

Material Safety Data Sheet

HYDROFLUORIC ACID

Print Date: September 2011

SECTION 1 – Chemical Product and Company Identification

MSDS Name: HYDROFLUORIC ACID

MSDS Preparation Date: 09-2011, Supersedes 07-2008, 02-2007, 02-2004, 02-2001 & 02-98

Synonyms: Fluohydric acid, fluoric acid, hydrofluoric acid solution.

Chemical Names: DE Fluorwasserstoffsäure; ES Fluoruro de hidrógeno; FR Acide fluorhydrique; IT Acido fluoridrico; NL Fluorwaterstofzuur.

UN / NA Number(s): UN1790

Formula: HF

Molecular Wt: 20.01

Product Numbers: S010501, S020502, S010501-SSND13, S010501-SSNW03, S010501-SSNW04, S010501-SSNW61, S010501-SSNX43, S020502-SSNF07, S020502-SSNF08, S020502-SSNP01, S020502-SSNP02, S020502-SSNP03, S020502-SSNP04, S020502-SSNP05, S020502-SSNP06, S040501-SSND12, S040501-SSND13, S040501-SSND14

Supplier: Seastar Chemicals Inc, 10005 McDonald Park Road, Sidney, BC V8L 5Y2 CANADA

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SECTION 2 – Composition/Information on Ingredients

<i>Chemical Name</i>	<i>Percent</i>	<i>CAS #</i>	<i>EINECS/ELINCS</i>
Hydrofluoric acid	47-51%	7664-39-3	231-634-8
Water	Balance	7732-18-5	231-791-2

SECTION 3 – Hazards Identification

EMERGENCY OVERVIEW

Appearance: Colourless liquid with a pungent, irritating, penetrating odour. Concentrations above 40% fume in air. Will not burn. Cylinders or tanks may rupture and explode if heated. Highly reactive. Contact with metals, such as iron or steel, slowly releases flammable and potentially explosive hydrogen gas. VERY TOXIC. May be fatal if inhaled, absorbed through the skin or swallowed. CORROSIVE to the nose, throat and respiratory tract. Causes lung injury-effects may be delayed. CORROSIVE to the eyes and skin. Causes severe burns. May cause blindness and permanent scarring. Absorbed fluoride can cause metabolic imbalances with irregular heartbeat, nausea, dizziness, vomiting and seizures. Long-term exposure may cause skeletal fluorosis (weakened bone structure).

Target Organs: Lungs, teeth, eyes, skin, bone, mucous membranes.

Potential Health Effects

Primary Route(s) of Entry: Inhalation and ingestion. Skin contact. Eye contact. Skin absorption.

Effects of Acute Exposure: May be fatal by ingestion, inhalation or skin absorption. Corrosive. Acute effects may be delayed.

LD50/LC50: CAS# 7732-18-3: Oral, rat: LD50 = >90 mL/kg. CAS# 7664-39-3: Inhalation, mouse: LC50 = 342 ppm/1H. Inhalation, rat: LC50 = 1276 ppm/1H.

Eyes: Direct contact with hydrofluoric acid can cause severe and irreversible corrosive injury with possible corneal scarring and blindness. The acid penetrates to deep tissue layers and causes severe corrosive injury. The gas can dissolve in the moisture on the surface, forming corrosive hydrofluoric acid. Irritation has been reported with exposure to concentrations as low as 0.24 ppm for 1 hour.

Skin: May be fatal if absorbed through skin and penetration may continue for several days. Hydrofluoric acid is extremely corrosive and can cause very deep and excruciatingly painful burns and tissue loss. Burns from concentrated solutions (greater than 50%) are felt immediately and tissue destruction is readily apparent. Weaker solutions (20-50%) result in burns that are apparent after several hours. Burns from solutions of less than 20% may take up to 24 hours to become apparent. Weak solutions (less than 7%) penetrate deeply before causing tissue damage and surface involvement may be minimal. Burns are swollen, hot and painful, then develop white or yellowish areas and blistering, with deep ulceration and destruction of tissue, which tends to heal slowly. The severity of the burns and absorption of the acid (with liquefaction necrosis of soft tissue and decalcification and corrosion of the bone) have resulted in permanent scarring, disability and death.

Ingestion: May be fatal if swallowed. Hydrofluoric acid is corrosive and can cause severe burning of the mouth, throat and stomach. Perforation of the digestive system may occur. Systemic fluoride toxicity has occurred following ingestion. Symptoms such as nausea, vomiting, abdominal pain, reduced heartbeat and blood pressure, shortness of breath have been reported. In some cases, death occurred in less than one hour following ingestion. Ingestion is not a typical route of occupational exposure.

Inhalation: May be fatal if inhaled. Low concentrations (a few ppm) can cause irritation of the nose, throat, eyes and respiratory tract. Higher concentrations can cause severe burns to the throat, airways and lungs. Fluid accumulation in the lungs and irregular heartbeat has led to deaths within hours following inhalation and, in some cases, concurrent skin contact with unknown concentrations of HF.

Within 24-48 hours, the victim may experience a rapidly worsening difficulty in breathing, accompanied by coughing. These symptoms are due to the development of a life-threatening accumulation of fluid in the lungs (pulmonary edema). Severe short-term exposures may result in long-lasting effects such as shortness of breath and pulmonary emphysema (larger than normal air spaces in the lungs which decrease lung efficiency).

Effects of Chronic Exposure: Absorbed fluoride can cause metabolic imbalances with irregular heartbeat, central nervous system depression, seizures, and deaths. Long-term exposure may cause osteofluorosis (weakened bone structure), skin disorders, and respiratory, liver and kidney effects. To the best of our knowledge, the chronic toxicity of this substance has not been fully investigated.

SECTION 4 – First Aid Measures

FIRST AID PROCEDURES SHOULD BE ESTABLISHED PRIOR TO USE. DO NOT HANDLE UNTIL ALL SAFETY PRECAUTIONS HAVE BEEN READ AND UNDERSTOOD. SEEK MEDICAL ATTENTION FOR ALL EXPOSURES.

Eyes: Avoid direct contact. Wear chemical protective gloves if necessary. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. If a contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Take care not to rinse contaminated water into the unaffected eye. DO NOT use benzalkonium chloride (Zephiran®) for eye contact. If sterile 1% calcium gluconate is available, limit water flushing to 5 minutes. Then, use the 1% calcium gluconate solution to repeatedly rinse the eye(s). Immediately transport victim to an emergency care facility. Continue flushing with water, neutral saline or 1% calcium gluconate during transport, if at all possible.

Skin: Avoid direct contact. Wear chemical protective clothing, if necessary. As quickly as possible, remove contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Immediately flush with lukewarm, gently flowing water. Limit flushing with water to 5 minutes if 0.13% benzalkonium chloride (Zephiran®) solution or 2.5% calcium gluconate gel is available. If these treatments are not available, continue flushing until medical treatment is available. A certain quantity of either prepared solution or the calcium gluconate gel be kept on hand at all times. Solutions should be replaced annually if not previously used.

BENZALKONIUM CHLORIDE: Begin soaking the affected area in iced 0.13% benzalkonium chloride (Zephiran®) solution. Use ice cubes, not shaved ice, to prevent frostbite. If immersion is not practical, towels should be soaked with iced 0.13% benzalkonium chloride (Zephiran®) solutions and used as compresses for the burned area. Compresses should be changed every 2-4 minutes. Benzalkonium chloride (Zephiran®) soaks or compresses should be continued until medical attention is available.

CALCIUM GLUCONATE GEL: Wearing chemical protective gloves, start massaging 2.5% calcium gluconate gel into the burn site. Apply gel frequently and massage continuously until medical attention is available. Quickly transport victim to an emergency care facility. Double bag, seal, label and leave contaminated clothing, shoes and leather goods at the scene for safe disposal.

Ingestion: NEVER give anything by mouth if victim is rapidly losing consciousness, is unconscious or is convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. If vomiting occurs naturally, have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

Inhalation: Remove source of contamination or move victim to fresh air. If breathing is difficult, trained personnel should administer oxygen and 2.5% calcium gluconate, preferably with a doctor's advice. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure. If breathing has stopped, trained personnel should begin artificial respiration (AR) or, if the heart has stopped, cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED) immediately. Quickly transport victim to an emergency care facility.

Notes to Physician: Due to delayed and persistent symptoms, observe patient closely for 48 hours. Prompt action is essential in all cases of contact and first aid procedures must be followed if any contact is suspected. Consult a doctor and/or the nearest Poison Control Centre for ALL EXPOSURES. Some first aid procedures recommended above require advanced first aid training. Protocols for undertaking advanced procedures must be developed in consultation with a doctor and routinely reviewed. All first aid procedures should be periodically reviewed by a doctor familiar with the material and its conditions of use in the workplace.

Antidote: Always have calcium gluconate gel on hand. The use of infiltration therapy and intraarterial therapy for hydrofluoric acid burns resulting from concentrations greater than 20% should be made by qualified medical personnel. Calcium gluconate may be administered intravenously slowly to bind to the fluoride ion. This administration needs to be monitored under the supervision of a physician.

SECTION 5 – Fire Fighting Measures

General Information: Hydrofluoric acid is not flammable. However, if it is involved in a fire, extremely corrosive and very toxic hydrogen fluoride gas or fumes may be released into the air. Contact with metals, such as iron or steel, slowly releases extremely flammable and potentially explosive hydrogen gas. A large amount of heat is generated when highly concentrated hydrofluoric acid solutions are diluted with water. Closed containers may rupture violently and suddenly release large amounts of product when exposed to fire or excessive heat for a sufficient period of time. Firefighters should wear a positive pressure self-contained respirator (SCBA) and full-body encapsulating chemical protective suit.

Extinguishing Media: Use extinguishing agents compatible with acid and appropriate for fire surrounding hydrofluoric acid containers. The extinguishing medium used depends on the concentration of the acid. Water spray or fog may be used where concentrations below 60% are present. Higher concentrations may react violently with water and a dry agent, e.g. dry chemical powder is recommended. Use water spray to keep fire exposed containers cool.

Auto-ignition Temperature: Not available.

Flash Point: Not available.

NFPA Rating: Health 4; Flammability 0; Reactivity 1.

Explosion Limits: Lower: Not available. Upper: Not available.

SECTION 6 – Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8. Restrict access to area until completion of clean-up. Remove or isolate flammable and combustible materials. Ensure clean-up is conducted by trained personnel only.

Spills/Leaks: Absolutely no unprotected contact with spilled material. Stop leak if without risk. Keep materials which can burn away from spilled material. Use water spray to knock down gas. Do not get water inside vessels. Dike corrosive water solutions to prevent entry into waterways, sewers or confined spaces.

Steps to be taken in case material is released or spilled: Contain spill with absorbent material which does not react with spilled material and cautiously dilute with large excess of water. Neutralize carefully with soda ash or lime. Material will fume during neutralization; approach from upwind. Provide good ventilation. Contaminated absorbent material will pose the same hazards as the spilled product. **LARGE SPILLS:** Evacuate area. Contact fire and emergency services and supplier for advice.

Waste disposal method: According to all applicable regulations. Avoid runoff.

SECTION 7 – Handling and Storage

Handling: This material is a VERY TOXIC (INHALATION and SKIN CONTACT HAZARD), CORROSIVE liquid. Never work alone with this chemical. Another person should be in view at all times and be equipped and trained to rescue. In case of leaks or spills, escape-type respiratory protective equipment should be available in the work area. If hydrofluoric acid is released, immediately evacuate the area.

Ensure that emergency eyewash and showers are in the immediate vicinity of work involving hydrofluoric acid. Prior to working with hydrofluoric acid, ensure that appropriate first aid procedures are established and supplies are readily accessible to trained personnel. Be aware of typical signs and symptoms of poisoning and first aid procedures. Any signs of illness should be reported immediately to supervisory personnel. Seek medical attention for all exposures even if an exposure did not seem excessive. Symptoms of a severe exposure can be delayed.

Closed handling systems should be used. Avoid generating vapours or mists. Prevent the release of vapours/mist into workplace air. Keep away from combustible materials. Protect from accidental contact with water. Do not use with incompatible materials. See Section 10 for more information. Keep containers tightly closed when not in use. Never return contaminated material to its original container. Never add water to a corrosive. Always add corrosives to COLD water. When mixing with water, cautiously and slowly stir small amounts of acid into water. Assume that empty containers contain residues which are hazardous.

Storage: Store in a cool, dry, well-ventilated area away from incompatible substances. Do not store in metal or glass containers. Do not store in direct sunlight. Keep tightly closed. Empty container may contain hazardous residue. Do not add any other material to the container. Do not wash down the drain. Do not get in eyes, on skin, or on clothing. Wash well after use. Handle in accordance with good storage and handling practices. Do not allow smoking or food consumption while handling. Store in approved containers only.

Storage Code: White.

SECTION 8 – Exposure Control/Personal Protection

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Exposure Limits:

<i>Chemical Name</i>	<i>ACGIH</i>	<i>NIOSH</i>	<i>OSHA</i>
Hydrofluoric acid	As F, skin: 0.5 ppm TWA; 2 ppm Ceiling	As F: 3 ppm TWA (2.5 mg/m ³ TWA); 6 ppm STEL (5 mg/m ³ STEL); 30 ppm IDLH	3 ppm TWA
Water	None listed.	None listed.	None listed.

OSHA Vacated PELs Hydrofluoric acid, as F: 3 ppm TWA

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133. Wear face shield.

Skin: Wear appropriate protective neoprene gloves to prevent skin exposure. Wear acid-resistant jacket, trousers and boots sufficient to protect skin.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respiratory Protection: Wear appropriate OSHA/MSHA approved chemical cartridge respirator regulations found in 29CFR 1910.134. If more than TLV, do not breathe vapour. Wear self-contained breathing apparatus. Always use an NIOSH-approved respirator when necessary.
Ventilation: Use only in a chemical fume hood. Adequate ventilation to maintain vapour/dust below TLV.
Other Protective Equipment: Make eye bath and emergency shower available.

SECTION 9 – Physical and Chemical Properties

Physical State: Liquid
Appearance: Clear, colourless
Odour: Strong odour
pH: Weak acid
Vapour Pressure: Varies with concentration; 50% (w/w): 1.64 kPa (12.4 mm Hg) at 20 °C (calculated).
Vapour Density: 1.86 at 25 °C (air = 1) (HF gas)
Evaporation Rate: Varies with concentration
Viscosity: No information available.

Boiling Point: Varies with concentration; 48% (w/w): 108.7 °C (227.7 °F); 38.2% (w/w): 112.2 °C (234 °F)
Freezing/Melting Point: Varies with concentration; 48% (w/w): -37 °C (-34.6 °F)
Decomposition Temperature: No information available.
Solubility: Soluble in water in all proportions. Soluble in ethanol; slightly soluble in diethyl ether, benzene, toluene, xylene and tetralin.
Specific Gravity/Density: 50% (w/w): 1.18 at 20 °C (water = 1).
Molecular Formula: HF
Molecular Weight: 20.0054

SECTION 10 – Stability and Reactivity

Chemical Stability: Normally stable.
Conditions to Avoid: Incompatible materials, metals, high temperatures.
Incompatibilities with Other Materials: Substance is incompatible with over 35 specific chemicals. Please refer to the NFPA Fire Protection Guide for specifics. Heat. Glass, concrete and other silicon-bearing materials will yield silicon tetrafluoride. Pressure build-up from this process has been known to blow up glass containers. Carbonates, sulphides, and cyanides will yield toxic gases such as carbon dioxide, hydrogen sulphide and hydrogen cyanide. Alkalis, some oxides, fluorine and other water-reactive materials will cause strong exothermic reactions that can be violent. Reacts with most common metals to produce hydrogen. Corrosive to many materials, including leather, rubber and many organics.
Hazardous Decomposition Products: Fluoride fumes.
Hazardous Polymerization: Tends to associate by means of hydrogen bonds to form polymers in both liquid and gaseous states. This polymerization is not hazardous.

SECTION 11 – Toxicological Information

RTECS: CAS# 7732-18-5: ZC0110000. CAS# 7664-39-3: MW7875000.
LD50/LC50: CAS# 7732-18-3: Oral, rat: LD50 = >90 mL/kg. CAS# 7664-39-3: Inhalation, mouse: LC50 = 342 ppm/1H. Inhalation, rat: LC50 = 1276 ppm/1H.
Carcinogenicity: CAS# 7732-18-5: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65. CAS# 7664-39-3: ACGIH: Not listed. California: Not listed. NIOSH: Not listed. NTP: Not listed. OSHA: Not listed. IARC: [present] (when used in drinking water) (listed as 'FLUORIDES, INORGANIC').

Epidemiology: Standard Draize test: Eye, human – 50 mg, severe reaction.
Teratogenicity: Embryo or fetus: death, Inhalation-rat TClO = 4980 µg/m³/4H (1-22 D preg).
Reproductive: Fertility: post- and pre-implantation mortality, Inhalation-rat TClO=470 µg/m³/4H.
Mutagenicity: DNA Damage: *D. Melanogaster* – Inhalation 1300 ppb/6W. Sex Chromosome Loss/Non-disjunction: *D. Melanogaster* – Inhalation 2900 ppb.
Neurotoxicity: No information available.

SECTION 12 – Ecological Information

Ecotoxicity: Fish (fresh water) 60 ppm lethal (time period not specified).
Environmental: No information reported.

Physical: No information available.
Other: None.

SECTION 13 – Disposal Considerations

Dispose of in a manner consistent with federal, provincial/state/territorial, and local regulations.
RCRA D-Maximum Concentration of Contaminants: None of the components are on this list.
RCRA D Series – Chronic Toxicity Reference Levels: None of the components are on this list.
RCRA F Series Wastes: None of the components are on this list.

RCRA P Series Wastes: None of the components are on this list.

RCRA U Series Wastes: CAS# 7664-39-3: waste number U134 (Corrosive waste, Toxic waste).

RCRA Substances Banned from Land Disposal: CAS# 7664-39-3 is banned from land disposal according to RCRA.

SECTION 14 – Transport Information

CANADIAN TRANSPORTATION OF DANGEROUS GOODS (TDG) SHIPPING INFORMATION

Shipping Name and Description: HYDROFLUORIC ACID, solution, with not more than 60 per cent hydrofluoric acid

UN Number: UN1790

Class: 8, 6.1

Packing Group/Category: II

Special Provisions: ---

Marine Pollutant: ---

Passenger Carrying Road/Railway Vehicle Index: 1 kg or L

NOTE: This information incorporates the Transportation of Dangerous Goods Regulations SOR/2001-286, effective October 14, 2009.

US DEPARTMENT OF TRANSPORT (DOT) HAZARDOUS MATERIALS SHIPPING INFORMATION (49 CFR)

Shipping Name and Description: HYDROFLUORIC ACID, with not more than 60 percent strength

Identification Number: UN1790

Hazard Class or Division: 8

Packing Group: II

NOTE: This information was taken from the US Code of Federal Regulations Title 49 - Transportation and is effective July 1, 2009.

IATA (1 January – 31 December 2010)

UN/ID No. A	Proper Shipping Name / Description B	Class or Div. (Sub Risk) C	Hazard Label(s) D	PG E	Passenger and Cargo Aircraft		Cargo Aircraft Only		S.P. See 4.4 M
					Pkg Inst I	Max Net Qty/Pkg J	Pkg Inst K	Max/Net Qty/Pkg L	
1790	Hydrofluoric acid 60% or less strength	8 (6.1)	Corrosive & Toxic	II	809	1 L	813	30 L	

NOTE: Consult IATA DG Regulations for the most recent information, abbreviations and reference marks.

SECTION 15 – Regulatory Information

US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

OSHA Hazard Communication Evaluation: Meets criteria for hazardous material, as defined by 29 CFR 1910.1200.

US Federal

TSCA: CAS# 7732-18-5 is listed on the TSCA Inventory. CAS# 7664-39-3 is listed on the TSCA Inventory.

Health and Safety Reporting List: None of the components are on this list.

Chemical Test Rules: None of the components are on this list.

TSCA Section 12b: None of the components are on this list.

TSCA Significant New Use Rule (SNUR): None of the components are on this list.

CERCLA Reportable Quantities (RQ): CAS# 7664-39-3: final RQ = 100 pounds (45.4 kg).

SARA Threshold Planning Quantities (TPQ): CAS# 7664-39-3: TPQ = 100 pounds.

SARA Hazard Categories: CAS# 7664-39-3: Acute, chronic.

SARA Section 313: This material contains Hydrofluoric acid (CAS# 7664-39-3, 48-50%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

US State

State Right to Know: Hydrofluoric acid can be found on the following state Right-to-Know lists: California, New Jersey (RTK# 3759), Florida, Pennsylvania, Minnesota, Massachusetts (10 lbs RQ).

Clean Air Act – Hazardous Air Pollutants (HAPs): CAS# 7664-39-3 is listed as a hazardous air pollutant (HAP).

Clean Air Act – Class 1 Ozone Depletors: None of the components are on this list.

Clean Air Act – Class 2 Ozone Depletors: None of the components are on this list.

Clean Water Act – Hazardous Substances: CAS# 7664-39-3 is listed as a Hazardous Substance under the CWA.

Clean Water Act – Priority Pollutants: None of the components are on this list.

Clean Water Act – Toxic Pollutants: None of the components are on this list.

OSHA – Highly Hazardous: CAS #7664-39-3 is considered highly hazardous by OSHA.

California Prop 65: No information available.

California No Significant Risk Level: No information available.

CANADIAN WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

CCOHS WHMIS Classification:

D1A - Poisonous and infectious material - immediate and serious effects – Very toxic

D2A - Poisonous and infectious material - Other effects - Very toxic

E - Corrosive material

NOTE: The WHMIS Classification of D2A (chronic toxicity) for this chemical is currently under review.

WHMIS Health Effects Criteria Met by this Chemical: D1A - Acute lethality - very toxic - immediate, D1B - TDG class 6.1 packing group unknown - toxic - immediate, D2A - Chronic toxicity - very toxic - other, E - Corrosive to skin, E - TDG class 8 - corrosive substance
WHMIS Ingredient Disclosure List: Included for disclosure at 1% or greater.

Detailed WHMIS Classification According to Criteria:

Class A - Compressed Gas: Does not meet criteria.

Class B - Flammable and Combustible Material: Does not meet criteria. Not combustible (does not burn).

Class C - Oxidizing Material: Does not meet criteria.

Class D - Poisonous and Infectious Material. Division 1 - Immediate and Serious Toxic Effects: Meets criteria for "Very toxic material".

Acute Lethality: "Very toxic". LC50 (mouse): 170 ppm (4- hour exposure); cited as 342 ppm (1-hour exposure); LD50 (oral, mouse): less than 40 mg/kg (cited as less than 2 mq/kg; at 40 mg/kg all animals (numbers not reported) died within 2 hours).

Transportation of Dangerous Goods (TDG): "Toxic"; class 6.1, packing group unknown.

Class D - Poisonous and Infectious Material. Division 2 - Other Toxic Effects: Meets criteria for "Very toxic material". See detailed evaluation below.

Chronic Health Effects: "Very toxic". Severe lung, liver and kidney damage and deaths observed in animals exposed to low concentrations (e.g. 30 ppm for 5 weeks produced complete mortality). Low concentrations cause fluorosis in humans.

Carcinogenicity: Does not meet criteria. Not included in standard reference lists.

Teratogenicity and Embryotoxicity: Insufficient information. There are insufficient details to evaluate the one animal study located.

Reproductive Toxicity: Insufficient information.

Mutagenicity: Insufficient information. The only available in vivo study is weak and inconclusive.

Respiratory Tract Sensitization: Does not meet criteria. Not reported as a human respiratory sensitizer.

Skin Irritation: Corrosive materials are not also classified as irritants.

Eye Irritation: Corrosive materials are not also classified as irritants.

Skin Sensitization: Does not meet criteria. Not reported as a skin sensitizer.

Class E - Corrosive Material: Meets criteria.

TDG Class 8. Corrosive to skin, carbon steel alloy 1020 and aluminum alloy 3003 at 55 °C (131 °F). No information on the corrosivity to aluminum alloy 7075-T6 was located.

Class F - Dangerously Reactive Material: Does not meet criteria.

Canadian DSL/NDSL: CAS# 7732-18-5 is listed on Canada's DSL/NDSL List. CAS# 7664-39-3 is listed on Canada's DSL/NDSL List.

EUROPEAN UNION (EU) CLASSIFICATION AND LABELLING INFORMATION

EU Index#: 009-003-00-1

EU Classification: Acute toxicity, Oral – Category 2
Acute toxicity, Dermal – Category 1
Acute toxicity, Inhalation – Category 2
Skin corrosion – Category 1A
Corrosive to metals – Category 1

EU Signal Word: Danger

EU Pictograms:



EU Hazard Statements:

H300: Fatal if swallowed.

H310: Fatal in contact with skin.

H330: Fatal if inhaled.

H314: Causes severe skin burns and eye damage.

H290: May be corrosive to metals.

EU Precautionary Statements:

P234: Keep only in original container.

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P262: Do not get in eyes, on skin, or on clothing.

P264: Wash thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P271: Use only outdoors or in a well-ventilated area.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P284: Wear respiratory protection.

P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P302+P350: IF ON SKIN: Gently wash with plenty of soap and water.

P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310: Immediately call a POISON CENTER or doctor/physician.

P320: Specific treatment is urgent (see Section 4 for first aid instructions in case of skin exposure).

P321: Specific treatment (see P310).

P330: Rinse mouth.

P361: Remove/Take off immediately all contaminated clothing.

P363: Wash contaminated clothing before reuse.

P390: Absorb spillage to prevent material damage.

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

P405: Store locked up.

P406: Store in corrosion resistant container with a resistant inner liner.

P501: Dispose of contents/container according to federal, regional and local government requirements.

Exposure Limits: (listed under FLUORIDES, as F) OES-United Kingdom: TWA 2.5 mg/m³, STEL 3 ppm (2.5 mg/m³).

SECTION 16 – Other Information

The statements contained herein are offered for informational purposes only and are based upon technical data. Seastar Chemicals Inc believes them to be accurate but does not purport to be all-inclusive. The above-stated product is intended for use only by persons having the necessary technical skills and facilities for handling the product at their discretion and risk. Since conditions and manner of use are outside our control, we (Seastar Chemicals Inc) make no warranty of merchantability or any such warranty, express or implied with respect to information and we assume no liability resulting from the above product or its use. Users should make their own investigations to determine suitability of information and product for their particular purposes.