DEPARTMENT OF HOMELAND SECURITY
U.S. COAST GUARD

International Maritime Organization
CHARACTERISTICS OF LIQUID CHEMICALS PROPOSED FOR MARINE TRANSPORT IN BULK

Please supply all relevant information available. If necessary, use additional sheets.
All information should relate to the product in the form carried.

Please indicate when information on this form is proprietary. It will be treated confidentially.

1 IDENTITY OF PRODUCT

1.1 Name of chemical:

1.2 Other chemical or trade names:

1.3 Chemical formula (If carried as a solution, indicate concentration and solvent; if as a mixture, specify composition):

1.4 United Nations classification (if any)	UN Number:	UN class:	Subsidiary risks:	Packaging group:

2 PHYSICAL PROPERTIES

Note: If the material is to be carried at other than ambient temperature, state the proposed carriage temperature: _____ °C; and where possible supply physical data below at this temperature as well as at ambient.

2.1 Melting point or range: °C

2.2 Boiling point or range: °C

2.3 Relative density (specific gravity)
at 20°C:
at 37.8°C:
at carriage temperature if different:

2.4 Solubility in water:
mg/100 ml at 20°C

2.5 Vapour pressure, kPa
at 20°C:
at 45°C:
at 37.8°C:
at carriage temperature if different:

2.6 Vapour density:

2.7 Dynamic viscosity at 20°C: mPa.s
at carriage temperature if different: mPa.s

2.8 Colour:

2.9 Odour and odour threshold (ppm):

2.10 Impurities likely to be present (with concentrations):

2.11 Coefficient of cubical expansion:

2.12 Electrical conductivity:

2.13 Other relevant physical data:

3 CHEMICAL PROPERTIES

3.1 If the product is corrosive to or reactive with normal ship construction materials (listed below), indicate the nature of the problem and supply corrosion rates, etc., if available.

☐ Normal materials of construction are suitable.

Mild steel	Zinc
Stainless steel	Brass
Aluminium	Other (specify)
Copper	

3.2 Is inhibition or stabilization required to prevent hazardous reactivity? ☐ YES ☐ NO

If so, state inhibitor or stabilizer used:

Concentration:

How long will the inhibitor or stabilizer remain active at the carriage temperature?

Conditions or materials likely to render the inhibitor or stabilizer ineffective:

3.3 Does the material require tank environmental control? ☐ YES ☐ NO

If so, give details below of the hazards to be overcome and the methods used.

1. Vapour space control, e.g. to prevent peroxide formation,dangerous reaction with moisture, flammability hazards, etc.:
2. Temperature control, e.g. to prevent dangerous self reaction:
3. Any other environmental control:

3.4 Will the material react with water or steam to produce gas, aerosols or significant quantities of heat?

☐ YES ☐ NO

If so, give details:

3.5 Give details of any other hazards or characteristics not mentioned above, such as possible hazardous reactions with other cargoes, temperature sensitivity, oxidizing properties, explosive properties, stability problems, etc.:

3.6 Are highly toxic vapours produced at high temperatures or in a fire? ☐ YES ☐ NO

If so, give details:

4 FLAMMABILITY

4.1 Flashpoint: °C ☐ open cup ☐ closed cup	4.4 Suitable extinguishing agents, in order of effectiveness:
4.2 Autoignition temperature: °C (ASTM E 659-78; DIN 51794)	4.5 Temperature Class, as defined in IEC Publication 79 (T1 to T6):
4.3 Flammable limits (volume % in air at 20°C and 1 atmosphere): Upper limit percent Lower limit percent	4.6 Apparatus Group, as defined in IEC Publication 79 (IIA, IIB or IIC): U.S. NFPA 479M:

5 HARMFUL BIOLOGICAL EFFECTS

5.1 TO HUMANS

Acute Effects

Describe toxic effects from inhalation, ingestion and skin absorption. Include information on pathological findings if available. State approximate quantities or concentrations which will produce symptoms and serious effects.

Irritation and Sensitization

Describe any irritant or corrosive effects on the lungs. State whether sensitization by skin contact or inhalation can occur.

Repeated Exposure Effects

State whether repeated exposure can result in cumulative toxic effects or chronic effects, including carcinogenicity.

Past Experience

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

5.2 *TO OTHER MAMMALS*
Supply all relevant information, including data sources or copies of laboratory reports.

5.2.1 INHALATION TOXICITY

.1 Acute LC **50**: ppm

Time, specify (1 hour or 4 hours are preferred):

Specify test animal (preferred species is rat):

.2 Does inhalation of vapours cause allergic sensitization? ☐ YES ☐ NO

If so, supply details:

.3 Are the vapours corrosive or strongly irritating? ☐ YES ☐ NO

If so, supply details:

.4 Will repeated exposure to vapours cause chronic or cumulative effects? ☐ YES ☐ NO

If so, supply details:

.5 Will exposure to the vapour cause a narcotic effect? ☐ YES ☐ NO

If so, supply details:

5.2.2 DERMAL TOXICITY

.1 Acute LD **50**: mg per kg

Specify test animal (preferred species is rabbit):

.2 Is the material readily absorbed by the skin? ☐ YES ☐ NO

.3 Does the material cause skin sensitization? ☐ YES ☐ NO

If so, supply details:

.4 Will repeated exposure to the material cause chronic or cumulative effects? ☐ YES ☐ NO

If so, supply details:

5.2.3 ORAL TOXICITY

.1 Acute LD **50**: mg per kg

Specify test animal (preferred species is rat):

.2 Will repeated ingestion cause chronic or cumulative effects? ☐ YES ☐ NO

If so, supply details:

5.2.4 CORROSIVITY TO SKIN (state species used):

Does the material cause ☐ irritation or ☐ corrosion to the skin? ☐ NO

If so,does visible necrosis of the skin occur ☐ less than 3 minutes?

☐ less than 1 hour? ☐ less than 4 hours? ☐ more than 4 hours?

5.2.5 SPECIAL TOXIC EFFECTS
Has the material been tested for specific toxic effects such as neurotoxicity, mutagenicity, teratology or reproductive effects?

Give details ofthe results, indicating the species tested.

5.3 *TO FISH*
Supply all relevant information, including data sources or copies of laboratory reports.

5.3.1 ACUTE TOXICITY TO AQUATIC ORGANISMS
Preferably supply 96-hour TLm (the concentration of the substance which will within 96 hours kill 50% of the exposed group of test organisms) with confidence limits.

	(a) a marine fish	(b) a marine crustacean
.1 Subject of test		
.2 96 hours TLm		
.3 Confidence limits		
.4 Method of test (static, static replaced, intermittant flow, etc.)		
.5 Conditions of test		
Temperature	°C	°C
Salinity		
Number of animals		
Test volume (litre)		

If further information is available, please supply on a separate sheet.
If no information on marine species is available, please supply data on freshwater species.

5.3.2 BIOACCUMULATION IN MARINE ORGANISMS

.1 Rate of uptake:
Accumulation factor for uptake:
Retention time or half life:

.2 Octanol/water partition coefficient (Log **10**):

.3 Tainting potential:

.4 Colouring potential:

5.4 *OTHER PROPERTIES OF INTEREST IN ENVIRONMENTAL ASSESSMENT CONTEXT*	
5.4.1 Biodegradability:	5.4.5 Lipid solubility:
5.4.2 Chemical oxygen demand:	5.4.6 Biotransformation:
5.4.3 Biochemical oxygen demand:	5.4.7 Reactivity with air:
5.4.4 Reactvity with seawater:	5.4.8 Other (specify):

6 OTHER RELEVANT INFORMATION

6.1 Recommended personnel protection for handling and emergency use:

6.2 IMO Medical First Aid Guide table number:

6.3 Recommended antidotes and first aid treatment:

6.4 Methods of vapourd etection (including sensitivity):

6.5 Recommended emergency procedures in cases of:

6.5.1 Spillages:	6.5.2 Fire:

6.6 Other: