U.S. DEPARTMENT OF HOMELAND SECURITY U.S. COAST GUARD CG-4355 Rev (06-04)	**CHARACTERISTICS OF LIQUID CHEMICALS PROPOSED FOR BULK WATER MOVEMENT**	Form Approved OMB No.1625-0007 Exp. Date: XX/XX/XXXX

RETURN ORIGINAL TO: **COMMANDANT** (G-MSO-3), U.S. COAST GUARD, WASHINGTON, D.C. 20593-0001

PLEASE INDICATE WHEN INFORMATION SUPPLIED ON THIS FORM IS PROPRIETARY. IT WILL BE TREATED CONFIDENTIALLY BY THE COAST GUARD. NO CLASSIFICATION OF THE PROPOSED CARGO MAY BE MADE UNLESS A COMPLETED FORM, OR ITS EQUIVALENT, HAS BEEN RECEIVED (46 CFR, PARTS 151, 153 AND 154).

NAME

1. CHEMICAL NAME (for mixtures see CHEMICAL PROPERTIES question 1.)	2. CHEMICAL FORMULA(s)
3. COMMON INDUSTRIAL NAME(s) and Trade Names	

PRODUCTION

1. INDUSTRIAL METHODS OF PRODUCTION

2. USES

PHYSICAL PROPERTIES

1. Normal State and Color		8. Vapor pressure at	p.s.i.a. or mm Hg
		70°F	
2. State and Color during Transportation (if different from above)		105°F	
		115°F	
		130°F	
3. Transportation temperature (if other than ambient)		9. Viscosity at 20° C	
4. Sp. Gr. of liquid at 20° C (water equals 1)		10. Coeff. of thermal expansion of liquid per °C	
5. Sp. Gr. of vapor at 20° C and 1 atm (air equals 1)		11. Solubility in water at 20° C, percent by weight	
6. Boiling point or range		12. Latent heat of vaporization at 1 atm, BTU/lb.	
7. Freezing point or range		13. Molecular weight	

CHEMICAL PROPERTIES

1. If the product is impure or a mixture, supply composition information and amounts present.

2. Chemical Stability
   a. Can the product be polymerized or Decomposed? If "Yes," describe conditions and possible hazards. Yes ☐ No ☐

   b. Does it require inhibition or stabilization for safe shipment? If "Yes," supply the following information. Yes ☐ No ☐
      (1) Name of inhibitor or stabilizer
      (2) Amount normally added
      (3) Duration of effectiveness

   c. Is the product capable of a hazardous self-oxidation which might cause an explosion or detonation? If "Yes," explain below. Yes ☐ No ☐

PREVIOUS EDITION MAY BE USED

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d. Are toxic vapors produced by high temperature or combustion of the material? Describe conditions and identify gases evolved and approximate amounts. Yes ☐ No ☐

3. Chemical Reactivity

a. If the product can react dangerously (such as evolution of heat or gas) with other chemicals, specify the kinds of chemicals to avoid.

b. Should the vapor composition in the cargo tank be controlled (inerted or padded) to prevent such problems as peroxide formation, reaction with moisture, or unusual flammability hazards? If "Yes," briefly describe the problem and specify satisfactory inerting or padding materials and any necessary restrictions. Yes ☐ No ☐

c. Is the product an oxidizing or reducing agent? Yes ☐ No ☐

d. Does the product decompose or react with air, water vapor, fresh water or salt water at a temperature below 150° F to produce toxic vapors, high temperatures, or rapid evolution of gas? If "Yes," describe the nature and rate of reaction. Yes ☐ No ☐

FLAMMABILITY

1. Flash point (Tag open cup, ASTM D1310)	°F
2. Flash point (Pensky-Martens closed cup, ASTM D93)	°F
3. Fire point (Cleveland open cup ASTM D92)	°F
4. Autoignition temperature (specify method)	°F
5. Reid vapor pressure (ASTM D323)	p.s.i.a. at 100°F
6. Flammable limits in air, % by volume (Indicate source such as National Fire Protection Association, Underwriters Laboratories, Company Laboratory, etc.)	

7. Suitable fire extinguishing agents (In order of effectiveness)

MATERIALS OF CONSTRUCTION

1. If a dangerous reaction or significant corrosion is likely to occur when any of the materials listed below are used in a containment system transporting this product, indicate which materials are unsatisfactory and briefly describe the nature of the problem.

Mild Steel	Zinc
Stainless Steel	Tin
Aluminum	Brass
Copper	Bronze

2. Are any other common materials (coatings, linings, plastics, etc.) unsuitable for use with the product? If "Yes," explain below. Yes ☐ No ☐

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3. Are acetylene or acetylene-like impurities, which may react with copper, silver, or mercury to form unstable acetylides, present in the product ? Yes ☐ No ☐

4. Effect on ordinary steel:	Type of Steel	Rate of corrosion at 100°F

5. Recommended materials of construction:

Use	Materials	Rate of corrosion at 100° F
TANKS		
PIPES		
VALVES		

6. Describe any peculiarities of corrosion such as pitting, intergranular corrosion, aeration effects, etc., with the recommended materials of construction.

SKIN AND EYE CONTACT

1. Describe effects of contact with skin and eyes (such as blistering or destruction of tissue) and the duration of contact which will produce these effects. Is the product a primary irritant or corrosive liquid? Yes ☐ No ☐

TOXICITY

1. Acute Health Hazards
   a. Describe toxic effects from inhalation, ingestion, and skin absorption. State approximate quantities or concentrations which will produce symptoms and serious effects.

   b. If short term toxicity tests on laboratory animals have been performed, complete the sections below where information is available. Indicate data sources or supply copies of the laboratory reports.

LD_{50} (ORAL, RATS)	**OTHER VALUES** *(Specify)*
LD_{50} (DERMAL, RABBITS)	
LC_{50} (RATS, 1 HOUR)	

2. Chronic Health Hazards
   a. Can repeated exposures result in cumulative toxic effect or sensitization? Describe symptoms and state approximate quantities or concentrations and time exposed. Yes ☐ No ☐

   b. Have any long term studies been performed on laboratory animals? Summarize findings or attach copies of the reports. Yes ☐ No ☐

3. Describe past experience relating to hazards of handling and transporting this material.

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TOXICITY (Continues)

4. DESCRIBE ODOR AND TASTE		
5. MINIMUM CONCENTRATION READILY DETECTIBLE	a. In air by odor (ppm)	b. In water by taste (mg/kg)
6. ANTIDOTES AND FIRST AID TREATMENT		
7. EMERGENCY PROCEDURES FOR	a. Spills	b. Fires

AQUATIC TOXICITY AND WATER QUALITY CHARACTERISTICS

1. Describe toxic effects on marine life. If TLm values for this material are available, provide these below (a TLm is the concentration of a substance which, within the specified time (generally 96 hours), will kill 50% of the exposed group of test organisms).

2. If data are available on the water quality characteristics listed below, provide this information:

a. Biodegradation

b. Biochemical oxygen demand (BOD_5, LB/LB; also specify test concentration, acclimated or non-acclimated bacteria)

c. Bioaccumulation (also indicate, when known, if tainting or similar effects occur)

d. Chemical oxygen demand (COD, LB/LB)

e. Recommended waste water treatment scheme such as gravity separation, biological, and activated carbon

DHS REGULATIONS

1. DHS CLASSIFICATION AND TYPES OF PACKAGES PERMITTED

CARGO HANDLING

1. TYPE OF VESSELS PROPOSED FOR WATER MOVEMENT

2. EXPECTED LOADING AND DISCHARGE POINTS

3. PROPOSED ROUTE OF VESSEL OR BARGE

4. METHOD USED FOR LOADING AND DISCHARGING LIQUID CARGO (State maximum air pressure, type of pump, etc.)

5. STATE PRECAUTIONS TO BE EMPLOYED IN HANDLING LIQUID CARGO (List special safety equipment for protection of personnel)

6. METHODS USED FOR GAS-FREEING AND CLEANING CARGO TANKS

REMARKS AND ADDITIONAL DATA

DATE	SIGNATURE AND TITLE

NAME AND ADDRESS OF FIRM OR ORGANIZATION

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