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DOS-1 BIO-GUARD TREATMENT BIOCIDES FOR COOLING TOWERS

APPLICATION

Cooling towers provide a near-ideal environment for microbial proliferation. Warm water temperatures, nutrients, and constant exposure to the surrounding air encourage growth and virtually assure ongoing contamination by microorganisms. The U.S. Public Health Service Center for Disease Control & Prevention (CDC) has identified some of these organisms to cause human illness or death. OSHA Technical Manual Section II - Chapter 7 states that biocide control of such organisms is needed.

Unchecked microbial growth may also cause a rapid loss of heat-transfer efficiency by fouling piping, nozzles, packing, process heat exchangers, and drift eliminators. Growth under deposits or slime masses can yield accelerated localized corrosion of system metal components. These problems, due to growth and development of algae, bacteria, and fungi greatly reduce efficiency in a system and significantly increase operating costs.

Microbial organisms in nature vary considerably as a hazard to human health and in susceptibility to any particular bactericide. CH₂O's **BIO-GUARD** series offers a wide variety of biocide products, which have been shown effective against microorganisms found in cooling tower waters.

DOS-1 is a combination of two organ sulfur compounds:

- Disodium cyanodithioimidocarbonate
- Potassium N-methylidithiocarbamate

DOS-1 aids in controlling microbial growth in water-cooling towers. It is effective over a wide pH and temperature range and is non-foaming. **DOS-1** is noncorrosive and does not contain heavy metals.

SAFETY & HANDLING PROCEDURE

This is a moderately alkaline product. Wear goggles or face shield and rubber gloves when handling. Ingestion will cause damage to the stomach and other tissues contacted. Avoid contamination of food. Excessive inhalation of product mists can cause irritation to the respiratory system.

EFFECTIVE CONDITIONS

DOS-1 is effective at most pH ranges found in normally operated cooling towers. It is not recommended for use in systems where heavy metal contamination or heavy metal corrosion inhibitors are present.

DOSAGE & CONTROL

An initial slug addition of 6.9 to 13.9 fluid ounces of **DOS-1** per 1,000 gallons of water is recommended. Repeat initial dosage until control is evident. Subsequent slug additions of 2.3 to 13.9 fluid ounces of **DOS-1** per 1,000 gallons of water should be employed every 1 to 5 days, as needed. The frequency of addition depends upon the relative amount of bleed-off and the severity of the microbiological problem. Slug additions should be made to the water sump of cooling towers. It is a violation of federal law to use this product in a manner inconsistent with its labeling.

Daily testing is recommended to maintain proper control. Failure to monitor and maintain treatment levels can cause damage. It is the customer's responsibility to monitor and maintain treatment levels.

PHYSICAL PROPERTIES

pH of 1% Solution	8.9-9.4
Pounds per Gallon	8.6-9.1
Physical Appearance	Orange Liquid
Odor	Sulfurous
Flash Point	NA

Seller Warranty

Applies to all products sold by CH₂O, Inc., and is hereby communicated to all of its customers as a condition of sale.

Seller warrants that this product conforms to its chemical description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. Buyer assumes the risk of any use contrary to such directions. Seller makes no other warranty or representation of any kind, express or implied, concerning the product, including **NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE**. No such warranties shall be implied by law and no agent of seller is authorized to alter this warranty in any way except in writing with a specific reference to this warranty. The exclusive remedy against seller shall be a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of warranty or tort. Jurisdiction for any issues arising from or relating to this product shall be in the courts of the State of Washington and the venue shall be Thurston County. Any controversy or claim arising out of or relating to this contract, or breach thereof, shall be settled by arbitration in accordance with the rules and procedures as stated in RCW 7.06 and shall be binding upon both parties without right to appeal, and judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

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