BIOBAN 2000

MICROBICIDE FOR METALWORKING FLUIDS

ACCEPTED
JUN 0 1 1981
Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 271-38

ACTIVE INGREDIENTS:

5-Chloro-2-methyl-4-isothiazolin-3-one	1.15% by wt
2-Methyl-4-isothiazolin-3-one	0.35% by wt
INERT INGREDIENTS:	98.50% by wt
TOTAL	100.00% by wt

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS

DANGER!

CORROSIVE.
CAUSES EYE DAMAGE AND SKIN BURNS.
MAY CAUSE ALLERGIC SKIN REACTION.
MAY BE HARMFUL IF INHALED.
MAY BE FATAL IF SWALLOWED OR ABSORBED THROUGH THE SKIN.

Do not get in eyes, on skin, on clothing. Wear goggles or face shield and rubber gloves when handling. Wash thoroughly after handling. Avoid breathing vapor or mist. Avoid contamination of food. Do not take internally.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and wildlife. Do not discharge into lakes, streams, ponds, or public waters, unless in accordance with an NPDES permit. For guidance contact your Regional Office of the EPA. Do not contaminate waters by cleaning of equipment or disposal of waste. Apply this pesticide only as specified on this label.

MANUFACTURED BY

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
NP DIVISION
666 Garland Plac
Des Plaines, Ill. 60

KEEP OUT OF REACH OF CHILDREN

DANGER!

STATEMENT OF PRACTICAL TREATMENT

IF IN EYES: Flush with plenty of water for at least 15 minutes. Call a physician

IF ON SKIN: Wash thoroughly with soap and water. Remove and wash contaminated clothing before reuse.

IF INHALED: Remove immediately to fresh air. If not breathing, apply artificial respiration. If breathing is difficult, give oxygen. Call a physician.

IF SWALLOWED: Do not induce vomiting. Drink promptly a large quantity of milk, egg whites, or gelatin solution; or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

NOTE TO PHYSICIAN

Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression, and convulsions may be needed.

SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

EPA Reg. No. 271-38
C-529-D

Net Weight _____ lb

DIRECTIONS FOR USE

GENERAL CLASSIFICATION

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

STORAGE AND DISPOSAL

STORAGE: Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty plastic container.

DISPOSAL: Pesticide or rinsate that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticides, or buried in a safe place away from water supplies. Triple rinse (or equivalent) all containers. Dispose of plastic containers in an incinerator; or dispose in landfill approved for pesticide containers; or bury in a safe place. Consult federal, state, or local disposal authorities for approved alternative procedures.

TREATMENT

BIOBAN 2000 is recommended for the control of bacteria and fungi in soluble and emulsifiable type aqueous metalworking fluids, such as emulsified petroleum oils, and formulations containing alcoholic fatty acid, sulfonated red oil, or naphthalene-sulfonate. These fluids are usually prepared for use by diluting the product concentrates 1:40 to 1:60 with water.

For the maintenance of a nonfouled system, use BIOBAN 2000 at 32 fl. oz. (2 lb) per 1000 gallons of emulsion every 4 weeks (250 ppm BIOBAN 2000). For a noticeably fouled system use an initial dose of 64-154 fl. oz. (4-10 lb) per 1000 gallons emulsion, followed by subsequent maintenance dosages. The higher dosage range and/or increased frequency of treatment may be required depending upon rate of dilution of the preservative with makeup fluid, the nature and severity of contamination, level of control required, filtration effectiveness, system design, etc.

The preservative should be dispensed into the use dilution of the metalworking fluid using a metering pump. BIOBAN 2000 weighs 8.4 lb per gallon.

International Minerals & Chemical Corporation assumes no responsibility when this product is not used in accordance with the instructions and information contained on this label.

271-38
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INTERNATIONAL MINERALS
& CHEMICAL CORPORATION

NP DIVISION

TECHNICAL DATA SHEET

NP DIVISION • 666 Garland Place • Des Plaines, Illinois 60016 • Phone: (312) 296-0600

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JUN 01 1981
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BIOBAN® 2000

MICROBICIDE FOR METALWORKING FLUIDS

**NP SERIES
TDS NO. 22**

BIOBAN 2000 is an antimicrobial product designed to be used as a preservative in aqueous metalworking fluids. The active ingredients are effective at low concentration against fungal and bacterial contaminants.

BIOBAN 2000 is resistant to inhibition by most organic or inorganic compounds normally present in metalworking fluids. It is compatible biologically and physically with anionic, nonionic, or cationic surface active agents, with proteins, or with halogens. The active ingredients may be inactivated by chemical reaction with primary and secondary amines or with mercaptans and sulfides.

BIOBAN 2000 is an aqueous solution containing the following minimum concentrations of active ingredients:

5-chloro-2-methyl-4-isothiazolin-3-one	1.15% by wt
2-methyl-4-isothiazolin-3-one	0.35% by wt

Also present as stabilizers are magnesium chloride, magnesium nitrate, and cupric nitrate. BIOBAN 2000 is stable for at least 6 months at ambient temperature.

Physical Properties

Appearance	Pale yellow to green liquid
Odor	Mild, aromatic
pH	3–5
Specific gravity	1.02
Weight per gallon	8.4 lb
Freezing point	32°F
Viscosity	Same as water

Antimicrobial Spectrum

Bacteriostatic and fungistatic tests were performed in serial dilutions in trypticase soy broth with 1:100 inocula. The bacterial inoculum was from a 24-hour broth culture of the organism. The fungal inoculum was a spore suspension prepared from a 7- to 14-day culture slant washed with 7 ml deionized water. The minimum inhibitory levels were determined visually after 2 days incubation at 37°C for fungi.

The minimum inhibitory concentrations presented in the table are intended to provide an indication of the activity of BIOBAN 2000 in aqueous solutions. They are neither intended as a claim for recommended use concentration nor as a list of microorganisms involved in the contamination and deterioration of metalworking fluids.

Organism	BIOBAN 2000 Concentration
Bacteria	
Bacillus subtilis	130 ppm
Desulfovibrio desulfuricans	330
Escherichia coli	330
Proteus vulgaris	330
Pseudomonas aeruginosa	330
Pseudomonas fluorescens	130
Staphylococcus aureus	130
Fungi	
Aspergillus niger	600 ppm
Candida albicans	330
Cladosporium resinae	330
Penicillium species	200

The microbicidal effectiveness of BIOBAN 2000 for treating contaminated metalworking fluids at use dilutions was demonstrated as follows. Two proprietary metalworking fluids without preservatives were held at room temperature and were inoculated with organisms at 2-week intervals for a total of 12 weeks. The inoculum consisted of a mixed culture of microorganisms from a naturally contaminated metalworking fluid plus a pure culture of a pseudomonad isolated from a contaminated metalworking fluid. To aliquots of each contaminated fluid (2–12 million microorganisms/ml) were added 400 ppm or 1000 ppm of BIOBAN 2000. Samples were removed at appropriate time intervals for agar plate counts (sodium thioglycollate was added to the agar medium to stop any further action of the microbicide). The percentage kill was determined by comparing the number of microorganisms per sample at each time interval to the number of microorganisms/ml in the test sample at zero time. The data show BIOBAN 2000 to have a rapid and extensive lethal effect on the microorganisms in two contaminated metalworking fluids.

Time After Treatment	Kill of Microorganism in Contaminated Use Dilutions of Metalworking Fluids	
	Product A	Product B
With 400 ppm BIOBAN 2000		
1 hr	57.2%	93.8%
6	89.1	97.5
24	85.6	99.1
48	98.7	99.9
72	>99.9	>99.9
With 1000 ppm BIOBAN 2000		
1 hr	83.1%	96.0%
6	88.6	97.7
24	94.9	99.3
48	99.1	99.9
72	>99.9	>99.9

Use in Metalworking Fluids

BIOBAN 2000 is recommended for the control of bacteria and fungi in soluble, semisynthetic, and synthetic types of aqueous metalworking fluids.

For the maintenance of a nonfouled system, add 32 fl. oz. (2 lb) of BIOBAN 2000 per 1000 gallons of emulsion every 4 weeks to achieve a concentration in the fluid of 250 ppm of BIOBAN 2000.

For a noticeably fouled system, use an initial dose of 64–154 fl. oz. (4–10 lb) of BIOBAN 2000 per 1000 gallons of emulsion. Follow with subsequent maintenance dosages as above. The higher dosage range and/or an increased frequency of treatment may be required depending upon the rate of dilution of the preservative with fresh makeup fluid, the nature and severity of the contamination, the level of control required, the filtration effectiveness, the system design, or other factors.

BIOBAN 2000 should be dispensed into the diluted metalworking fluid using a metering pump. The preservative must be dispersed uniformly throughout the system. Equipment for handling BIOBAN 2000 should be constructed of type 316 stainless steel, polypropylene, or polyethylene.

BIOBAN 2000 at use dilutions of up to 25,000 ppm in tap water does not corrode stainless steel, aluminum, copper, or brass. There may be slight corrosion on mild steel.

Toxicological Properties

ACUTE TOXICITY PROFILE OF BIOBAN 2000 AS SUPPLIED

Acute oral LD_{50} in rats:
3.81 g/kg body weight.
Acute dermal LD_{50} in rabbits:
>5 g/kg body weight.
Skin irritation in rabbits:
Severely irritating.
Primary irritation index = 7.5.
Eye irritation in rabbits:
Severely irritating with corneal damage.

IRRITATION/SENSITIZATION OF BIOBAN 2000 ACTIVE INGREDIENT

Varying concentrations of from 14 ppm to 56 ppm of BIOBAN 2000 (as isothiazolone active ingredient) formulated in a typical metalworking fluid were tested for irritation or sensitizing properties in humans by means of a repeated insult patch test. The patches were applied and occluded. No visible skin changes characteristic of irritation, fatiguing effects, or sensitization were observed at the levels tested.

In a similar repeated insult patch test in which BIOBAN 2000 was formulated in water, one out of 18 subjects was sensitized to 25 ppm of isothiazolone active ingredient.

EFFECTS OF EXPOSURE TO BIOBAN 2000 AS SUPPLIED

Causes eye damage and skin burns.
May cause allergic skin reaction.
May be harmful if inhaled.
May be fatal if swallowed or absorbed through the skin.

FIRST AID

If in eyes: Flush with plenty of water for at least 15 minutes. Call a physician.

If on skin: Wash thoroughly with soap and water. Remove and wash contaminated clothing before reuse.

If swallowed: Drink promptly a large quantity of milk, egg whites, or gelatin solution. If these are not available, drink large quantities of water. Do not induce vomiting and avoid alcohol. Call a physician immediately. Note to physician: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression, and convulsions may be needed.

If inhaled: Remove immediately to fresh air. If not breathing, apply artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Storage and Handling

Exercise strict care in handling BIOBAN 2000 to prevent inhalation of mists or vapors and to prevent contact with the eyes and skin. Work areas should have mechanical ventilation adequate to remove contaminated air.

Personnel handling drums or equipment containing BIOBAN 2000 should wear complete protective clothing, including a long-sleeved shirt covering the arms and wrist, trousers covering the ankles, impervious rubber gloves and apron, and goggles. After working with BIOBAN 2000, personnel should wash thoroughly with soap and water and launder clothing before reuse.

The following materials are suitable for equipment for handling BIOBAN 2000: type 316 stainless steel, polypropylene, polyethylene, Teflon, glass, or glass-reinforced furan resins. For transfer of BIOBAN 2000 liquid use pumps with magnetic seals, water eductors, or vacuum. Keep transfer lines as short as possible.

In cleaning BIOBAN 2000 from equipment or in mopping up spills, it is advisable to neutralize the active ingredient. Solutions of hypochlorite salts are effective and rapid decomposition agents. To prevent the evolution of gaseous chlorine, deactivating solutions must be made alkaline by adding sodium hydroxide. Deactivating solutions decompose on standing and should be prepared fresh

daily. The following solutions are acceptable decontaminants:

A. Calcium hypochlorite (65%)	8 lb
Sodium hydroxide (50%)	5 lb
Water	77 lb
B. Sodium hypochlorite (15%)	8 lb
Sodium hydroxide (50%)	1.25 lb
Water	15 lb
C. Household bleach (5–6%)	8 lb
Sodium hydroxide (50%)	0.25 lb

Mixing vessels, lines, pumps, and other equipment must be decontaminated before carrying out maintenance or repair work and before using for other service. Drips, spills, and exposed wet areas and valves should be cleaned up promptly with hypochlorite. To decontaminate the surfaces of equipment, swab them with hypochlorite solution and rinse thoroughly with clean water. Rinse tools, pails, funnels, and lines with water.

To determine the amount of hypochlorite solution needed for cleanup, (1) estimate the volume of BIOBAN 2000 remaining in a well-drained system, (2) make up and charge 2 volumes of hypochlorite per volume of BIOBAN 2000, and (3) add sufficient water to provide thorough mixing and contact throughout the equipment. Circulate this mixture through the system; then drain and follow with a rinse of water or detergent solution. Use this same procedure to rinse out emptied drums of BIOBAN 2000.

Personnel cleaning up spills should wear overshoes in addition to the usual protective clothing. Dike the spilled material and absorb it on an inert solid such as sand, sawdust, or vermiculite. Shovel the absorbent into a pail or drum and treat with enough decontaminant solution to wet the solid thoroughly. Let these containers stand open for 48 hours to avoid the buildup of pressure. Then seal and bury in an approved landfill. Wash the spill area with additional decontaminant solution, and flush into a chemical sewer or other disposal site in accordance with local, state, and federal regulations.

The active ingredients in BIOBAN 2000 are toxic to fish and wildlife. Treated effluent or rinsate should not be discharged where it will drain into municipal sewers or into lakes, streams, ponds, or public waters, unless in accordance with an NPDES permit.

Shipping Containers

BIOBAN 2000 is available in 5-gal polyethylene pails containing 40 lb and in 30-gal polyethylene drums containing 240 lb.

DOT Hazard Classification:

Corrosive Liquid.

DOT Proper Shipping Name:

Corrosive Liquid, N.O.S.

HKD

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