



BUSAN[®] 40

Patents issued or pending in the U.S.A. and other countries

Active ingredient:

| | |
|---|------------|
| Potassium N-hydroxymethyl N-methyldithiocarbamate | 40 percent |
| Inert ingredients | 60 percent |
| Weight per U.S. gallon | 10.9 lb. |

APPLICATIONS

Busan 40 is used in pulp and paper mills (1) to control bacterial and fungal slime; (2) to inhibit the growth of bacteria that cause the degradation of papermaking chemicals such as animal glue solutions, clay slurries, starch solutions and slurries, and coating formulations; and (3) to inhibit the growth of fungi that cause the degradation of papermaker's alum solutions. Refer to the Product Data bulletin entitled *Busan 40 For Microorganism Control in Pulp and Paper Mills* for detailed directions on these applications.

Busan 40 is used to inhibit the growth of bacteria and fungi that cause the degradation of cellulosic solutions, such as hydroxyethyl cellulose solutions, and to inhibit the growth of bacteria that cause degradation in water-thinned paints, emulsion resins, and cutting oils. Refer to the Product Data bulletin entitled *Busan 40 For Microorganism Control in Emulsion Resins, Emulsion Paints, and Other Water Thinned Products* for detailed direction on these applications.

Busan 40 is composed of substances that have been allowed for use in the manufacture of paper and paperboard under U.S. Food and Drug Administration Regulation 121.2505.

Nov. 9, 1974

DANGER

1448-521

KEEP OUT OF REACH OF CHILDREN

Corrosive. Causes eye and skin damage. Do not get in eyes, on skin, or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful or fatal if swallowed. Avoid contamination of food.

FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eye, call a physician. Remove and wash contaminated clothing before reuse.

If swallowed, give patient doses of powdered charcoal immediately or all he can swallow of raw egg whites, milk, gruel, or flour and water. Then induce vomiting with salt, soap, or mustard in warm water. Call a physician immediately.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures to avert circulatory shock, respiratory depression, and convulsion may be needed.

This product is toxic to fish. Treated effluent should not be discharged where it will drain into lakes, streams, creeks, or public water. Do not contaminate water by cleaning of equipment, or disposal of wastes. Apply this product only as specified on this label.

Do not reuse empty drum. Return to drum reconditioner or destroy by perforating or crushing a safe place.

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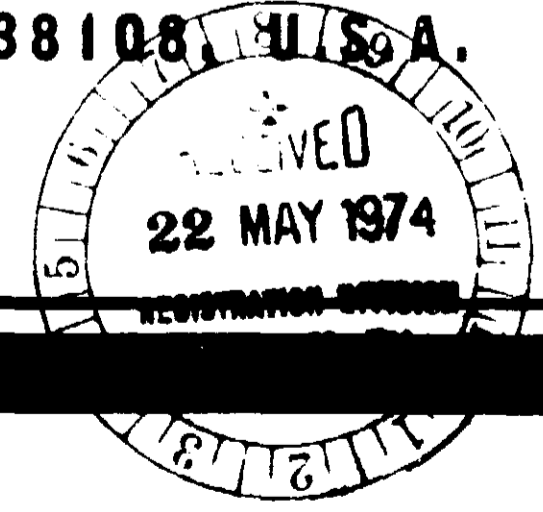
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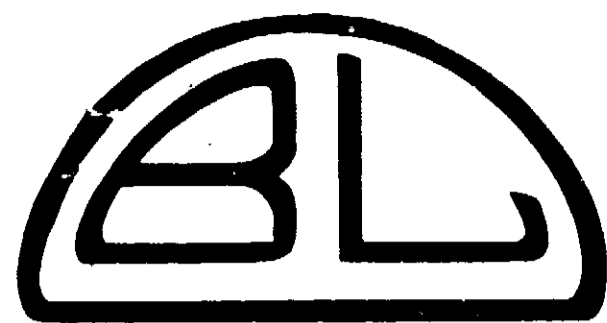
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BUCKMAN LABORATORIES, INC.
MEMPHIS, TENN. 38108, U.S.A.

EPA Reg. No. 1448-52

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EPA Est. 1448 TN 1



PRODUCT DATA

April 15, 1974

Bulletin No. A 33

BUSAN[®] 40

Patents issued or pending in the U.S.A. and other countries

FOR MICROORGANISM CONTROL IN PULP AND PAPER MILLS

Busan 40 is a new organosulfur product that is effective in the control of bacterial and fungal slime in pulp and paper mill systems. It is highly effective against microorganisms at pH values below 7, and, in contrast to some other microbicides, it also has a good degree of activity in the alkaline pH range. Thus, Busan 40 is useful alone or in combination with other Busan microbicides to obtain savings in slime control costs. In slime control applications, Busan 40 is compatible with the full range of Busan microbicides.

Busan 40 is composed of substances that have been allowed for use in the manufacture of paper and paperboard under U.S. Food and Drug Administration Regulation 121.2505.

PRODUCT CHARACTERISTICS

Busan 40 is a liquid packed in 240-kg. (530-lb.) net weight, lined, nonreturnable steel drums with bungs. Penton, Teflon, polyethylene, polypropylene, molded nylon, and stainless steel are all satisfactory for storing and handling the product, but prolonged contact of concentrated Busan 40 with copper and copper alloys should be avoided. Busan 40 is completely soluble in water. The composition and some of the physical properties of Busan 40 are as follows:

Active ingredient:

| | |
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| Potassium N hydroxymethyl-N methylthiocarbamate | 40 percent |
| Inert ingredients | 60 percent |
| Density at 25° C. (77° F.) | 1.31 g. per ml. |
| Approximate weight per U.S. gallon | 10.9 lb. |
| Approximate volume per kilogram | 763 ml. |
| Approximate volume per pound | 346 ml. |
| Flashpoint by Tagliabue open cup method | Above 100° C. (212° F.) |
| pH of 100 parts per million in distilled water | 9-11 |

Busan 40 is moderately toxic by ingestion in single doses and is irritating to the skin and eyes. Workmen handling the product should wear rubber gloves and goggles and should observe other precautions shown on the label.

METHODS OF APPLICATION

Busan 40 can be fed into the system directly from the shipping containers by use of chemical metering pumps. It can also be dispensed in suitable measuring containers or by means of drip feed devices.

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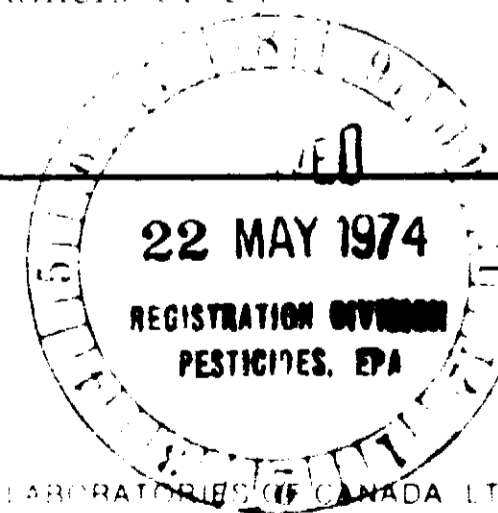
METHODS OF APPLICATION

Busan 40 can be fed into the system directly from the shipping containers by use of chemical-metering pumps. It can also be dispensed in suitable measuring containers or by means of drip-feed devices.

Buckman Laboratories, Inc.

BUCKMAN LABORATORIES, INC. INTERNATIONAL, INC.

MEMPHIS, TENNESSEE 38108, U.S.A.



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RIEN, SOUTH AFRICA

CREATIVITY FOR OUR CUSTOMERS

Slime Control in Pulp and Paper Mills

For controlling bacterial and fungal slime in pulp and paper mill systems, Busan 40 is employed at 125 to 500 g. per metric ton (0.25 to 1.0 lb. per short ton) of pulp or paper produced. In acidic systems, it is added in concentrations of 1 to 5 parts per million by weight, based on the total weight flow of stock and water at maximum dilution, for treatment periods of 2 to 6 hours out of each 8, each 12, or each 24 hours. In neutral or alkaline systems, concentrations of 4 to 8 parts per million for similar treatment periods may be required for optimum control of slime. The concentrations of Busan 40 and the frequency of treatment should be adjusted higher or lower according to the rate of slime accretion. Best results are generally obtained by feeding Busan 40 into the suction side of the fan pump or into white water or stock moving to the fan pump. When necessary, this treatment can be supplemented by treatment of fresh water, slush pulp, broke, or other furnish components with Busan 40 or another one of the broad spectrum Busan microbiocides.

When microbiologically contaminated furnish is added to the system, the supplementary addition of 0.1 kg. of Busan 40 per metric ton (0.2 lb. per short ton) of this furnish to each beater or pulper will aid in keeping the system free of slime. Broke may also require supplementary treatment. For uncoated broke, the addition of 0.1 to 0.2 kg. of Busan 40 per metric ton (0.2 to 0.4 lb. per short ton) will usually be adequate, but coated broke may require as much as 0.3 kg. of Busan 40 per metric ton (0.6 lb. per short ton).

Slush pulp may require treatment with a microbicide to preserve the pulp and to prevent contamination of papermaking systems. Pulp that may be held in storage for 8 hours to 1 week should be treated with 0.1 to 0.3 kg. of Busan 40 per metric ton (0.2 to 0.6 lb. per short ton) of moisture-free pulp. The Busan 40 should be added in a manner that will ensure uniform distribution throughout the mass of pulp moving to storage.

When the fresh water used on the machine is a significant source of microbiological contamination, treatment of this water with Busan 40 to supplement or replace chlorine can aid in slime control on the machine. For this purpose, Busan 40 usually is added to the fresh water at concentrations of 1 to 4 parts per million for treatment periods of 3 hours out of each 8 hours. Busan 40 should not be added to water used for drinking or bathing.

In addition to use of effective microbiocides, good housekeeping is also essential to a good slime control program. Before treatment with Busan 40 is started, the system should be cleaned thoroughly to remove old deposits of slime, pitch, scale, etc., and cleaning of the system should be repeated periodically in order to get the best results from use of the microbicide. Cleaning procedures used should include both mechanical cleaning with high-pressure hoses and other mechanical devices and, if possible, circulation of a hot chemical cleaning solution to all parts of the system.

A suitable cleaning solution can be prepared by adding 7.5 kg. of caustic soda (sodium hydroxide) and 1 liter of Busperse 47 or 2 liters of Busperse 46 to each cubic meter of water (60 lb. of caustic soda and 1 U.S. gallon of Busperse 47 or 2 U.S. gallons of Busperse 46 to each 1,000 U.S. gallons of water). Sodium metasilicate or sodium carbonate are suggested replacements for caustic soda in systems with surfaces that may be adversely affected by strongly alkaline solutions. Prepare sufficient cleaning solution to fill the largest chest or tank in the system. Heat the solution to about 65° C. (149° F.), and move it stepwise through the entire system, allowing it to remain in contact with each part of the system for at least 2 hours. Provision should be made to keep the temperature of the solution above 50° C. (122° F.) as it is moved through the system, by introduction of live steam either through a permanent piping arrangement or through steam hoses. Prolonged contact of the hot cleaning solution with wires or forming fabrics should be avoided, and precautions should be taken to see that loosened deposits do not damage the wires or fabrics. When circulation of the cleaning solution is completed, the wire or fabric should be rinsed thoroughly with fresh water, the cleaning solution should be discharged to the sewer, and the entire system should be flushed with fresh water.

Preservation of Papermaking

Busan 40 can be used for the prevention of degradation of papermaking solutions. The required amounts of Busan 40 recommended for use should be uniform and unbuffered; the pH should be adjusted to suit the material. The concentration of the solution to be protected should be expressed in pounds (lb.) of substrate per pound (weight/weight).

Substrate

Alum solutions
Animal glue solutions
Clay slurries,
phosphate-dispersed
Coating formulations,
protein binders
Coating formulations,
starch binders
Starch slurries
and solutions

The maximum effect is obtained when the product is used in the presence of deposits and to increase the stability of the solution. The Coordinated Program utilizes

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 parts per million by weight.
 tion, for treatment periods
 neutral or alkaline systems.
 riods may be required for
 e frequency of treatment
 accretion. Best results are
 e fan pump or into white
 ment can be supplemented
 ponents with Busan 40 or

system, the supplementary
 on of this furnish to each
 Broke may also require
 to 0.2 kg. of Busan 40 per
 e, but coated broke may
 port ton.

ve the pulp and to prevent
 rage for 8 hours to 1 week
 2 to 0.6 lb. per short ton
 t that will ensure uniform

source of microbiological
 nt or replace chlorine can
 ually is added to the fresh
 ods of 3 hours out of each
 bathing.

g is also essential to a good
 d, the system should be
 etc., and cleaning of the
 results from use of the
 mechanical cleaning with
 culation of a hot chemical

g. of caustic soda (sodium
 46 to each cubic meter of
 J.S. gallons of Perse 46
 m carbonate are suggested
 be adversely affected by
 ill the largest chest or tank
 ve it stepwise through the
 the system for at least 2
 he solution above 50°C.
 ive steam either through a
 contact of the hot cleaning
 utions. Should be taken to
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 ghly with fresh water, the
 system should be flushed

Preservation of Papermaking Chemicals

Busan 40 can be used to inhibit the growth of bacteria that cause the microbiological degradation of papermaking chemicals and to inhibit the growth of fungi in papermaker's alum solutions. The required amount of Busan 40 should be added in such a manner as to ensure uniform distribution throughout the substrate to be protected. The table below shows the amounts of Busan 40 recommended for the preservation of various substrates, both buffered and unbuffered; the pH shown is the maximum pH reached during processing and storage of the material. The concentrations are based on the total wet weight of slurry, emulsion, or solution to be protected and are shown both as avoirdupois ounces (oz.) of Busan 40 per 1,000 pounds (lb.) of substrate and as parts of Busan 40 per million parts of substrate (weight/weight).

| Substrate | Recommended Concentrations of Busan 40 for Preservation of Papermaking Chemicals | | | |
|--|---|---------|---------------|--------|
| | pH below 7 | | pH above 7 | |
| | Oz./1,000 lb. | P.p.m. | Oz./1,000 lb. | P.p.m. |
| Alum solutions | 0.8-1.6 | 50-100 | 1.6 | |
| Animal glue solutions | 1.2-2.4 | 75-150 | 2.4 | 150 |
| Clay slurries, phosphate-dispersed | 0.8-1.6 | 50-100 | 1.6 | 100 |
| Coating formulations, protein binders | 2.4-6.4 | 150-400 | 6.4 | 400 |
| Coating formulations, starch binders | 0.8-2.4 | 50-150 | 2.4 | 150 |
| Starch slurries and solutions | 0.8-2.4 | 50-150 | 2.4 | 150 |

COORDINATED PROGRAMS

The maximum effectiveness of any microbicide, including Busan 40, will be obtained when the product is used as part of an overall Coordinated Program designed to control deposits and to increase operating efficiency in the pulp and paper mill systems. The representatives and distributors of Buckman Laboratories can assist in the development of a Coordinated Program utilizing the Buckman team of compatible and complementary products.

Recommendations given in this bulletin are based on tests believed to be reliable. However, the use of the product is beyond the control of Buckman Laboratories, Inc., and no guarantee, expressed or implied, is made as to the effects of such use. The results to be obtained if not used in accordance with directions or established safe practice. The buyer must assume full responsibility, including injury or damage, resulting from misuse of the product as such, or in combination with other materials. This bulletin is not to be taken as a license to operate under or recommendation to infringe any patent.

Printed in U.S.A.

22 MAY 1974



PRODUCT DATA

1967-68

Bull. No. 411

BUSAN[®] 40

Registered and pending in the U.S.A. and other countries

FOR MICROORGANISM CONTROL IN EMULSION RESINS, EMULSION PAINTS, AND OTHER WATER-THINNED PRODUCTS

Busan 40 is a new organosulfur product that is effective in the control of bacterial degradation of water thinned paints, emulsion resins, and cutting oils. It is also effective for control of bacteria and fungi that cause the degradation of cellulosic solutions, such as hydroxyethyl cellulose solutions.

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HL of 100 parts per million in distilled water 9-11

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METHODS OF APPLICATION

Busan 40 can be dispensed directly from the shipping container by means of a chemical metering pump or suitable measuring containers. It should be mixed thoroughly with the material to be protected in a manner that will ensure uniform distribution of the microbicide. If necessary for uniform distribution, it can be diluted with water to any desired lower concentration. Dilute solutions of Busan 40, however, should be used on the same day they are prepared.

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Busan 40 is a new organosulfur product that is effective in the control of bacterial degradation of water-thinned paints, emulsion resins, and cutting oils. It is also effective for control of bacteria and fungi that cause the degradation of cellulosic solutions, such as hydroxyethyl cellulose solutions.

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LUXEMBOURG

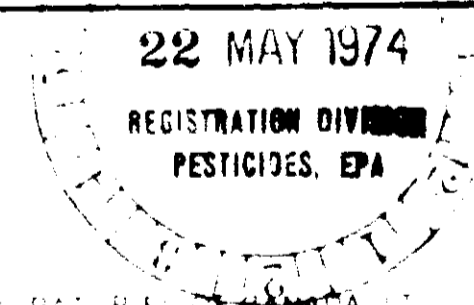
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MEXICO CITY, MEXICO

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BOGOTA, COLOMBIA



Protective Colloids

Enzymes resulting from the growth of certain fungi and bacteria in water thinned cellulosic protective colloids such as hydroxyethyl cellulose solutions cause a loss in viscosity of these solutions. Busan 40 has demonstrated effectiveness in controlling this microbiological growth and thereby provides viscosity stability for the protective colloid. Concentrations of 0.05 to 0.2 percent of Busan 40 based on the total weight of solution are suggested for preservation; the exact concentration to be used will depend on the particular system, amount of microorganism contamination, and the degree of protection desired.

Emulsion Resins and Water Thinned Paints

Enzymes produced by bacteria can also cause loss of viscosity in emulsion resins. Busan 40 at 0.05 to 0.2 percent based on the weight of the emulsion has shown effectiveness as a preservative for both acrylic and polyvinyl acetate emulsion resins. Such emulsion resins are commonly used for the manufacture of emulsion paints, adhesives, waxes, and polishes; and these finished products can also be preserved by the use of Busan 40. Concentrations of 0.05 to 0.2 percent of Busan 40 based on the weight of the finished product are employed in the latter applications.

Cutting Oils

Busan 40 can be used to prevent degradation of aqueous emulsions of cutting oils. Concentrations of 0.03 to 0.2 percent of Busan 40 based on the total weight of water and cutting oil are recommended, and the treatment with Busan 40 should be repeated periodically at not greater than 5 week intervals. In some cases, Busan 40 may be added to concentrated cutting oils, and the amount of Busan 40 used should be such that concentrations of 0.03 to 0.2 percent are obtained when the cutting oil is mixed with water.

Recommendations given in this bulletin are based on tests believed to be reliable. However, the use of the product beyond the control of Becton Laboratories, Inc., and no guarantee, expressed or implied, is made as to the effectiveness of the results to be obtained if not used in accordance with directions or established safe practice. The buyer must assume responsibility, including one or more damages, resulting from misuse of the product as such, or in combination with other materials. This bulletin is not to be taken as a license to operate or as a recommendation to infringe any patent.

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