# CLOSURE PLAN

BOSTIK INC.
MIDDLETON, MA 01949

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# 1.0 INTRODUCTION

This closure plan has been designed to comply with the closure requirements of Subpart G (40 CFR Part 265.110 through 265.120), 40 CFR §265.197 (closure of tank systems), and 40 CFR §266.102(e)(11) (hazardous waste burned in boilers and industrial furnaces). Upon completion of this closure plan and certification of closure, Bostik will have met the requirements for "clean closure" of all of the hazardous waste management units and will be eligible for release from the financial assurance requirements for closure of such units.

# 2.0 BACKGROUND

## 2.1 Manufacturing Operations and Plant History

Bostik, Inc. is an international manufacturer of industrial grade adhesives and sealants. Approximately 120 people are employed at the Middleton plant in administration, research and development, and manufacturing areas. Industrial grade adhesives manufactured at the plant include solid polyester hot melt resins, polyurethane adhesives, solvent based liquid adhesives, web adhesives and coated film adhesives.

Polyester and Polyurethane adhesive resins are manufactured in polymerization reactions, which occur when diacids react with glycols (to produce polyesters) or isocyanates react with polyols (to produce polyurethanes). The polymerization reactions occur in the Polyester and Polyurethane departments (Buildings 36, 39, and 37).

Liquid adhesives are manufactured in mixing vessels (churns) by dissolving rubber and polyester based polymers in organic solvents. This liquids-manufacturing process occurs in the Churn Room and Polyurethane departments (Buildings 24 & 37, respectively). Film Adhesives are made by coating the liquid adhesives onto various substrates. The coated substrates then pass through a flotation oven where the solvent emissions are driven off to a Regenerative Thermal Oxidizer (RTO). A dry adhesive film is left behind on the substrate which is then wound and shipped in rolls. Film manufacturing occurs in Building 23.

Web Adhesives are manufactured by extruding polyester resin onto a belt or around a ring die to create a non-woven web material. This web material is then cut to customer specific widths, wound, and shipped as rolls. Web manufacturing occurs in Building 41.

Research and Development (R&D) occurs in the R&D department (Building 29) and Pilot Plant (Building 30). Quality Control and Analytical Services are also located in Building 29.

Shipping and receiving operate from three locations at the facility. Solvent based raw materials and products are received and shipped from Building 26. Non-flammable raw materials and products are received and shipped from Buildings 40 and 41.

The historical use of the site, including property transfers, can be summarized as follows:

- In 1674, John Phelps started a sawmill.
- In 1685, John McCarty and John Buxton started a “fulling” mill” for cleaning and finishing wool cloth.
- In 1709, Ezekial Upton established a grist mill.
- In 1832, Col. Francis Peabody bought property and built a paper mill and a few years later added a building to produce linseed oil.
- In 1843, Zenas and Luther Crane bought property and manufactured fine quality paper.
- In 1885, Edward Hickey acquired property and operated a wallpaper business until 1908.
- Between 1908 and 1920, the property was used as a leather finishing factory.
- In the 1920’s, it became a dyeing establishment.
- Since 1928, it has been known successively as the Boston Blacking Co (shoe blacking), The B B Chemical Co, and Bostik Inc.
- USM purchased Bostik in 1929
- Emhart purchased Bostik Division in 1975
- Black & Decker purchased Bostik Division in 1989
- Orkem purchased Bostik, Inc. in 1990. Portion of Orkem containing Bostik became TOTAL Chemical (present owner of Bostik, Inc.)
- Bostik, Inc. merged with Findley, Inc. to become Bostik Findley in 2001
- Reverted name back to Bostik, Inc. in 2004

## 2.2 Environmental Setting

Surface Topography

The southeastern portion of the site bordering Boston Street is the highest elevation portion of the site. From Boston Street, the site slopes downward to the north and northwest. The remainder of the site is generally flat. The surface topography of the site is shown on the Site Drainage Plan (Section B of the Part B permit application).

Geologic and Hydrogeologic Setting

The subsurface conditions at the site generally consist of granular fill overlying an alluvial deposit of silty fine sand and sandy silt. Underlying the fill and alluvial sand and silt, is a stratum of glacial till, which is dense, silty, widely graded sand and gravel with cobbles and boulders. The glacial till overlies granite and granodiorite bedrock. The depth to bedrock ranges from 19 to 44 feet.

The site is located within the Ipswich River Drainage Basin. The Ipswich River flows northeasterly from the town of Burlington past Bostik to eventually discharge into Plum Island Sound. Local groundwater flow is to the north toward the Ipswich River. Depth to groundwater at the site ranges from 3 to 10 feet below ground surface. Assuming a hydraulic conductivity of 0.3 to 30 ft/day, a porosity of 0.25 to 0.50, and an average hydraulic gradient of 0.01 feet/foot, the rate of groundwater flow is estimated to range from 3 to 450 feet/year. All groundwater at the site is classified by the MA DEP under the Massachusetts

Contingency Plan (MCP) as GW3, however, category GW2 is also applicable where the depth to groundwater is less than 15 feet and within 30 feet of an occupied building.

Surface water bodies on the site consist of two ponds, a stream, and a small canal. The Upper Pond drains to the Lower Pond, which drains into the stream. The stream flows north to the Ipswich River. The canal, which is located on the north side of Building 1, parallel to the Ipswich River, flows east through a culvert to join the Ipswich River on the eastern side of Boston Street.

Storm Water Runoff

Bostik operates under a Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity. Storm water runoff at the site is channeled into five outfalls. Cooling water from manufacturing processes does not discharge into the outfalls as it is contained in closed loop cooling towers. The Site Drainage Plan (provided in Section B of the permit application), details surface water flow from paved areas, catch basins, outfalls, and surface water bodies.

The five outfall stations include:

| **Outfall** | **Location** | (1) Discharge |
|---|---|---|
| 1 | Upper Pond, west of Solvent Tank Farm | Receives rainwater from Solvent Tank Farm containment berm |
| 2 | Upper Pond, north of Bldg 30 | Receives storm water runoff from Bldgs 29 and 30 roads and parking lot |
| 3 | Stream, west of Bldg 35 | Receives storm water runoff from road and paved area between Bldgs 34, 35, 41, and 42 |
| 4 | Stream, northwest of Bldg 36 | Receives storm water from catch basins 1, 2, 3, 4 and 5 |
| 5 | Lower (eastern) canal | Receives storm water from catch basins 7, 8, and 9, and paved area to Boston Street |

## 2.3 Spill History and Prior Site Investigation and Remediation

In 1979 and again in 1984, polyester distillate was released to the environment in the area of the existing Struthers-Wells unit. These releases were caused by a failure in the pumping system and resulted in soil and groundwater contamination in the area. These releases were documented with the MA DEP and extensive excavation and removal efforts followed. Follow-up investigation by Bostik's Licensed Site Professional (LSP) (GEI Consultants) as part of MCP Phase II Comprehensive Site Assessment activities concluded that no further action was required to address the 1979 and 1984 polyester distillate releases. There have been no documented releases of hazardous waste associated with the regulated units since that time. The 2007 RCRA tank inspection that resulted in the need to replace the original T-1 and T-2 did not indicate that there had been any prior release of material.

In addition, the plant has undergone an extensive investigation and remediation Response Action Outcome (RAO) process that has closed out all environmental conditions associated with the Bostik site, including the

areas around the regulated receivers, tanks and Struthers-Wells unit. An Activity and Use Limitation has also been established for the site. This factor also affects the extent of soil sampling that is needed to demonstrate clean closure.

### 2.4 RCRA Regulatory Status of Facility

The facility is a large quantity generator of hazardous waste and is in RCRA interim status for its prior burning and storage for more than 90 days of a liquid hazardous waste polyester distillate stream. This stream is generated from the polyester reaction process. The stream can pass through any one of seven receiver tanks and it is then stored in two bulk tanks. Prior to March 2011, this liquid hazardous waste stream, which has a high Btu content, was co-burned in a Struthers-Wells Burner unit, which heats the heating oil used in production processes at the plant. Since March of 2011, this liquid has been shipped off-site for disposal.

Bostik is in interim status for its hazardous waste boiler operations, which are now inactive. In 2006, Bostik submitted its latest Part B application to obtain a RCRA permit. Bostik has submitted a letter requesting withdrawal of the Part B application.

Bostik submitted a RCRA partial closure plan for the closure of T-9, a hazardous waste tank in Building 9, which was approved by EPA Region 1 on November 4, 2011. That closure has been completed. Bostik is now submitting this Closure Plan seeking approval to commence clean closure of all of the remaining regulated units pursuant to the interim status regulations. This closure plan does not address corrective action applicable to an interim status facility under Section 3008(h) of RCRA.

## 3.0 DESCRIPTION OF REGULATED UNITS SUBJECT TO CLOSURE

Struthers-Wells Oil Heater

Since 1988 and prior to the promulgation of the boiler and industrial furnace (BIF) regulations, Bostik operated a Struthers-Wells oil heater under a MA DEP recycling permit for Class B(2) facilities. The heated oil from the Struthers-Wells unit is conveyed into a hot oil loop that heats the polyester reactor vessels and also heats a steam generator. The Struthers-Wells unit is made of carbon steel and is located within a 6" thick concrete-diked secondary containment structure measuring 22.5' by 14' by 10". The containment structure was recoated in April/May of 2007. From 1988 through July of 2000, Bostik co-fired the polyester distillate hazardous waste from the polyester reaction process with No. 2 fuel oil in the Struthers-Wells unit. After July of 2000, the hazardous waste was co-fired with natural gas. Since March 2011, combustion of the hazardous waste byproduct has been suspended and all waste generated has been shipped off-site for disposal while Bostik has been evaluating alternatives for recycling, on-site combustion, or off-site disposal. Bostik has now decided to cease burning hazardous waste in the Struthers-Wells oil heater and to commence closure of it and all other regulated units at the facility, i.e., the receiver tanks and storage tanks that conveyed hazardous waste into the Struthers-Wells Burner.

Receiver and Storage Tanks

Polyester distillate is conveyed from the polyester reaction process into any one of seven distillate receiver tanks (V1, V2, V3, V4,V10,V13 and V14) and into DT-1, an overflow receiver tank for V13, and then conveyed to and stored in two bulk aboveground tanks (T-1 and T-2). The "V" receiver tanks and DT-1 are located in a fully contained explosion-rated space within Bld 39 (H-vault). T-1 and T-2 are located externally to Bld 39 in a secondary containment structure designed to contain at least 110% of the largest container. The key information relating to each regulated receiver and storage tank is described in the following table:

| **Regulated Unit** | **Tank Dimensions** | **Tank Maximum Inventory (gal)** | **Tank Install Date** | **Tank Materials of Construction** | **Secondary Containment Dimensions** | **Secondary Containment Materials of Construction** |
|---|---|---|---|---|---|---|
| T-1 | 14' x 10' od | 8,000 | 2008 | ¼ " MCS | 30' x 16'x 3.75' 10" thick | Concrete Dike |
| T-2 | 14' x 10' od | 8,000 | 2008 | ¼ " MCS | 30' x 16'x 3.75' 10" thick | Concrete Dike |
| V-1 | 7' x 2.5' od | 240 | 2011 | 0.2 " CS | 18"x25'x16' 12" thick | Concrete Dike |
| V-2 | 5'3" x 4'6" od | 700 | 2011 | 0.241 " SS | 18"x25'x16' 12" thick | Concrete Dike |
| V-3 | 7' x 2.5' od | 240 | 2011 | 0.2 " CS | 18"x25'x16' 12" thick | Concrete Dike |
| V-4 | 5' x 4.5' od | 700 | 2011 | ¼ " SS | 18"x25'x16' 12" thick | Concrete Dike |
| V-10 | 5.5' x 4' od | 700 | 2011 | 3/16 " SS | 18"x25'x16' 12" thick | Concrete Dike |
| V-13 | 3' x 20" od | 50 | 2011 | 3/16 " SS | 18"x25'x16' 12" thick | Concrete Dike |
| V-14 | 4' x 3.5' od | 600 | 2011 | ¼ " SS | 18"x25'x16' 12" thick | Concrete Dike |
| DT-1 | 7.4' x 5' od | 950 | 2000 | ¼" CS | 18"x25'x16' 12" thick | Concrete Dike |

MCS is Mild carbon steel SS is Stainless Steel CS is Carbon Steel

Each concrete dike is coated with an epoxy coating (SikaGuard) that was applied at the date of installation or replacement. The containment structure for the receiver tanks and DT-1 containment structure was most recently re-coated in June 2011.

Ancillary Equipment

Stainless steel piping delivers the hazardous waste generated by the polyester reactors to the seven distillate receiver tanks and DT-1. Liquid accumulated in these tanks is pumped directly to T-1 or T-2. All piping described is located within containment structures.

Prior to March 2011, the hazardous waste distillate was pumped from T-1 and T-2 through carbon steel piping to the Struthers-Wells Burner unit by pumps located in Bldg 27. T-1 and T-2 are equipped with conservation vents to prevent pressure buildup during the introduction of liquids. T-1 and T-2 are equipped with level measurement instrumentation (including high level alarms) that relates the tank level to operators at their process control screen. Numerous valves and filter housings are located in Bldg 27 to control flow and clean out lines.

The regulated hazardous waste management units are depicted on the site plan provided hereto as Exhibit 1.

# 4.0 CLOSURE APPROACH

## 4.1 Performance Standard

As required by 40 CFR §265.111, Bostik will clean close the facility in a manner that:

a. Minimizes the need for further maintenance;
b. Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and
c. Complies with the closure requirements of 40 CFR Part 265, Subpart G, and the applicable requirements of 40 CFR §265.197 and §266.102(e)(11).

## 4.2 Continued Use of Regulated Units

Most of the regulated units and ancillary equipment will continue to be used on-site after clean closure, and this is an important factor in developing the approach to closure herein. Specifically:

- After clean closure, all of the receiver tanks (V-1, V-2, V-3, V-4, V-10, V-13 and V-14) as well as T-1, T-2 and DT-1 will continue to receive polyester distillate that will be a hazardous waste due to D001 ignitability. All ancillary piping and other equipment from the polyester process up to T-1, T-2 and DT-1 will also continue to be used to convey such polyester distillate hazardous waste. Whereas prior to March 2011 such hazardous waste was co-fired in the Struthers-Wells Burner, since March 2011 and continuing after clean closure, all hazardous waste will be removed every 90 days or sooner from T-1 and T-2 and sent off-site for disposal. As such, T-1, T-2, DT-1 and the other "V" receiver tanks will be operated as less-than 90-day hazardous waste storage tanks. Because all of the receiver units, the storage tanks and the associated ancillary equipment up to T-1

and T-2 will continue to receive, store, and/or convey the same distillate hazardous waste after closure, the clean closure requirement to "remove or decontaminate" these units and equipment is an ephemeral concept that at most will exist for a few days after clean-out until the units and equipment are put back into service and start receiving the same distillate hazardous waste. Although Bostik will clean the units and equipment so as to meet the clean closure performance standard, the fact that the receiver and storage tanks and their ancillary equipment will almost immediately begin receiving the same hazardous waste that was removed from such units and equipment should be considered in establishing the removal and decontamination endpoints.

- Similarly, the secondary containment that surrounds the receivers, the storage tanks and the Struthers-Wells Burner will continue to be used to provide secondary containment after closure. If at all possible, their integrity should not be jeopardized by drilling through sound containment to take samples, and this factor affects the planned approach to closure.

- The closure will also need to occur in a manner that minimizes disruption of the manufacturing processes at the plant. All of the units that will be closed will continue in service and are essential to the on-going production operations. Some units can be out-of-service longer than others where the material they receive can be handled by other units, such as T-1 being used while T-2 is being cleaned. But other units, like the Struthers-Wells Burner, which provides the heated oil for the plant's production processes, cannot be out of service for more than a brief period. These situations also affect the planned approach to closure.

## 4.3 Constituents of Concern, Analytical Methods, Clean Closure Levels, and Waste Classification

### 4.3.1 Constituents of Concern

Constituents of concern (COCs) for the regulated units are all of the hazardous constituents that were burned or may have been burned in the Struthers-Wells Burner. Specifically, the polyester distillate waste was burned, and it is comprised of water and the following COCs: **tetrahydrofuran; ethylene glycol;** and **methanol**

Although mostly water, this wastestream is considered hazardous due to ignitability (D001). This waste stream varies only slightly due to the production of a variety of polyester polymers.

In addition to these three distillate COCs, because spent **toluene**, spent **methyl ethyl ketone** (MEK), spent **ethyl acetate** (EA), and spent **xylene** historically may have been occasionally burned in the Struthers-Wells unit, these constituents will also be considered COCs.

Finally, **benzene** will also be a COC since it was detected during the last trial burn.

The complete list of COC's is thefore summarized as follows:

Tetrahydrofuran
Ethylene glycol
Methanol
Methyl ethyl ketone
Ethyl acetate
Xylene
Benzene
Toluene

### 4.3.2 **Analytical Methods**

All samples will be collected, preserved, and analyzed in accordance with the Massachusetts Department of Environmental Protection (MassDEP) policy WSC #10-320: *Compendium of Quality Control Requirements and Performance Standards for Selected Analytical Protocols* (the "CAM") where applicable. All samples will be submitted to an approved laboratory and analyzed using EPA Method 8260C and EPA Method 8015B. The following constituent results will be reported using the following detection limits:

| **Detection Limits** | | |
|---|---|---|
| **Method 8260C*** | Soil/Concrete (mg/kg) | Wipes (mg/wipe) |
| Tetrahydrofuran | .010 | .010 |
| Toluene | .005 | .005 |
| Xylenes | .002 | .002 |
| Methyl Ethyl Ketone | .005 | .005 |
| Ethyl Acetate | .005 | .005 |
| Benzene | .005 | .001 |
| **Method 8015B** | Soil/Concrete High Level (mg/kg) | Wipes (mg/wipe) |
| Methanol | 1 | 1 |
| Ethylene Glycol | 5 | 5 |

*Low Level Preservative/Deionized Water (Sample Method 5035)

### 4.3.3 **Clean Closure Concentration Levels**

Since 1987, EPA's policy for clean closure is that where sampling occurs, clean closure can be shown by achieving risk-based levels for the COCs; it is not necessary to show non-detection of COCs or detection at or below background levels in the case of environmental media. See Memo, "Closure Requirements"

from M. Williams to D. Wagoner, OSWER Directive #9476.00-12 (Feb. 2, 1988); 52 Fed. Reg. at 8705-06 (March 19, 1987); Memo, "Risk-Based Clean Closure," from E. Cotsworth, RO 14174 (March 16, 1998).

The Bostik Middleton site is currently an industrial site where residential exposure cannot occur. It is subject to an activity and use limitation (AUL) under Massachusetts law, which is a deed restriction that requires that the site not be used for residential purposes. Also, groundwater under the site is not used for drinking water purposes and is not categorized as GW1 (usable for drinking water) by MassDEP.

In addition, the site is currently subject to site-wide corrective action under Massachusetts' authorized RCRA corrective action program. If units were not clean closed and contaminants were released from the units into soil or groundwater, the soil or groundwater would be subject to Massachusetts action levels and cleanup standards. This strongly supports applying Massachusetts action levels as closure standards.

To be conservative, Bostik and EPA have agreed that sample concentrations for the COCs will be compared to Mass. DEP MCP S1-GW1 standards. These promulgated standards that apply to the COCs at the Middleton site are:

| Contaminant | MCP Method 1 S-1 & GW-1 Standard (mg/kg) (ppm) |
|---|---|
| Benzene | 2 |
| Methyl Ethyl Ketone (2-Butanone) | 4 |
| Toluene | 30 |
| Xylenes | 400 |

For COCs where there are no promulgated MassDEP MCP S-1/GW-1 standards, Bostik and EPA have agreed that the higher of the EPA Region 3 groundwater screening level and the New Jersey groundwater quality standards will be used as the action levels, as shown below with the higher value shaded:

| Contaminant | Region 3 Screening Level Risk-based GW SSL (mg/kg) | New Jersey GW Quality Standards (mg/kg) |
|---|---|---|
| Ethyl Acetate | 0.031 | 6 |
| Ethylene Glycol | 8.1 | 0.3 |
| Methanol | 8.1 | 4 |
| Tetrahydrofuran | 0.75 | 0.01 |

### 4.3.4 Classification of Wastes for Disposal

The wastes that have been stored in the hazardous waste fuel storage tanks and burned in the Struthers Wells burner were hazardous wastes due to the D001 ignitability characteristic. In addition, historically some liquid wastes may have been burned that were F005 spent toluene and methyl ethyl ketone (MEK), and F003 spent ethyl acetate (EA), methanol and xylenes. Accordingly, before disposal of any waste

(liquid, equipment, concrete, rags, soil or other materials), the wastestream may be evaluated to determine if it exhibits D001 ignitability, if it is a listed F005 or F003 hazardous waste, or if it contains an F005 or F003 listed spent solvent.

In that regard, a wastestream containing EA, methanol or xylene would be listed F003 spent solvents only when the wastestream is ignitable. This is because under 40 CFR § 261.3(g), if such a wastestream or a mixture consisting of such a wastestream ceases to be ignitable, the stream is no longer classified as F003. Of all of the wastes that will be managed during closure, only the liquid tank residues will be ignitable, and as such, they will be classified as D001, and they will also be assumed to be F003 due to the mixture rule.

The liquid tank residues will also be classified as F005 due to their possible mixing with F005 streams that occasionally were historically burned. Similarly, any chamber ash and rinsewater will also be classified as F005 under the derived-from and/or mixture rules. The ash, as a solid material, would not be D001 or F003 for ignitability, and the rinsewater, being almost entirely water, would also not be D001 or F003 for ignitability. Any debris (piping, pumps, rags; PPE) that will be disposed will be assumed to be a F005 hazardous waste. If soil has to be excavated and disposed, its classification will be further discussed with Region 1.

# 5.0 Protocols for Achieving Clean Closure

This section describes how clean closure will be achieved for each group of equipment, structures, and potentially impacted media. In the event any procedure identified below is determined to be not feasible or practicable, Bostik will propose an alternative and obtain Region 1's approval. Worker health and safety procedures in accordance with 29 CFR § 1910.120 will be followed as applicable.

## 5.1 Clean Closure of Tanks and Ancillary Equipment

The basic steps for clean closure of the storage tanks (T-1, T-2), the eight receiver tanks (V1, V2, V3, V4, V10, V13, V14 and DT-1), and their ancillary equipment (e.g., piping and pumps) is as follows:

1. Pump all distillate from each receiver tank to tanks T-1 or T-2.
2. Pump all distillate from tanks T-1 and T-2 into a tanker truck and/or containers for proper disposal. To avoid a production shutdown, the removal of distillate from the receiving, piping and the storage tanks, as well as the cleaning described below will be staged to keep necessary equipment in service at all times.
3. Remove entry point covers from each receiver tank.
4. Using a high pressure spray washer, from outside receiver tanks V2, V4, V10, V13, V14 and DT-1, spray a solution of hot water (approximately 120°F) and a mild detergent throughout the interior of each receiver tank. For receiver tanks V1 and V3, which do not have an entry port, fill each receiver with hot water and a mild detergent and leave it in the receiver for at least 15 minutes. Pump the rinsewater from each receiver through the piping and into T-1 or T-2. Pump the rinsewater from T-1 and T-2 into a tanker truck.
5. For each receiver tank, repeat Step 4 two more times for a total of three washes.

6. For T-1 and T-2, remove an entry point and spray a solution of hot water (approximately 120°F) and a mild detergent throughout the interior of each tank using a high pressure spray washer from outside each tank. Remove the rinse water after the washdown into a tanker truck. If the pumping does not remove all liquid, to the extent practical, use a vacuum hose to remove the remaining liquid.
7. Repeat Step 6 two more times for a total of three washes.
8. Dispose all rinsewater as a F005 listed hazardous waste.
9. Have an independent engineer inspect the interior of tanks T-1 and T-2, take photographs after the cleaning, and confirm that they contain no visible chemical residue.
10. Dismantle and remove the piping and any other ancillary equipment between the tanks T-1 and T-2 and the Struthers-Wells Burner. Bostik will first evaluate whether any of the equipment can be reused. If so, it will be thoroughly washed with a hot water and detergent solution, and the rinsewater will be managed as an F005 hazardous waste. For equipment that cannot be reused and for piping, Bostik's first choice will be to send the metal parts off-site for scrap recycling in accordance with 40 CFR §261.6(a)(3)(ii) and the Monthly Hotline Q&A, Faxback 14277, Sub-9224-98-006, EPA 530-R-98-005f (June 1, 1998), which clarifies that scrap metal that exhibits a hazardous waste characteristic or contains listed hazardous waste is exempt from hazardous waste storage, transport and disposal regulations when recycled. To the extent scrap metal is washed before being sent off-site, collect and manage the rinsewater along with the other rinsewater as an F005 hazardous waste. Any material that cannot be reused or sent off-site as scrap metal will be manifested as an F005 hazardous waste and sent to a permitted TSD facility. Shipping papers and manifests, as applicable, will be submitted to Region 1 along with the Certification of Closure. If the scrap metal recycler requires analysis of the scrap metal or other profiling, such documentation will also be submitted to Region 1 along with the Certification of Closure. During the closure process, any scrap metal intended for recycling will be managed and stored in a manner that will not permit any release of any hazardous waste or constituent to the environment. There will be no visible hazardous waste liquids associated with the storage or disposal of the scrap metal. Verification that the metal has been recycled by the receiving facility will be provided in the Certification of Closure documentation.

## 5.2 Clean Closure of Struthers-Wells Burner

The Struthers-Wells Burner has burned natural gas and no hazardous waste since March of 2011. As such, all organic hazardous constituents are expected to have been destroyed by such burning. The Struthers-Wells Burner is integral to the plant's manufacturing processes since it heats the oil that is used to provide necessary heat transfer to certain production processes. As such, it is critical that the Struthers-Wells goes through a clean closure process that does not keep it out of service for more than 24 to 48 hours. After clean closure, the Burner will continue burning 100% natural gas, and as such, there should be no concern with it being a source of future contamination. Moreover, because the Burner needs to resume service promptly, a minimally invasive method for establishing clean closure of the unit is much more practical than dismantlement. With this background, the clean closure steps for the Struthers-Wells Burner will be as follows:

1. Cease burning in the Struthers-Wells unit and allow to cool (likely several hours depending on ambient temperature).
2. Open up the chamber by disconnecting the bottom of the chamber.
3. Remove any ash and dispose ash as F005 hazardous waste.
4. Inspect the refractory brick by entering the chamber via ladder from the bottom. If the brick is in need of replacement, remove brick that will be replaced. Dispose of removed brick, if any, as a F005 hazardous waste, unless the brick is sampled and toluene or MEK are not detected. After removal of all brick in need of replacement, replace removed brick with new refractory brick.
5. Unless all brick has been replaced, take three chip samples as follows: Identify an area of unreplaced brick in the top-third of the chamber, middle third of the chamber, and bottom third of the chamber, and in varying directions from the center. If the brick has entirely been replaced in one or two of the thirds, take the three chip samples in the remaining one or two thirds where all of the brick has not been replaced.
6. A wipe sample of the stack will also be taken from a sample port that is accessible from the stack gangway. The minimum size of the stack wipe sampling area will be 10 cm by 10 cm.
7. Have the wipe samples analyzed for the COCs as specified in Section 4.3.1 and 4.3.2.
8. If all sample results are at or below the clean closure levels for wipe samples specified in Section 4.3.3., clean closure of the Struthers-Wells has been achieved, and it may be reused for burning fuel.
9. If any sample result exceeds the clean closure levels specified in Section 4.3.3., at Bostik's discretion, Bostik will either:
    a. resample the chamber or stack, depending on where the exceedance occurred. If the resample result is below the clean closure level, the unit will be considered clean closed; or
    b. clean the chamber or stack, depending on where the exceedance occurred, and resample the cleaned chamber or stack. If the resample result is below the clean closure level, the unit will be considered clean closed; or
    c. Bostik will submit for approval to Region 1 within 90 days of verification of the failed sample results a revised closure plan that allows Bostik to continue to use the Struthers-Wells unit to burn fuel without any hazardous waste until the unit is dismantled and removed from service.
10. While the wipe samples are being analyzed and the results are being verified and reported, Bostik may elect to reassemble the bottom of the unit and resume burning fuel, or suspend burning pending the outcome of the analysis.
11. Documentation of the wipe sampling procedures used during the closure process will be included in the certification of closure.

## 5.3 Containment Structures

These procedures apply to both the diked containment structures around tanks T-1 and T-2 and the Struthers-Wells Burner, except where noted.

1. Remove all debris, if any, from each containment structure, and dispose as nonhazardous waste.
2. Using a high pressure spray washer, spray the containment structure's floor and interior walls with a solution of hot water (approximately 120°F) and mild detergent.

3. Dispose all rinsewater as a F005 listed hazardous waste.
4. Repeat Steps 2 and 3 two more times for three total washes.
5. Have an independent engineer inspect each containment structure for visible gaps and cracks.
6. If visible cracks or gaps are detected, a chip sample will be taken in the location of the deepest crack and another chip sample taken in the location of the widest crack. In addition, a chip sample will be taken at the location where the distillate was fired into the Struthers-Wells boiler.
7. All chip samples will be sent off-site for laboratory analysis of the COCs as specified in Sections 4.3.1 and 4.3.2. Before analysis, the laboratory will be instructed to pulverize the chip sample if necessary to properly analyze it.
8. If a chip sample result exceeds the clean closure levels in Section 4.3.3, Bostik will bore through the concrete where the sample exceeded the clean closure level, continue boring to the water table, and collect a grab sample of soil at each two foot intervals. Bostik will send the soil samples to a third-party laboratory for analysis and reporting of the COCs as specified in Sections 4.3.1 and 4.3.2. If the soil results exceed the clean closure levels specified in Section 4.3.3, the on-going Site Wide Corrective Action requirements will apply, and how the contamination will be addressed will be discussed with Frank Battaglia at Region 1.
9. If the chip sample results do not exceed the clean closure levels in Section 4.3.3, clean closure of the containment structures will have been attained, provided:
    a. all visible cracks are repaired and sealed in each containment area;
    b. each containment area is power washed and recoated with an appropriate epoxy;
    c. an independent engineer certifies that there are no remaining cracks and gaps; and
    d. if a chip sample does not exceed the clean closure levels for either containment structure, within six feet outside that structure, a soil sample will be taken and analyzed to confirm no exceedance of the clean closure levels in Section 4.3.3.
10. Locations of all visible cracks or gaps will be recorded in the operating log and documentation of the locations will be provided as part of the Certification of Closure.
11. If additional soil sampling is conducted, it will be recorded in the operating log and documentation will be provided in the certificate of closure.

## 5.4 Continuous Emissions Monitoring (CEM) Room

1. Remove $0_2$ and CO analyzers and reuse (after refurbishing based on manufacturers' recommendations, if necessary) or dispose as nonhazardous waste.
2. Disconnect the cylinder gas bottles and return to vendor.
3. Disconnect and dispose the sample line as hazardous waste.
4. Remove and dispose sample line insulation as nonhazardous waste after confirming from records and/or operator knowledge that the insulation has not contacted hazardous waste.
5. Disconnect and remove the DAS computer for reuse or for disposal as a nonhazardous waste.

## 5.5 Decontamination Residues

It is estimated that about 2600 to 3000 gallons of rinseate water will be generated during the cleaning activities. All of the rinseate will be collected, placed in containers (drums, totes or tank truck), appropriately labeled, and disposed off-site as F005 hazardous waste. Absorbent materials, polyethylene

sheeting, used personal protective equipment, etc. used during the decontamination procedures will be accumulated in containers (drums, dumpster, truck) and it and any equipment that will be disposed will be managed as an F005 hazardous waste. Equipment used in the decontamination and/or removal process, such as the pressure washer gun/wand and the concrete chipping equipment, will be washed in a plastic tub/basin with soap and hot water. The washwater will be disposed along with the other rinsewaters as F005 hazardous waste. Such equipment decontamination will occur in a contained area either inside the T1/T2 containment structure or immediately adjacent. Residual solids will be collected in 55 gallon drums and staged in the 90 day hazardous waste storage area. Ideally, the residual liquids will be collected in a vacuum tanker along with the other rinsewaters. If this is not practical due to low volumes or unavailability of a tank truck, this material will be collected in 55 gallon drums and staged in the 90 day hazardous waste storage area awaiting off-site transportation.

# 6.0 Quality Assurance and Quality Control Procedures (QA/QC)

Before beginning closure activities, a meeting will be scheduled with the contractor and/or consultant to ensure that the individuals responsible for QA/QC in each organization are identified. At that time, anyone responsible for QA/QC activities will supply their qualifications for such a position, and the Closure Plan procedures for cleaning each regulated unit will be reviewed. A meeting with the QA/QC individuals from each organization will also be scheduled any time deviations from the approved closure plan are being considered.

The following position and organizations will be associated with the QA/QC for the closure:

Environmental Manager, Bostik, Inc.

- Authorized to make any decisions regarding the effective completion of closure activities.
- Responsible for planning and scheduling all closure activities with the decontamination and removal contractor and ensuring that all QA/QC activities are handled appropriately.
- This person is qualified for this role through extensive experience with the permitted equipment as well as the applicable environmental regulations and Closure Plan.

Project Manager, Cleaning and Removal Contractor(s)

- Authorized to make any decisions regarding the effective completion of closure activities.
- Responsible for working with Bostik to complete all closure activities (including all QA/QC activities) in a way that protects the environment and employee safety.
- This person is qualified for this role through extensive experience with the tank cleaning operations and waste management and disposal.

Independent Site Professional Engineer, Consultant

- Authorized to make any decisions regarding the structural integrity of the cleaned units and their absence of visible staining.
- This person is qualified for this role through extensive experience in evaluating tanks, containment structures, and boiler units.
- Will document achievement of milestones.

Any sampling and analyses will be conducted in accordance with Section 4.3.2 and appropriate QA/QC procedures specified in the EPA document, Test Methods for Evaluation of Solid Waste, SW-846.

A chain of custody form will accompany any samples sent to approved laboratories for analysis. The chain of custody form will identify the samples contained in the sample cooler and be signed off by the sample collector indicating that they have transferred ownership of the samples to the transporter. Once received by the laboratory, the form will be signed accepting responsibility for the samples. The completed chain of custody will be returned to Bostik as part of the final data package.

# 7.0 Closure Schedule

The proposed schedule for closure is provided below.

| **Activity** | **Day** |
|---|---|
| Approval of Closure Plan | 0 |
| Commence Closure Activities | 60 |
| Complete Closure Activities | 150 |
| Complete Disposal of Rinse Water and Materials | 180 |
| Certification of Closure Submitted | 240 |

Although it is not anticipated that any extensions will be required, it is possible that harsh winter conditions, unavailability of consultant/contractor personnel, or coordination with production operations could delay closure efforts.

# 8.0 Financial Assurance/Closure Cost Estimates

The closure costs for the proposed closure herein will be substantially less than the closure cost estimate of $462,642 that is included in this current closure plan. That is because the existing closure plan assumed plant shutdown and total dismantling and disposal of the burner unit, all receiver and storage tanks, and ancillary piping and equipment. Under this proposed closure plan, the burner unit, tanks and most of the piping and equipment will not be dismantled and disposed, but rather will continue to be used after they are clean closed. Rather than providing a new closure cost estimate, which would be much lower than the existing estimate, Bostik will continue to maintain financial assurance at the current much higher closure cost level of $462,642 via the attached Exhibit 2, Financial Assurance Letter of Credit and the Standby Trust. This letter of credit and standby trust meet the requirements of 40 CFR 265.143.

Bostik also maintains liability coverage for sudden accidental occurrences in the amount of $8 Million per occurrence with an annual aggregate of $16 Million. A copy of this certificate of Liability Insurance is also provided as Exhibit 3.

## 9.0 Certification of Closure

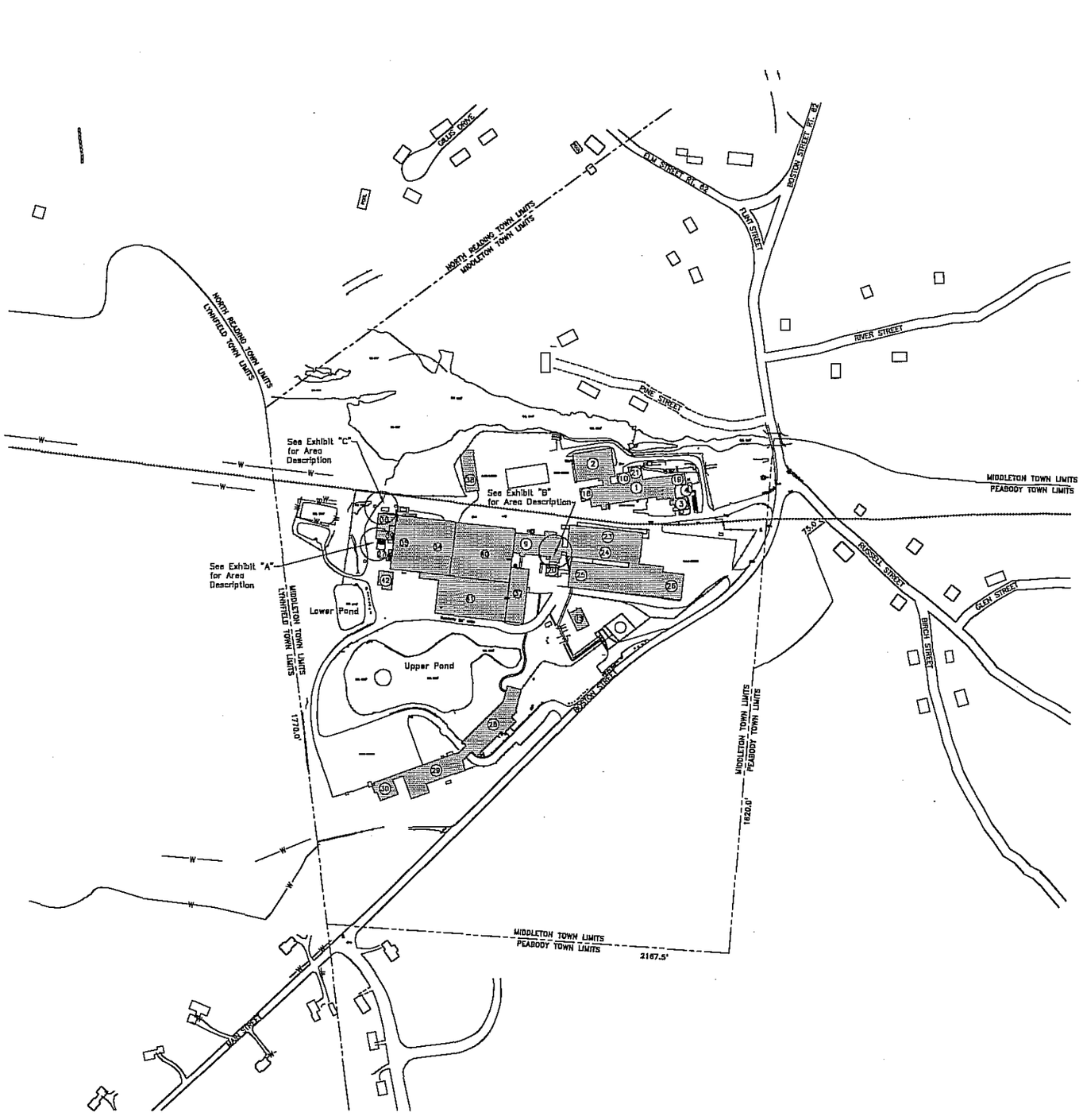
Within 60 days of completing closure activities, Bostik will submit a closure certification to EPA with a copy to the MA DEP. This certification will address the following:

- Documentation of all closure activities, including the identification of all project milestones, manifests, bills of lading, and final disposal facilities if they are not listed on these documents,
- Summary of all QA/QC data collected during closure,
- Photographic record of each milestone event identified in the plan,
- List of, and justification for, any departures from the approved closure plan,
- Sample results, including method detection limits,
- Verification of recycling of scrap metal,
- Documentation of the wipe sampling procedures,
- Documentation of any soil sampling associated with the containment structures.
- Certification statement by qualified Bostik personnel as well as an independent registered Professional Engineer that the facility was closed in accordance with identified milestones of the approved closure plan (tank cleaning, wipe samples analysis, piping scrapped or disposed).

If clean closure is achieved for the all regulated units at the facility, the Part A permit application will be withdrawn. Bostik will also terminate the financial assurance upon approval of the certification of closure.

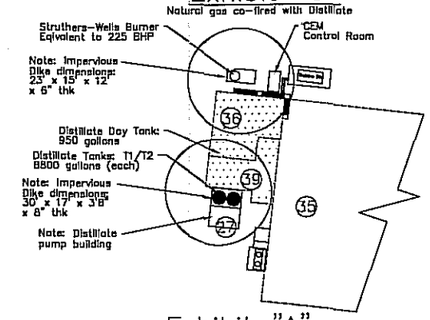
EXHIBIT 1

SITE PLAN



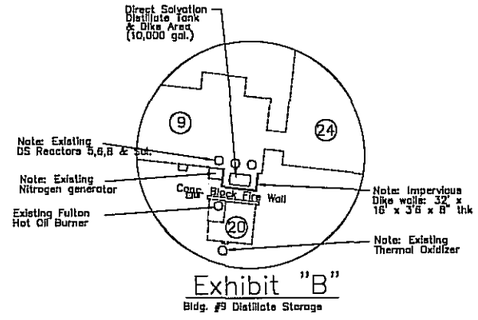

## Exhibit "C"

Natural gas co-fired with Distillate




## Exhibit "A"

Storage Tanks & Pump Bldg.




## Exhibit "B"

Bldg. #9 Distillate Storage

LEGEND

- (26) BUILDING NUMBERS
- CHAIN LINK FENCE
- WETLANDS
- STONE WALL
- RAILROAD
- CONTOUR
- BUILDING
- TREE LINE
- —W— WALL

NOTE

1. PLAN TAKEN FROM COL-EAST: BOSTIK SITE PLAN DATED JANUARY, 1991, WETLAND CONSERVATION MAP OF NORTH READING, TOPOGRAPHIC MAPS OF LYNNFIELD, MA NUMBERS 4, 8 AND 9 DATED APRIL 1968 AND USGS 7.5X15 MINUTE MAP OF READING, MA DATED 1957.
2. THE REMAINDER OF THE HOMES ON BIRCH AND RUSSELL STREETS WERE TOO DENSE TO BE DEPICTED.

REFERENCE:

BOSTIK, INC.
SITE PLAN – DISTILLATE STORAGE, DWG. NO. 10062008
DATED: 10/02/2006

0 200 400
SCALE, FEET

| REVISIONS | | | |
|---|---|---|---|
| NO.: | DESCRIPTION: | DATE: | BY: |
| | | | |

DESIGNED BY: X
DRAWN BY: K.P.B.
CHECKED BY: D.R.
APPROVED BY: X


ENSR | AECOM
ENSR CORPORATION
2 TECHNOLOGY PARK DRIVE
WESTFORD, MASSACHUSETTS 01886
PHONE: (978) 589-3000
FAX: (978) 589-3100
WEB: HTTP://WWW.ENSR.AECOM.COM


SITE PLAN – DISTILLATE STORAGE
BOSTIK, INC.
211 BOSTON STREET
MIDDLETON, MASSACHUSETTS

| SCALE: | DATE: | PROJECT NUMBER: |
|---|---|---|
| 1"=400' | 11/06 | 00963-035 |

FIGURE NUMBER: B-4

SHEET NUMBER: X

FILENAME: 00963-035-040.DWG

EXHIBIT 2

FINANCIAL ASSURANCE

**Crédit Industriel et Com cial**
520 Madison Avenue
New York, NY 10022
Phone (212) 715-4400
Rapifax: (212) 715-4477
Swift: CMCIUS33



Issuance Date: March 25, 2015
Our Ref.: SB23.720
Amount: US$462,642.00
Expiry Date: March 25, 2016

Beneficiary:
U.S. Environmental Protection Agency
Mr. H. Curtis Spalding, Regional Administrator
EPA New England – Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Applicant:
Bostik, Inc.
211 Boston Street
Middleton, MA 01949

Dear Sir:

We hereby establish our Irrevocable Standby Letter of Credit No. SB23.720 in your favor, by order of Bostik, Inc., 211 Boston Street, Middleton, MA 01949 and for the account of Arkema Inc., up to the aggregate amount of US$462,642.00 (Four Hundred Sixty Two Thousand Six Hundred Forty Two and 00/100 U.S. Dollars), available upon presentation of:

1. Your sight draft bearing reference to this Letter of Credit No. SB23.720 , and

2. Your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations issued under Authority of the Resource Conservation and Recovery Act of 1976 as amended".

This Letter of Credit is effective as of March 25, 2015 and shall expire on March 25, 2016, but such expiration date shall be automatically extended for a period of 1 year on March 25, 2016 and on each successive expiration date, unless, at least (120) days before the current expiration, we notify both you and Bostik, Inc. by certified mail that we have decided not to extend this Letter of Credit beyond the current expiration date. In the event you are so notified, any unused portion of the Letter of Credit shall be available upon presentation of your sight draft for 120 days after the date of receipt by both you and Bostik, Inc., as shown on the signed return receipts.

Whenever this Letter of Credit is drawn on under and in compliance with the terms of this Letter of Credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the Standby Trust Fund of Bostik, Inc. in accordance with your instructions.

Continued on page 2, which forms an integral part of this Letter of Credit

**Crédit Industriel et Commercial**
520 Madison Avenue
New York, NY 10022
Phone (212) 715-4400
Rapifax: (212) 715-4477
Swift: CMCIUS33



We certify that the wording of this Letter of Credit is identical to the wording specified in 40 CFR 264.151(d) as such regulations were constituted on the date shown immediately below.

Very Truly Yours,

Louvenia Davis
Vice President

Laura J. Carosi
Assistant Vice President

Date: March 25, 2015

This Letter of Credit is subject to the Uniform Customs and Practice for Documentary Credits, 2007 Revision, International Chamber of Commerce Publication No. 600.

Please address all correspondence regarding this Letter of Credit to the attention of the Standby Letter of Credit Department located at 520 Madison Avenue, New York, NY 10022, referring to our Letter of Credit No. SB23.720. For telephone assistance, please contact the Standby Letter of Credit Department at (212) 715-4690 and have this Letter of Credit number available.

EXHIBIT 3

CERTIFICATE OF LIABILITY INSURANCE

**Effective date of this Endorsement: 02-Feb-2015**
**This Endorsement is attached to and forms a part of Policy Number: W149EC130101**
**Syndicate 2623/623 at Lloyd's referred to in this endorsement as either the "Insurer" or the "Underwriters"**

**ADD/DELETE ENDORSEMENT WITHOUT ADDITIONAL/ RETURN PREMIUM**

This endorsement modifies insurance provided under the following:

**BEAZLEY "ECLIPSE"**
**ENVIRO COVERED LOCATION INSURANCE POLICY (SITE ENVIRONMENTAL**)

It is hereby understood and agreed that the following endorsement(s) is added to the Policy:

| | |
|---|---|
| Hazardous Waste Facility Liability Endorsement | EAK021<br>032015 ed. |

All other terms and conditions of this Policy remain unchanged.

Authorized Representative

**Effective date of this Endorsement: 02-Feb-2015**
**This Endorsement is attached to and forms a part of Policy Number: W149EC130101**
**Syndicate 2623/623 at Lloyd's referred to in this endorsement as either the "Insurer" or the "Underwriters"**

## HAZARDOUS WASTE FACILITY LIABILITY ENDORSEMENT

This endorsement modifies insurance provided under the following:

**BEAZLEY "ECLIPSE"**
**ENVIRO COVERED LOCATION INSURANCE POLICY (SITE ENVIRONMENTAL**)

In consideration of the premium charged for the Policy, it is hereby understood and agreed that:

1. This endorsement certifies that the policy to which this endorsement is attached provides liability insurance covering bodily injury and property damage in connection with the Insured's obligation to demonstrate financial responsibility pursuant to 310 CMR 30.908. The coverage applies to:

   EPA ID Number: MAD001039767
   Bostik, Inc.
   211 Boston Street, Middleton, MA 01949

   for sudden and nonsudden accidental occurrences.

   The limits of liability are $8,000,000 each occurrence and $16,000,000 annual aggregate, exclusive of legal defense costs.

2. The insurance afforded with respect to such occurrences is subject to all of the terms and conditions of the policy; provided, however, that any provisions of the policy inconsistent with subsections (a) through (e) of this Paragraph 2 are hereby amended to conform with subsections (a) through (e):

   (a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy to which this endorsement is attached.

   (b) The Insurer is liable for the payment of the amounts within any deductible applicable to the policy, with a right of reimbursement by the Insured for any such payment made by the Insurer.

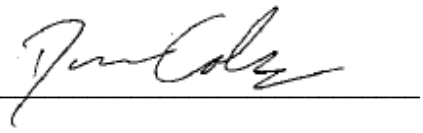
   (c) Whenever requested by the Department of Environmental Quality Engineering (hereinafter called the Department) of the Commonwealth of Massachusetts, the Insurer agrees to furnish to the Department a signed duplicate original of the policy and all endorsements thereon.

   (d) Cancellation of this endorsement, whether by the Insurer or the Insured, shall not take effect until at least 60 days after the date of receipt by the Department of written notice, sent to the Department by certified mail, of cancellation of this endorsement.

   (e) Any other termination of this endorsement will be effective only upon written notice and only after the expiration of thirty (30) days after the date of receipt by the Department of such written notice, sent to the Department by certified mail.

Attached to and forming part of policy No. W149EC130101, issued by Beazley USA Services, Inc. herein called the Insurer, of 30 Batterson Park Road, Farmington, CT 06032 to Arkema, Inc. of 900 First Avenue, King of Prussia, PA 19406 this 31st day of December, 2014. The effective date of said policy is 31st day of December, 2014.

I hereby certify that the wording of this Hazardous Waste Facility Liability Endorsement is identical to the wording specified in 310 CMR 30.909(6) as in effect on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in the Commonwealth of Massachusetts.

(Signature of Authorized Representative of Insurer) 
(Date) 10-Mar-2015
(Name) Douglas Colosky
(Title) Underwriting Manager, Authorized Representative of (name of Insurer) Beazley USA Services, Inc.
(Address of Representative) 30 Batterson Park Road, Farmington, CT, 06032