Emerson & Cuming Unit
Dewey & Almy Chemical Div.
W. R. Grace & Co.
869 Washington Street
Canton, Mass. 02021

March 29, 1984

Jacob Edwards
State Waste Programs
U.S. EPA, Room 1903
JFK Federal Building
Boston, Mass. 02203

Mr Edwards:

Emerson & Cuming formally requests to change our status of Hazardous Waste Storage Facility to Hazardous Waste Generator. Our EPA I.D. Number is MAD 000 843 920. When our Company originally filed its application in November, 1980, the following three process codes were used:

S02 - Tank Storage 600 gallons
T03 - Treatment by incineration 20 gallons per hour
S01 - Drum Storage 1000 gallons

The person who filled out this application is no longer with the Company and was apparently in error when describing our hazardous waste process. We have never incinerated a hazardous waste to the best of my knowledge and have never stored a hazardous waste in a tank. We only accumulate our waste is 55 gallon drums and periodically ship it out to a licensed hazardous waste facility. Our only change is that we will ship all accumulated waste within 90 days.

Thus, Emerson & Cuming, 869 Washington Street, Canton, Mass., EPA I.D. Number MAD 000 843 920, formally requests to change from Storage Facility status to Generator status.

Robert Marshall

Robert R. Marshall
Plant Manager

RRM/dlg

FEB 14 1984

C E R T I F I C A T I O N

I, ROBERT R. MARSHALL, PLANT MANAGER, hereby
(name) (position)

certify that EMERSON & CUMING UNIT, DEWEY & ALMY CHEMICAL DIV., W. R. GRACE & CO., MAD 000 843 920, which
(name of company) (EPA I.D. #)

notified the U.S. Environmental Protection Agency ("EPA") that it treats, stores and/or disposes of hazardous waste, at all times from this date forward (1) will not accumulate any hazardous waste for more than 90 days; (2) will accumulate hazardous waste in compliance with 310 CMR 30.340; (3) will not store, treat, or dispose of hazardous waste; and (4) will comply with all other applicable requirements of 310 CMR 30.000.

I understand that the Department of Environmental Quality Engineering is deferring applicability of the financial responsibility requirements of 310 CMR 30.900 as a result of EMERSON & CUMING UNIT, DEWEY & ALMY CHEMICAL FIV., W. R. GRACE & CO. having submitted
(name of company)

a request for change of status and this certification, so long as EMERSON & CUMING UNIT, DEWEY & ALMY CHEMICAL DIV., W. R. GRACE & CO. abides by the terms of this certification.
(name of company)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including possible fines and imprisonment.

Robert Marshall
(Signature)

869 WASHINGTON ST.
CANTON, MASS. 02021

ROBERT R. MARSHALL FEB. 10, 1984
(Name typewritten)

ANNUAL HAZARDOUS WASTE REPORT

PART I

MAR 0 5 1984

This form must be used for submission of Annual Reports by:

- Generators who meet the definition of Large Quantity Generator, or who generate any amount of PCB wastes in concentrations of 50 ppm or greater.
- Facilities which treat, store, use or dispose of hazardous waste at the site of generation.
- Owners/operators of wastewater treatment units (as defined in 310 CMR 30.605).

Please refer to the Part I Instructions before completing this form.

1. **Type of Report (s):** check where applicable

   (X) Generator ( ) Treatment, Storage, Disposal Facility and/or Wastewater Treatment Unit

2. **Reporting Year:** Year ending 19 '83

3. **EPA Identification Number:** MAD 000 543 92 0

4. **Installation's Name:** Emerson and Cuming

5. **Installation's Address:** 869 Washington St.
   Canton Ma 02056

6. **Installation Contact:** Robert R Marshall **Tel. No.:** 617 528 3300

7. Does your installation discharge process wastewater? X Yes ____ No
   If No, continue to question 8. If Yes, complete the appropriate line(s):

(a) NPDES Permit Number _____ (b) Municipal sewerage system MDC (Name)

Do any of the wastewater discharges indicated in (a) or (b) involve hazardous waste activity? No
____ Yes Which? ____ (a) ____ (b)

8. Is your installation listed as an Air Quality Source Registration? X Yes ____ No

9. **Transportation Services Used:** (List name and EPA ID number of each.)
   Chemical Waste Management MAD980523203

10. **Certification:**

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

In addition, I understand that any material supplied with this application will not be considered confidential unless I have specifically requested that such material be kept confidential and the Department has made a determination of confidentiality in accordance with 310 CMR 3.00, Regulations Governing Access to and Confidentiality of Department Records and Files under the Hazardous Waste Management Act.

Robert R Marshall — *Authorized Signature of Owner/Operator or Designated Official*

2/29/84 — *Date Signed*

ROBERT R MARSHALL — *Print or Type Name*

PLANT MANAGER — *Title of Person Signing*

ATTACH MAILING LABEL IF INCORRECT

PART 2

GENERATOR ANNUAL REPORT

Reproduce additional pages as necessary. Enter the page number of each sheet, as well as the total number of pages, in the lower right corner.

11. Generator's EPA Identification Number: MAD000843920

12. On-Site Treatment as an Integral Part of the Manufacturing Process: (This is an optional question.)

A Description of Waste	B Hazardous Waste Number	C Amount of Waste	D Unit of Measure	E Handling Method
N/A				

13. Waste Shipped Off-Site: (Complete a separate Part 2 Form for each facility to which waste was shipped.)

a) Name of Facility: Chemical Waste Management

b) EPA ID Number: MAD980523203

c) Address (Street or P.O. Box): 5 Strathmore Rd

(City, State and Zip Code): Natick MA 01760

Line Number	A Description of Waste	B Hazardous Waste Number	C Amount of Waste	D Unit of Measure	E Handling Method
1	Styrene Toluene Acetone	D001	230	G	D80
2	Methylene Chloride / Silicone	F002	620	G	D80
3	Machine Oil	M001	65	G	D80

14. Comments (refer to line number):

PART 2

(Continued)

13. Waste Shipped Off-Site: (Complete a separate Part 2 form for each facility to which waste was shipped.)

a) Name of Facility: EMERSON + CUMING

b) EPA ID Number: MADC005431129

c) Address (Street or P.O. Box): 869 WASHINGTON ST

(City, State and Zip Code): CANTON MA 02021

Line Number	A Description of Waste	B Hazardous Waste Number	C Amount of Waste	D Unit of Measure	E Handling Method
4	ZINC CHLORIDE (SOLID)	D002	55	G	D80
5	ALUMINUM CHLORIDE	D002	85	G	D80
6	STYRENE-POLYESTER-ACRYLIC	D001	55	G	D80
7	STYRENE-OIL-EPOXY	D001	75	G	D80
8	STRENT POTASSIUM CYANIDE SOLUTION	F009	1980	G	D80
9	TURPENTINE-ACETONE	D001	110	G	D80

14. Comments: (refer to line number)

PART 3

FACILITY ANNUAL REPORT

15. Facility's EPA Identification Number: [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

16. Waste Identification: N/A we do not treat store, use or dispose.

Line Number	A Description of Waste	B Hazardous Waste Number	C Handling Method	D Amount of Waste	E Unit of Measure
1					
2					
3					
4					
5					
6					
7					
8					

17. Recovered Materials: (Optional) N/A

Line Number	A Description of Material	B Handling Method	C Amount	D Unit of Measure

PART 3

FACILITY ANNUAL REPORT

18. Most Recent Closure Cost Estimate: WE ARE A SMALL QTY GENERATOR

19. Most Recent Post-Closure Cost Estimate: _____

20. Summary of Incidents When the Contingency Plan was Implemented:

NO INCIDENTS

21. Comments (refer to question and line number):