



Drew Chemical Corporation Industrial Chemicals Group

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PRODUCT DATA

BIOSPERSE® 244 microbiocide

INTRODUCTION

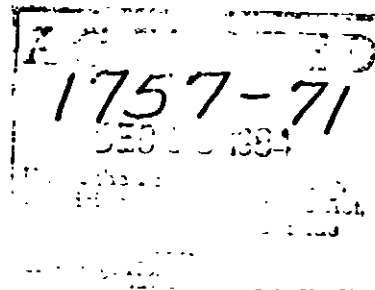
BIOSPERSE® 244 is a unique, easy to handle liquid designed to provide broad-spectrum control of bacteria, fungi and algae in industrial recirculating water cooling towers and evaporative condensers. It also controls slime-forming bacteria and fungi in airwasher systems, and controls bacteria, fungi and yeasts in enhanced oil recovery systems and in metal working fluids containing water. When BIOSPERSE® 244 is discharged, it hydrolyzes sufficiently fast so that it should not be a persistent environmental menace if used as recommended.

BIOSPERSE® 244 is not to be used in potable water systems or where contamination of potable water can occur.

Drew Chemical Corporation offers the services of trained professional personnel to assist in the determination of levels and rates of treatment to provide an efficient and economical slime control program.

TYPICAL CHEMICAL AND PHYSICAL PROPERTIES

Composition:	A blend of 2,2-dibromo-3-nitrilopropionamide and solubilizing agents
Appearance:	Clear to amber liquid
Odor:	Little or no odor
Flash Point:	None (PMCC)
pH:	1.2 - 2.4 (neat)
Specific Gravity:	1.25 (25°C/77°F)
Weight per U.S. Gallon:	10.5 pounds
Water Solubility:	Complete in all proportions
Storage Stability:	Stable (less than 10% decomposition) for 210 days at 32°C. Similarly, at the average storage temperature of 32°C, less than 5% decomposition occurs in 105 days. Small amounts of water (less than 2%) in the formulation cause no significant change in the stability.



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Sensitivity to pH,
Temperature and
Ultraviolet Light:

BIOSPERSE® 244 is biologically active in both acid and moderately alkaline pH ranges. Aqueous, alkaline solutions (\geq pH 9) cause it to lose biological activity. The same response is produced by elevated temperatures and/or ultraviolet light. If acidic solutions (pH 3-4) are kept at room temperature and out of ultraviolet light, they are stable for at least seven days.

Compatibility:

Under conditions of actual use, BIOSPERSE® 244 is compatible with recirculating cooling water systems. Inactivation may occur in the presence of strong reducing agents, like mercaptobenzothiazole.

DOSAGE

The dosage of BIOSPERSE® 244 required for any specific application will depend upon a number of factors including: the nature and extent of the microbiological contamination, the type and volume of the system being treated, the degree of control desired, and retention time in the system. Where necessary, your Drew Representative will arrange for microbiological and chemical analysis, so that technical advice can be given concerning specific site problems.

COOLING TOWERS AND EVAPORATIVE CONDENSERS

Dosages for industrial recirculating water cooling towers will depend on the condition of the system prior to the initiation of treatment. Heavily contaminated systems should be cleaned prior to treatment. Apply BIOSPERSE® 244 to the cleaned system or when growth is first noticed according to the following schedule:

BACTERIAL AND FUNGAL CONTROL

Intermittent or Slug Feed Method

Initial Dose: When the system is noticeably fouled, add 0.6 to 1.2 fluid ounces (6-12 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system. This dose may be repeated once, twice or three times weekly or as required to control the growth of slime forming organisms.

Subsequent Dose: When microbial control is evident, add 0.3 to 1.2 fluid ounces (3-12 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system every four days, or as needed to maintain good control.

Continuous Feed Method

Initial Dose: When the system is noticeably fouled add 0.6 to 1.2 fluid ounces (6-12 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system. Subsequently, maintain this level by pumping a continuous feed of 0.12 to 0.6 fluid ounces (1.2 to 6 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system lost by blowdown.

ALGAL CONTROL

Intermittent or Slug Feed Method

Initial Dose: When the system is noticeably fouled, add 6.0 to 12.0 fluid ounces (60 to 120 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system. Repeat until control is achieved.

Subsequent Dose: When algal control is evident, add 4.0 to 12.0 fluid ounces (40 to 120 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system or as needed to maintain control.

Continuous Feed Method

Initial Dose: When the system is noticeably fouled, add 6.0 to 12.0 fluid ounces (60 to 120 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system.

Subsequent Dose: Maintain this treatment level by pumping a continuous feed of 4.0 to 12.0 fluid ounces (40 to 120 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system.

AIR WASHER SYSTEMS

Add 0.15 to 12.0 fluid ounces (1.5 to 120 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system, depending upon the severity of contamination to control slime forming bacteria and fungi in industrial air washer systems.

Intermittent or Slug Feed Method

Initial Dose: When the system is noticeably fouled, add 0.3 to 12.0 fluid ounces (3.0 to 120 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system. Repeat until control is achieved.

Subsequent Dose: When microbial control is evident, add 0.0012 to 0.047 gal (0.06 to 60 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system every two days or as needed to maintain control.

Continuous Feed Method

Initial Dose: When the system is noticeably fouled, add 0.0023 to 0.095 gal (3.0 to 120 ppm) BIOSPERSE® 244 per each 1000 gallons of water in the system.

Subsequent Dose: Maintain this level by pumping a continuous feed of 0.0015 to 0.047 gal (1.5 to 60 ppm) of BIOSPERSE® 244 per each 1000 gallons of water in the system.

NOTE: For use only in industrial air washer systems that contain effective mist eliminating components.

ENHANCED OIL RECOVERY SYSTEMS

For controlling slime forming bacteria, sulfide producing bacteria, yeasts, and fungi in oil field water, polymer or mycellar floods, water disposal systems, or other oil field water systems, add 1-80 ppm BIOSPERSE® 244 (.08 to 6.4 gal BIOSPERSE® 244 per 2400 barrels of water) depending on the severity of contamination. Additions should be made with a metering pump either continuously or intermittently.

Continuous Feed Method

When the system is noticeably fouled, add 10-80 ppm BIOSPERSE® 244 (0.8-6.4 gal BIOSPERSE® 244 per 2400 barrels of water) continuously until the desired degree of control is achieved. Subsequently, treat with 1-15 ppm BIOSPERSE® 244 (.08-1.2 gal BIOSPERSE® 244 per 2400 barrels of water) continuously, or as needed to maintain control.

Intermittent or Slug Feed Method

When the system is noticeably fouled, or to maintain control of the system, add 10-80 ppm BIOSPERSE® 244 (0.8 to 6.4 gal BIOSPERSE® 244 per 2400 barrels of water) intermittently for 4-8 hours per day, and from 1-4 times per week or as needed depending on the severity of contamination.

Addition of BIOSPERSE® 244 may be made at the free water knockouts, before or after the injection pumps and injection well headers.

Note: For control of bacteria, yeast, and fungi in aqueous solutions of biopolymer (xanthan gum) used in flooding operations, add 15-80 ppm BIOSPERSE® 244 (1.2-6.4 gal BIOSPERSE® 244 per 2400 gal of water). Additions of BIOSPERSE® 244 should be made with a metering pump immediately after preparation of the aqueous biopolymer solution to prevent loss of viscosity.

METALWORKING FLUIDS CONTAINING WATER

This product is effective in metalworking fluid concentrates which have been diluted in water at ratios of 1:100 - 1:4.

For controlling (or inhibiting) the growth of bacteria, fungi and yeasts that may deteriorate metalworking fluids containing water, add BIOSPERSE® 244 to the fluid in the collection tank. Additions should be made with a metering pump.

Initial or Slug Dose: When the system is noticeably fouled, add 32 fluid ounces (250 ppm) BIOSPERSE® 244 per each 1000 gallons of metalworking fluid in the system. Repeat until control is achieved.

Subsequent Dose: When microbial control is evident, add 12.8 to 25.6 fluid ounces (100 to 200 ppm) BIOSPERSE® 244 per each 1000 gallons of metalworking fluid per day, or as needed to maintain control. Additions can be made continuously or intermittently. Slug feed the system as required.

FEEDING

BIOSPERSE® 244 may be fed directly from the drum or diluted with water and fed by any suitable feed system. BIOSPERSE® 244 should be dosed directly into the sump or basin or any other location where good distribution can be assured.

The following construction materials are acceptable for feeding BIOSPERSE® 244:

- Pumps:
1. Titanium
 2. Solid Kynar*
 3. Solid Teflon**
- Gaskets:
1. Chlorinated polyethylene
 2. Viton**
 3. Teflon
 4. Asbestos
- Pipes and Hosings:
1. Polypropylene lined pipe
 2. Derakane resin lined pipe
 3. Teflon lined pipe
 4. Saran resin lined pipe
 5. Braided reinforced Teflon hosing

The use of uncoated or unlined stainless steel is not recommended.

When required, your Drew District Representative will arrange for microbiological and chemical analyses and offer technical advice concerning your specific problems.

TOXICITY OF BIOSPERSE® 244

Animal tests show that BIOSPERSE® 244 is moderate to high in oral toxicity. The LD value for single doses of the active ingredient by intubation in female rats was 177 mg/kg body weight. These data indicate that ingestion of relatively small amounts may be capable of causing serious illness.

Eye contact tests on laboratory animals indicate that BIOSPERSE® 244 damages the eye seriously enough that permanent impairment or loss of vision is likely to occur. Flushing the eye with water is not expected to be of much help in averting vision impairment. Hence, BIOSPERSE® 244 must be considered to present a serious hazard from eye contact, and chemical worker's goggles MUST be worn when handling this product.

A single, short skin exposure to BIOSPERSE® 244 should result in no significant irritation. A single prolonged or frequently repeated skin exposure, however, may result in irritation, even a burn, depending upon the severity of exposure.

Based on animal tests, this material is not likely to be absorbed through the skin in acutely toxic amounts. Hence, BIOSPERSE® 244 may be considered to present only a moderate hazard from skin contact.

*Registered trademark of Pennsalt Chemicals Corp.

**Registered trademark of E.I. duPont de Nemours and Co.

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