

# LONZA

# BARDAC<sup>®</sup> LF

ACCEPTED

MAY 8 1975

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 6836-40

For the Repackaging or Formulation of Low-Foaming Water Treatment Microbiocides (Algaecide, Bactericide)

Active Ingredients: Dioctyl dimethyl ammonium chloride .....	50.0%
Ethyl alcohol .....	10.0%
Inert Ingredients: Water .....	40.0%

*Comment*

55 Gallons/Net Wt. 400 Lbs.

EPA Reg. No. 6836-40

## DANGER:

### Keep Out of Reach of Children

Corrosive. Causes severe 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.

### FIRST AID:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician. Remove and wash contaminated clothing before reuse. If swallowed, drink promptly a large quantity of milk, egg whites, 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 as well as oxygen and measures to support breathing manually or mechanically may be needed. If persistent, convulsions may be controlled by the cautious intravenous injection of a short-acting barbiturate drug.

This product is toxic to fish. Do not discharge where it will drain into lakes, streams, ponds or public water.

### Do not reuse empty drum.

Return to drum reconditioner or destroy by perforating or crushing and burying in a safe place away from water sources.

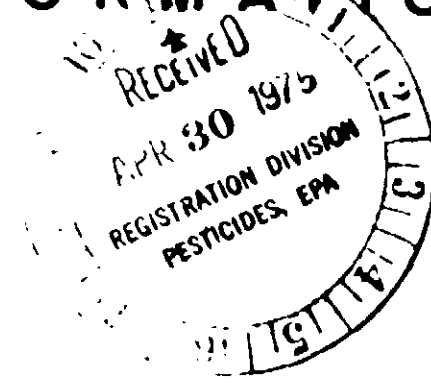
See Product Information Bulletin for recommended use. Do not use, pour, spill or store near heat or open flame.

LONZA, INC., - FAIR LAWN, N. J., - MAPLETON, ILL., - ASHTON, R. I.

LONZA

PRODUCT INFORMATION

**BARDAC<sup>®</sup> LF**



Chemical Properties

Active Ingredients

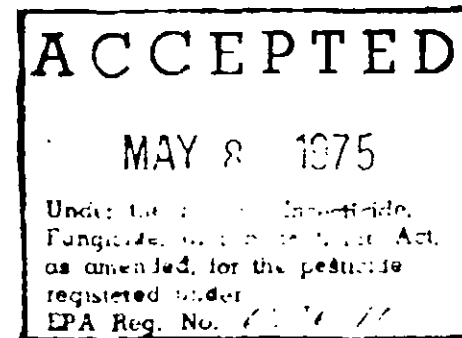
Diocetyl dimethyl ammonium chloride	50%
Ethyl alcohol	10%

Inert Ingredients

Water	40%
	100%

Physical Properties

Specific Gravity	0.962
Color	Pale Yellow
Viscosity	6 cps
Flash Point (COC)	133°F
Freezing Point	-25°C



EPA Registration Number **6836-40**

Application

**BARDAC LF** is designed as a low foaming microbiocide for use in recirculating cooling water systems.

The presence of foam in recirculating cooling water systems greatly impairs the efficient performance of such units. Poor heat transfer and low pressures are two of the problems that have been attributed to foam. One of the possible causes of introducing foam into cooling units is the actual foam generation of the microbiocide used for algae and bacterial slime control. **BARDAC LF**, by design, is a low-foaming microbiocide. Its use, at suggested use-levels, will eliminate the incorporation of a potential foam producer into recirculating cooling water systems and effectively control the growing algae and bacteria.

**Laboratory Evaluations**

To establish the antibacterial properties of **BARDAC LF**, preliminary screening evaluations were performed utilizing Minimum Inhibitory Test Procedure (Broth Dilution Test, 18 hour immersion @ 37°C). The following result was obtained:

<u>Test Organism</u>	<u>Minimum Inhibitory Concentration (ppm active BARDAC LF)</u>
Staphylococcus aureus, ATCC #6538	2.0
Escherichia coli, ATCC #11229	40.0

After completion of the preliminary screening evaluations, tests were performed against the types of bacteria and algae commonly found in recirculating cooling water systems.

The API-38 Test Procedure (American Petroleum Institute Recommended Practice for Biological Analysis of Subsurface Injection Waters, Second Edition, Dec. 1965, Section II Evaluation of Chemicals for Control of Microbial Growth, Sec. 25) was used for bacterial evaluations. This test procedure calls for a 96 hour incubation period (at 30°C) for *B. cereus* and *Ps. fluorescens* and 30 days (at 30°C) for *Desulfovibrio desulfuricans* (the sulfate reducing bacteria). The following results were obtained:

<u>Test Organism</u>	<u>Minimum Inhibitory Concentration (ppm active BARDAC LF)</u>
<i>Pseudomonas fluorescens</i> , ATCC #13525	17.5
<i>Bacillus cereus</i> , ATCC #14579	7.5
<i>Desulfovibrio desulfuricans</i> , ATCC #7757	17.5

Algaecidal and algistatic determinations were performed using the Fitzgerald Method (Applied Microbiology, Vol. 7, 1959, pp 205-211). This procedure calls for incubation for 28 days (at 23°C) under continuous light. The following results were obtained:

<u>Test Organism</u>	<u>Concentration of BARDAC LF (ppm active) Required For</u>	
	<u>Stasis</u>	<u>Kill</u>
<i>Chlorella pyrenoidosa</i> #2005 (Wisconsin Strain)	0.5	1.0
<i>Phormidium inundatum</i> #1093 (Black Algae)	0.5	1.25

**Field Evaluations**

To confirm the effectiveness of **BARDAC LF** as a low-foaming microbiocide for use in cooling towers, field trials were performed. While tower conditions varied considerably from one to the other, effective microbial control was observed in all units.

These trials indicate an initial treatment dose of 80 to 100 ppm and maintenance use-levels of 30-40 ppm (active) **BARDAC LF**.

The quantity of **BARDAC LF** required to effectively control microbial growth in cooling towers depends on a number of factors. Tower operating conditions, water quality and the severity of the microbiological problems are just three of the factors to be considered. Therefore, the optimum amount of **BARDAC LF** needed will have to be determined for each situation.

**Field Evaluations (Cont'd)**

The field trials performed did reveal that initial treatment of 80-100 ppm (active) and maintenance use-levels of 20-40 ppm (active) will produce the desired microbial control.

A sample label for a low-foaming water treatment microbiocide for recirculating cooling towers is attached. This guide may be followed in registering your product with the Environmental Protection Agency.

The repacker or formulator of this product will be responsible for providing in-use data to support any claims they make against bacteria.

**Handling Precautions for BARDAC LF Quaternary Concentrate**

**DANGER:** Keep Out of Reach of Children. Corrosive. Causes severe 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 eyes, call a physician. Remove and wash contaminated clothing before reuse.

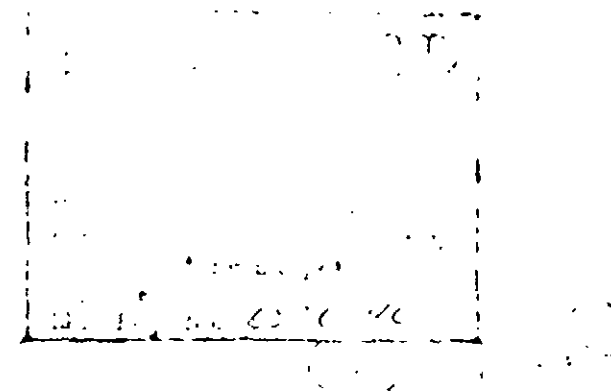
If swallowed, drink promptly a large quantity of milk, egg whites, gelatin solution or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

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

This product is toxic to fish. Treated effluent should not be discharged where it will drain into lakes, streams, ponds or public water.

ACCEPTED WITH COMMENTS

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Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated above. Buyer assumes all risk of use and/or handling of this material when such use and/or handling is contrary to label instructions. No statement is intended or should be construed as a recommendation to infringe any existing patent.

The presence of foam in recirculating cooling towers impairs the performance of the unit. Loss of heat transfer and pressure fluctuations are two of the problems encountered when foam is present in the recirculating water system.

One of the possible causative agents is the microbiocide added to control algae and algae slimes. \_\_\_\_\_ Low Foam Water Treatment Microbiocide, by design, is a low foaming microbiocide. When used as directed, \_\_\_\_\_ Low Foam Water Treatment Microbiocide will control algae and algae slimes found in recirculating cooling tower waters and not introduce a foam problem.

\_\_\_\_\_ Low Foam Water Treatment Microbiocide helps clean and loosen slime debris from cooling system surfaces. When used in slug doses, no other microbiocide is required.

\_\_\_\_\_ Low Foam Water Treatment Microbiocide is economical to use because it is concentrated. It should be handled with care.

## **DANGER**

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### **FIRST AID**

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

If swallowed, drink promptly a large quantity of milk, egg whites, 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 convulsion may be needed.

## SAMPLE LABEL

### BRAND NAME

### LOW FOAM WATER TREATMENT MICROBIOCIDE

Twin-Chain Quaternary  
Ammonium Compound Concentrate

Low Foam Water Treatment Microbiocide  
for Building and Industrial  
Cooling Towers

### Active Ingredients

Diocetyl dimethyl ammonium chloride	50%
Ethyl alcohol	10%

### Inert Ingredients

	40%
	100%

### EPA Registration No.

### Net Weight

### Net Volume

Manufactured By

## **DANGER**

KEEP OUT OF REACH OF CHILDREN. SEE LEFT PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS.

### USE-DIRECTIONS

To control algae and algae slimes, use \_\_\_\_\_ Low Foam Water Treatment Microbiocide as directed. For best results, slug feed. The frequency of addition of microbiocide needed depends on many factors. To optimize your use of \_\_\_\_\_ follow this procedure.

1. Initially use 16 fluid ounces per 1000 gallons of water to be treated (60 ppm active quaternary).

Should the above dosage not give satisfactory results, use 21 fluid ounces per 1000 gallons of water.

Repeat the initial dose every seven days or increase the frequency if needed.

2. When the above treatment level is successful, use 6 to 9 fluid ounces per 1000 gallons of water to maximize efficiency. Repeat weekly as needed.

Should slime develop again, return to initial dosage.

Cooling tower waters that are inherently low in algae growth may be adequately controlled by the lower range of these dosages; slug feed every seven days.

Dilute the appropriate amount of \_\_\_\_\_ Low Foam Water Treatment Microbiocide in 1 to 2 gallons of water then add to the sump of the tower. Note, this product weighs 8.0 lbs. per gallon (at 20°C).

This product is toxic to fish. Treated effluent should not be discharged where it will drain into lakes, streams, ponds, or public water.

Should tower be heavily fouled, a precleaning is required.

Do not reuse empty drum. Return to drum reconditioner or destroy by perforating or crushing and burying in a safe place away from water supplies.

DO NOT USE, POUR, SPILL OR STORE NEAR HEAT OR OPEN FLAME.