



## METALWORKING FLUIDS ADDITIVES DIVISION

### GROTAN®

Broad spectrum biocide for Metalworking Fluid Applications

EPA Registration No. 365-76

#### Description

Water dilutable soluble oil, semi-synthetic and synthetic metalworking fluid systems are highly susceptible to the growth of microorganisms. Microbial contamination can result in slime generation, gas formation, malodors and the reduction or drift of pH in the fluid concentrate and the working dilution. This contamination can diminish fluid performance and system efficiency, which can increase costs, decrease tool life, reduce productivity and cause machine shut-down. The use of **Grotan®**, a proven high quality preservative to control biodeterioration, will help maintain product functionality and increase the life of the metalworking fluid.

#### Application/ Use

For use in concentrates during manufacturing and for use in post addition applications.

#### Highlights

- Cost effective
- Proven efficacy against a broad range of bacteria and fungi at recommended use levels
- More than 40 years history of use
- Extends life of metalworking fluids
- Easy to use liquid, at 0.15% (1500 ppm) concentration in end use dilution
- For use in individual sumps as well as large central systems

#### Physical Properties

The following are typical properties of Grotan; they are not to be considered product specifications.

Active Ingredient: Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine..... 78.5%  
 Appearance: ..... Water white to pale yellow liquid, clear to slight haze  
 Color, Gardner:..... 2  
 Odor: ..... Light amine; odorless in end-use dilution  
 Refractive Index, 25°C:.....1.483  
 Specific Gravity, 25°C: ..... 1.152 g/cc  
 Lbs/Gal: ..... 9.62  
 Viscosity, 25°C: .....275 cps  
 Flow Point:..... -28°C (-18°F)  
 Freezing Point: ..... -28°C (-18°F)  
 pH of Concentrate, 25°C:..... 10.8  
 Solubility: ..... Miscible with water in all proportions  
 ..... Miscible with alcohol and acetone in all proportions  
 ..... Insoluble in ether, benzene, petroleum and chloroform

## Antimicrobial Activity

The following are examples of the broad range of organisms against which **Grotan®** has demonstrated efficacy:

Bacteria	Bacteria
<i>Bacillus subtilis</i>	<i>Proteus vulgaris</i>
<i>Desulfovibrio desulfuricans</i>	<i>Klebsiella pneumoniae</i>
<i>Enterobacter aerogenes</i>	<i>Staphylococcus aureus</i>
<i>Escherichia coli</i>	<i>Streptococcus faecalis</i>
<i>Pseudomonas aeruginosa</i>	

## Function/ Activity

Grotan is a liquid, organic broad spectrum preservative designed for use in both the concentrate and working dilutions of soluble oil, semi-synthetic and synthetic metalworking fluid systems which may be subject to microbial degradation.

## Formulating Considerations

Grotan at appropriate use levels in both laboratory and field evaluations, inhibits the growth of microorganisms. Products protected with Grotan can generally resist the long-term, repeated challenge of microorganisms.

Compounders: Add Grotan to the concentrate, in order to obtain 1500 ppm in the final dilution. Our Technical Service Laboratory will be pleased to assist formulators in the formulation and/or evaluation of preserved concentrates based on Grotan.

Metalworking Fluid Users: Grotan should be used to maintain a concentration of 0.15% (1500 ppm) in the fluid. For best results, before adding fresh fluid, drain and clean the system.

## Regulatory Considerations

### Toxicity

#### Acute Oral Effects

LD50 (oral, rat) - 535-580 mg/kg.

#### Acute Skin Effects

LD50 (dermal, rabbit) >2000 mg/kg. Mild skin irritation.

#### Acute Eye Effects

Moderate to severe irritation (rabbit). Corneal damage may be irreversible if not washed from eyes promptly.

#### Acute Inhalation Effects

Not determined.

### Subchronic Effects and Other Studies

Skin sensitization reactions associated with this product have been reported. However, the number of sensitization responses is very low. There is also information that allergic sensitivity, if it occurs, is lost at a fairly rapid rate.

4 Week inhalation toxicity (guinea pigs) – Guinea pigs were exposed to aerosol mists from cutting fluid solutions containing 0.15% and 1.5% Grotan (plus 3% cutting oil and water) for 8 hrs/day, 5 days/wk. The nominal concentrations for the 0.15% and 1.5% Grotan cutting fluids were 15 and 21 mg/L, respectively. The animals exhibited signs of eye irritation after the second week of exposure. Three animals died in the 1.5% Grotan group and one animal died in the 0.15% Grotan group. Necropsy of these animals revealed haemorrhagic lungs. Whether or not the lung lesions were related to Grotan exposure was not established. No other abnormalities that could be attributed to Grotan were reported.

## Environmental Effects

### Ecotoxicity

Do not apply directly to water or wetlands. Do not contaminate water when disposing of equipment washwaters.

LC50 (bluegill sunfish, adult) - 44.8 mg/L

LC50 (bluegill sunfish, fingerlings) - 27 mg/L

LC50 (rainbow trout) - 67.3 mg/L

### Environmental Fate

This product may cause adverse environmental impact. Avoid contamination of streams and sewers.

## Chemical Inventories

This product, or its components, are listed on, or are exempt from:

Country	Agency	Registration Number and Sections
United States	TSCA	4719-04-4
United States	EPA	365-76
Europe	EINECS	225-208-0
Canada	DSL	4719-04-4
Switzerland	SWISS	G-43057
Australia	AICS	4719-04-4
Korea	ECL	4719-04-4
Korea	ECL Serial No.	KE-33998
Japan	ENCS	4719-04-4
Japan	MITI No.	5-998
Philippines	PICCS	4719-04-4
China	IECSC	4719-04-4

## Labeling

HAZARDS TO HUMANS AND DOMESTIC ANIMALS. **DANGER** Corrosive. Causes irreversible eye damage. Do not get in eyes or on clothing. Wear goggles or face shield. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

## Handling, Storage, Health And Safety

Avoid contact with skin, eyes, or clothing. Avoid breathing vapor or mist. Wash thoroughly after handling. Keep container tightly closed. Use only with adequate ventilation. Store away from incompatible substances in a cool, dry, ventilated area. Prolonged contact with brass, copper, or aluminum piping, containers or equipment should be avoided to prevent possible corrosive effects to these metals. Do not contaminate water, food, or feed by storage or disposal.

**Observe all Federal, State, and Local Regulations when storing or disposing of this substance.**

**Shelf Life:** Two years from date of manufacture

**Emergency Overview:** Grotan® is a water white to pale yellow viscous liquid with a mild characteristic odor. Highly alkaline, pH = 10.8. May be harmful if swallowed. May cause severe eye irritation and irreversible corneal damage. Excessive heat greater than 147°C (297°F), will result in decomposition to formaldehyde. Avoid contamination of streams and sewers.

## Shipping And Packaging

Grotan® is packaged in:

Shipping Container	Net Weight
55 Gallon Drum	500 lbs/227 kg
Case (4 Plastic Bottles)	40 lbs/18 kg
Plastic Pail	45 lbs/20 kg

### DOT, IATA, IMDG

This product does not meet the definition of any hazard class and therefore is not subject to DOT, IATA and IMDG Regulations.

For further information visit our website:  
[www.troycorp.com](http://www.troycorp.com) or call...

United States    Tel: 973-443-4200  
                         Fax: 973-443-0258  
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