

# Fluoroacetyl chloride

sc-263328



The Power to Question

## Material Safety Data Sheet

Hazard Alert Code  
Key:

EXTREME

HIGH

MODERATE

LOW

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

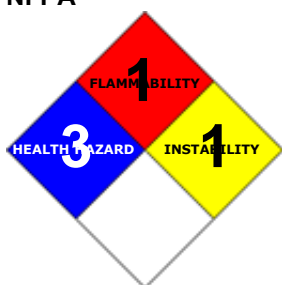
### PRODUCT NAME

Fluoroacetyl chloride

### STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

### NFPA



### SUPPLIER

Company: Santa Cruz Biotechnology, Inc.

Address:

2145 Delaware Ave

Santa Cruz, CA 95060

Telephone: 800.457.3801 or 831.457.3800

Emergency Tel: CHEMWATCH: From within the US and Canada: 877-715-9305

Emergency Tel: From outside the US and Canada: +800 2436 2255 (1-800-CHEMCALL) or call +613 9573 3112

### PRODUCT USE

■ Intermediate.

### SYNONYMS

C<sub>2</sub>-H<sub>2</sub>-Cl-F-O, "fluoro-acetyl chloride"

## Section 2 - HAZARDS IDENTIFICATION

### CANADIAN WHMIS SYMBOLS



### EMERGENCY OVERVIEW

#### RISK

Harmful if swallowed.

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

#### SWALLOWED

■ Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

■ The lethal dose of fluoroacetate in humans is 2-10 mg/kg. It is easily absorbed from the digestive system but symptoms of poisoning are delayed for up to a few hours. Their onset is usually insidious, and they include apprehension, auditory hallucinations, tingling sensation of the nose, facial twitching and numbness, and other central nervous system effects. Heart

failure and depression of breathing and the vasomotor system can cause death.

#### EYE

■ Although the liquid is not thought to be an irritant, direct contact with the eye may produce transient discomfort characterized by tearing or conjunctival redness (as with windburn).

#### SKIN

■ The material is not thought to be a skin irritant (as classified using animal models). Temporary discomfort, however, may result from prolonged dermal exposures. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

■ Open cuts, abraded or irritated skin should not be exposed to this material.

■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

#### INHALED

■ Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce severe damage to the health of the individual. Relatively small amounts absorbed through the lungs may prove fatal.

■ There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

■ Inhalation hazard is increased at higher temperatures.

■ Hydrogen chloride (HCl) vapour or fumes present a hazard from a single acute exposure. Exposures of 1300 to 2000 ppm have been lethal to humans in a few minutes.

Inhalation of HCl may cause choking, coughing, burning sensation and may cause ulceration of the nose, throat and larynx. Fluid on the lungs followed by generalised lung damage may follow.

Breathing of HCl vapour may aggravate asthma and inflammatory or fibrotic pulmonary disease.

High concentrations cause necrosis of the tracheal and bronchial epithelium, pulmonary oedema, atelectasis and emphysema and damage to the pulmonary blood vessels and liver.

#### CHRONIC HEALTH EFFECTS

■ Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

Chronic minor exposure to hydrogen chloride (HCl) vapour or fume may cause discolouration or erosion of the teeth, bleeding of the nose and gums; and ulceration of the nasal mucous membranes.

Repeated exposures of animals to concentrations of about 34 ppm HCl produced no immediate toxic effects.

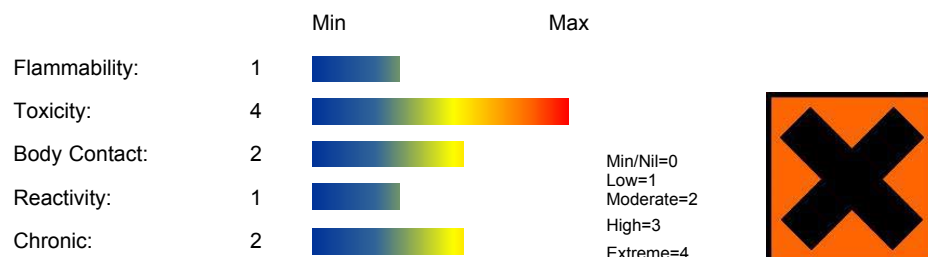
Workers exposed to hydrochloric acid suffered from gastritis and a number of cases of chronic bronchitis have also been reported.

Repeated or prolonged exposure to dilute solutions of HCl may cause dermatitis.

Repeated occupational exposure to sodium fluoroacetate has been associated with kidney disease.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

### HAZARD RATINGS



| NAME                              | CAS RN    | %   |
|-----------------------------------|-----------|-----|
| fluoroacetyl chloride             | 359-06-8  | >98 |
| hydrolysis yields                 |           |     |
| <a href="#">hydrogen chloride</a> | 7647-01-0 |     |

## Section 4 - FIRST AID MEASURES

### SWALLOWED

- 
- IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
- Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
- For advice, contact a Poisons Information Center or a doctor.
- Urgent hospital treatment is likely to be needed.
- If conscious, give water to drink.
- INDUCE vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

NOTE: Wear a protective glove when inducing vomiting by mechanical means.

- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
- If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
- If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

### EYE

- If this product comes in contact with the eyes:

- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Center or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

#### **SKIN**

- If skin contact occurs:
  - Immediately remove all contaminated clothing, including footwear
  - Flush skin and hair with running water (and soap if available).
  - Seek medical attention in event of irritation.

#### **INHALED**

- - If fumes or combustion products are inhaled remove from contaminated area.
  - Lay patient down. Keep warm and rested.
  - Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
  - Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
  - Transport to hospital, or doctor, without delay.

#### **NOTES TO PHYSICIAN**

- For poisonings involving fluoroacetate:
  - Induce vomiting immediately if possible.
  - Gastric lavage with tap water unless convulsions/ imminent convulsions make this impracticable.
  - Instill into the stomach sodium or magnesium sulfate in water (15-30 gm).
  - Although the clinical efficacy of monoacetin (glycerol monoacetate) is not established, it should probably be administered if available. The recommended dose is 0.5 ml/kg of undiluted fluid intramuscularly every half-hour for several hours and then at a reduced level for at least 12 hours. In the same dose monoacetin may also be given intravenously after dilution with 5 parts of sterile isotonic saline. No preparation of monoacetin is known to be available on the market. Usual commercial fluid contains free glycerin and assays at 70% at best. even the use of nonsterile preparations must be considered. Injection may be expected to produce some sedation and vasodilation. Intramuscular injection sites must be varied because of local pain and edema. Should parenteral administration be not feasible, the patient may drink a mixture of 100 ml of monoacetin in 500 ml water.
  - If monoacetin is not available, acetamide or ethanol may be given in the same doses.
  - A short-acting barbiturate drug or diazepam may be tried to control convulsions.
  - Oxygen therapy and artificial ventilation as required.
  - It is doubtful that digitalis is ever warranted. Parenteral procainamide or quinidine may be given a therapeutic trial but in experimental poisonings these drugs have proved less successful than monoacetin in controlling cardiac arrhythmias.
  - If possible, monitor the electrocardiogram continuously and secure chest electrodes for external defibrillation if it becomes necessary.

[GOSSELIN, SMITH HODGE: Clinical Toxicology of Commercial Products 5th Ed].

### **Section 5 - FIRE FIGHTING MEASURES**

|                             |               |
|-----------------------------|---------------|
| Vapour Pressure (mmHG):     | Not available |
| Upper Explosive Limit (%):  | Not available |
| Specific Gravity (water=1): | Not available |
| Lower Explosive Limit (%):  | Not available |

#### **EXTINGUISHING MEDIA**

- - Foam.
  - Dry chemical powder.
  - BCF (where regulations permit).
  - Carbon dioxide.
  - Water spray or fog - Large fires only.

#### **FIRE FIGHTING**

- - Alert Emergency Responders and tell them location and nature of hazard.
  - Wear full body protective clothing with breathing apparatus.
  - Prevent, by any means available, spillage from entering drains or water course.
  - Use fire fighting procedures suitable for surrounding area.
  - DO NOT approach containers suspected to be hot.
  - Cool fire exposed containers with water spray from a protected location.
  - If safe to do so, remove containers from path of fire.
  - Equipment should be thoroughly decontaminated after use.

#### **GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS**

- - Combustible.
  - Slight fire hazard when exposed to heat or flame.
  - Heating may cause expansion or decomposition leading to violent rupture of containers.
  - On combustion, may emit toxic fumes of carbon monoxide (CO).
  - May emit acrid smoke.
  - Mists containing combustible materials may be explosive.

Combustion products include: carbon dioxide (CO<sub>2</sub>), hydrogen chloride, phosgene, hydrogen fluoride, other pyrolysis products typical of burning organic material.

May emit poisonous fumes.

### FIRE INCOMPATIBILITY

■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

### PERSONAL PROTECTION

Glasses:

Chemical goggles.

Gloves:

Respirator:

Type AB-P Filter of sufficient capacity

## Section 6 - ACCIDENTAL RELEASE MEASURES

### MINOR SPILLS

■

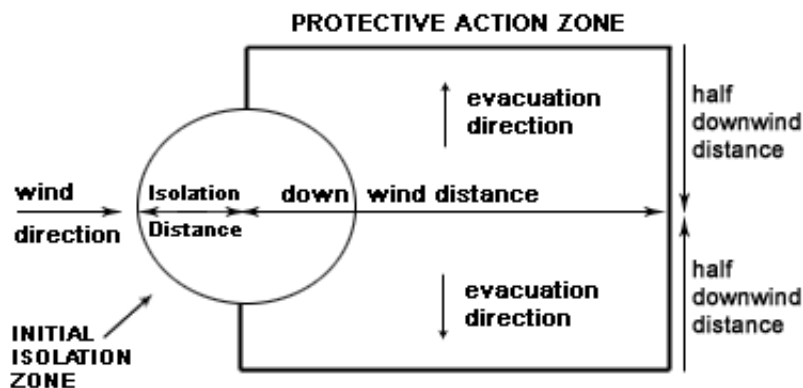
- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapors and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- Wipe up.
- Place in a suitable labeled container for waste disposal.

### MAJOR SPILLS

■

- Clear area of personnel and move upwind.
- Alert Emergency Responders and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Stop leak if safe to do so.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labeled containers for recycling.
- Neutralize/decontaminate residue.
- Collect solid residues and seal in labeled drums for disposal.
- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- If contamination of drains or waterways occurs, advise emergency services.

### PROTECTIVE ACTIONS FOR SPILL



From US Emergency Response Guide 2000 Guide 153

### SMALL SPILLS

| Name                                                                                     | Isolation Distance | Downwind Day      | Protection Night  |
|------------------------------------------------------------------------------------------|--------------------|-------------------|-------------------|
| Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone A)                                 | 700 ft (215 m)     | 1.2 mile (1.9 km) | 2.7 mile (4.3 km) |
| Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone B)                                 | 200 ft (60 m)      | 0.2 mile (0.3 km) | 0.7 mile (1.1 km) |
| Toxic liquid, organic, n.o.s. (when Inhalation Hazard is on a package or shipping paper) | 700 ft (215 m)     | 1.2 mile (1.9 km) | 2.7 mile (4.3 km) |

From IERG (Canada/Australia)

|                              |            |
|------------------------------|------------|
| Isolation Distance           | 25 meters  |
| Downwind Protection Distance | 250 meters |

### LARGE SPILLS

| Name                                                     | Isolation Distance | Downwind Day          | Protection Night      |
|----------------------------------------------------------|--------------------|-----------------------|-----------------------|
| Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone A) | 3000 ft (915 m)    | (7.0+ mile (11.0+ km) | (7.0+ mile (11.0+ km) |
| Toxic liquid, organic, n.o.s. (Inhalation Hazard         | 600 ft             | 1 mile (1.6           | 2.5 mile (4           |

|                                                                                          |                    |                          |                          |
|------------------------------------------------------------------------------------------|--------------------|--------------------------|--------------------------|
| Zone B)                                                                                  | (185 m)            | km)                      | km)                      |
| Toxic liquid, organic, n.o.s. (when Inhalation Hazard is on a package or shipping paper) | 3000 ft<br>(915 m) | (7.0+ mile<br>(11.0+ km) | (7.0+ mile<br>(11.0+ km) |

## FOOTNOTES

1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.

2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.

3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.

4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills". LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.

5 Guide 153 is taken from the US DOT emergency response guide book.

6 IERG information is derived from CANUTEC - Transport Canada.

## ACUTE EXPOSURE GUIDELINE LEVELS (AEGL) (in ppm)

|            |        |        |        |      |         |
|------------|--------|--------|--------|------|---------|
| fluoroacet |        |        |        |      |         |
| yl         |        |        |        |      |         |
| chloride   |        |        |        |      |         |
| AEGL Type  | 10 min | 30 min | 60 min | 4 hr | 8 hr    |
| AEGL 1     | 1.8    | 1.8    | 1.8    | 1.8  | GALSYN~ |
| AEGL 2     | 100    | 43     | 22     | 11   | GALSYN~ |
| AEGL 3     | 620    | 210    | 100    | 26   | GALSYN~ |
| hydrogen   |        |        |        |      |         |
| chloride   |        |        |        |      |         |
| AEGL Type  | 10 min | 30 min | 60 min | 4 hr | 8 hr    |
| AEGL 1     | 1.8    | 1.8    | 1.8    | 1.8  | GALSYN~ |
| AEGL 2     | 100    | 43     | 22     | 11   | GALSYN~ |
| AEGL 3     | 620    | 210    | 100    | 26   | GALSYN~ |

AEGL 1: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

AEGL 2: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

AEGL 3: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

## EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

|                       |        |
|-----------------------|--------|
| fluoroacetyl chloride | 150ppm |
|-----------------------|--------|

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

|                       |       |
|-----------------------|-------|
| fluoroacetyl chloride | 20ppm |
|-----------------------|-------|

other than mild, transient adverse effects without perceiving a clearly defined odour is:

|                       |      |
|-----------------------|------|
| fluoroacetyl chloride | 3ppm |
|-----------------------|------|

American Industrial Hygiene Association (AIHA)

Ingredients considered exceed the following cutoffs

|                 |          |               |         |
|-----------------|----------|---------------|---------|
| Very Toxic (T+) | >= 0.1%  | Toxic (T)     | >= 3.0% |
| R50             | >= 0.25% | Corrosive (C) | >= 5.0% |
| R51             | >= 2.5%  |               |         |
| else            | >= 10%   |               |         |

where percentage is percentage of ingredient found in the mixture

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

- 
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.

- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

## RECOMMENDED STORAGE METHODS

- Lined metal can, Lined metal pail/drum
- Plastic pail
- Polyliner drum
- Packing as recommended by manufacturer.
- Check all containers are clearly labeled and free from leaks.

For low viscosity materials

- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure.

For materials with a viscosity of at least 2680 cSt. (23 deg. C) and solids (between 15 C deg. and 40 deg C.):

- Removable head packaging;
- Cans with friction closures and
- low pressure tubes and cartridges may be used.

- Where combination packages are used, and the inner packages are of glass, there must be sufficient inert cushioning material in contact with inner and outer packages \* . - In addition, where inner packagings are glass and contain liquids of packing group I and II there must be sufficient inert absorbent to absorb any spillage \*. - \* unless the outer packaging is a close fitting molded plastic box and the substances are not incompatible with the plastic. All inner and sole packagings for substances that have been assigned to Packaging Groups I or II on the basis of inhalation toxicity criteria, must be hermetically sealed.

## STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

## SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



X: Must not be stored together

O: May be stored together with specific preventions

+: May be stored together

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

| Source                                                    | Material                                                     | TWA<br>ppm | TWA<br>mg/m³ | STEL<br>ppm | STEL<br>mg/m³ | Peak<br>ppm | Peak<br>mg/m³ | TWA<br>F/CC | Notes                                                        |
|-----------------------------------------------------------|--------------------------------------------------------------|------------|--------------|-------------|---------------|-------------|---------------|-------------|--------------------------------------------------------------|
| Canada - British Columbia<br>Occupational Exposure Limits | fluoroacetyl chloride<br>(Hydrogen chloride<br>Revised 2003) |            |              |             |               | 2           |               |             |                                                              |
| Canada - Ontario Occupational<br>Exposure Limits          | fluoroacetyl chloride<br>(Hydrogen chloride)                 |            |              |             |               | 2           |               |             |                                                              |
| US - Minnesota Permissible Exposure<br>Limits (PELs)      | fluoroacetyl chloride<br>(Hydrogen chloride)                 |            |              |             |               | 5           | 7             |             |                                                              |
| US ACGIH Threshold Limit Values<br>(TLV)                  | fluoroacetyl chloride<br>(Hydrogen chloride)                 |            |              |             |               | 2           |               |             | TLV<br>Basis:<br>upper<br>respiratory<br>tract<br>irritation |

|                                                                                               |                                                          |      |      |   |   |  |                                               |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------|------|------|---|---|--|-----------------------------------------------|
| US NIOSH Recommended Exposure Limits (RELs)                                                   | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7    |   |   |  |                                               |
| Canada - Alberta Occupational Exposure Limits                                                 | fluoroacetyl chloride (Hydrogen chloride)                | 2    | 3    |   |   |  |                                               |
| US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants                     | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7    |   |   |  |                                               |
| US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants | fluoroacetyl chloride (Hydrogen chloride)                | (C)5 | (C)7 |   |   |  |                                               |
| US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants   | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7    |   |   |  |                                               |
| US - California Permissible Exposure Limits for Chemical Contaminants                         | fluoroacetyl chloride (Hydrogen chloride; muriatic acid) | 5    | 7    |   |   |  |                                               |
| US - Idaho - Limits for Air Contaminants                                                      | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7    |   |   |  |                                               |
| US - Hawaii Air Contaminant Limits                                                            | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7    |   |   |  |                                               |
| US - Alaska Limits for Air Contaminants                                                       | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7    |   |   |  |                                               |
| US - Michigan Exposure Limits for Air Contaminants                                            | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7    |   |   |  |                                               |
| Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances                 | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7    | - | - |  |                                               |
| US - Washington Permissible exposure limits of air contaminants                               | fluoroacetyl chloride (Hydrogen chloride)                | 5.0  |      |   |   |  |                                               |
| Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits       | fluoroacetyl chloride (Hydrogen chloride)                | 2    |      |   |   |  |                                               |
| US - Oregon Permissible Exposure Limits (Z1)                                                  | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7    |   |   |  |                                               |
| US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants              | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7    |   |   |  |                                               |
| Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)               | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7,5  |   |   |  |                                               |
| US OSHA Permissible Exposure Levels (PELs) - Table Z1                                         | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7    |   |   |  |                                               |
| Canada - Northwest Territories Occupational Exposure Limits (English)                         | fluoroacetyl chloride (Hydrogen chloride)                | 5    | 7.5  |   |   |  |                                               |
| Canada - Nova Scotia Occupational Exposure Limits                                             | fluoroacetyl chloride (Hydrogen chloride)                | 2    |      |   |   |  | TLV Basis: upper respiratory tract irritation |
| Canada - Prince Edward Island Occupational Exposure Limits                                    | fluoroacetyl chloride (Hydrogen chloride)                | 2    |      |   |   |  | TLV Basis: upper respiratory tract irritation |
| Canada - British Columbia Occupational Exposure Limits                                        | hydrogen chloride (Hydrogen chloride Revised 2003)       | 2    |      |   |   |  |                                               |
| Canada - Ontario Occupational Exposure Limits                                                 | hydrogen chloride (Hydrogen chloride)                    | 2    |      |   |   |  |                                               |
| US - Minnesota Permissible Exposure Limits (PELs)                                             | hydrogen chloride (Hydrogen chloride)                    | 5    | 7    |   |   |  |                                               |
| US ACGIH Threshold Limit Values (TLV)                                                         | hydrogen chloride (Hydrogen chloride)                    | 2    |      |   |   |  | TLV Basis: upper respiratory tract irritation |
| US NIOSH Recommended Exposure Limits (RELs)                                                   | hydrogen chloride (Hydrogen chloride)                    | 5    | 7    |   |   |  |                                               |
| Canada - Alberta Occupational                                                                 | hydrogen chloride                                        | 2    | 3    |   |   |  |                                               |

|                                                                                               |                                                      |      |      |   |                                               |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------|------|------|---|-----------------------------------------------|
| Exposure Limits                                                                               | (Hydrogen chloride)                                  | 2    | 5    |   |                                               |
| US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants                     | hydrogen chloride (Hydrogen chloride)                | 5    | 7    |   |                                               |
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| Canada - Prince Edward Island Occupational Exposure Limits                                    | hydrogen chloride (Hydrogen chloride)                | 2    |      |   | TLV Basis: upper respiratory tract irritation |

#### EMERGENCY EXPOSURE LIMITS

| Material              | Revised IDLH Value (mg/m3) | Revised IDLH Value (ppm) |
|-----------------------|----------------------------|--------------------------|
| fluoroacetyl chloride |                            | 50                       |
| hydrogen chloride     |                            | 50                       |

#### MATERIAL DATA

FLUOROACETYL CHLORIDE:

HYDROGEN CHLORIDE:

■ for hydrogen chloride:

Odour Threshold Value: 0.262 ppm (detection), 10.06 ppm (recognition)

NOTE: Detector tubes for hydrochloric acid, measuring in excess of 1 ppm, are available commercially.

Hydrogen chloride is a strong irritant to the eyes, mucous membranes and skin. Chronic exposure produces a corrosive action on the teeth. Reports of respiratory irritation following short-term exposure at 5 ppm have lead to the recommended TLV-C. There is no indication that skin contact with hydrogen chloride elicits systemic poisoning and a skin designation has not been applied.

Exposure of humans to hydrogen chloride at 50 to 100 ppm for 1 hour is reported to be barely tolerable; 35 ppm caused irritation of the throat on short exposure and 10 ppm was the maximal concentration for prolonged exposure. It has been stated that hydrogen chloride at concentrations of 5 ppm is immediately irritating.

Odour Safety Factor(OSF)

OSF=1.3 (HYDROGEN CHLORIDE).

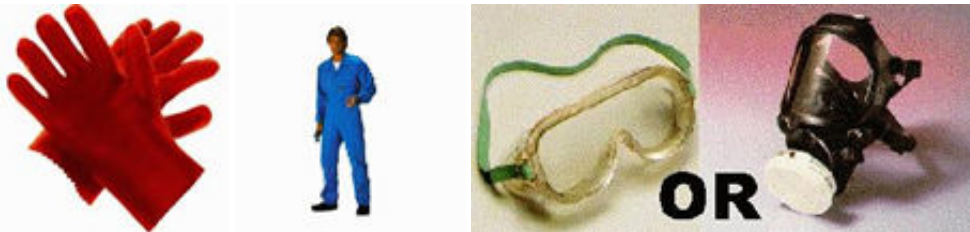
FLUOROACETYL CHLORIDE:

■ for sodium fluoroacetate:

Sodium fluoroacetate is highly toxic producing both convulsions and ventricular fibrillation. Systemic toxicity is due inhibition of the citric acid cycle and may result form both inhalation and dermal exposure. The TLV-TWA is thought to be protective against systemic intoxication.

No exposure limits set by NOHSC or ACGIH.

## PERSONAL PROTECTION



Consult your EHS staff for recommendations

### EYE

■

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. DO NOT wear contact lenses.

### HANDS/FEET

■ Wear chemical protective gloves, eg. PVC.

Wear safety footwear or safety gumboots, eg. Rubber.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).

- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
- Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

- Neoprene gloves

### OTHER

■

- Overalls.
- Eyewash unit.
- Barrier cream.
- Skin cleansing cream.

### RESPIRATOR

■ Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

| Breathing Zone Level ppm (volume) | Maximum Protection Factor | Half-face Respirator | Full-Face Respirator |
|-----------------------------------|---------------------------|----------------------|----------------------|
| 1000                              | 10                        | AB-1 P               | -                    |
| 1000                              | 50                        | -                    | AB-1 P               |
| 5000                              | 50                        | Airline*             | -                    |
| 5000                              | 100                       | -                    | AB-2 P               |
| 10000                             | 100                       | -                    | AB-3 P               |
|                                   | 100+                      |                      | Airline* *           |

\* - Continuous Flow \*\* - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

Use appropriate NIOSH-certified respirator based on informed professional judgement. In conditions where no reasonable estimate of exposure can be made, assume the exposure is in a concentration IDLH and use NIOSH-certified full face pressure demand SCBA with a minimum service life of 30 minutes, or a combination full facepiece pressure demand SAR with auxiliary self-contained air supply. Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

### ENGINEERING CONTROLS

■ Local exhaust ventilation usually required. If risk of overexposure exists, wear an approved respirator. Correct fit is essential to obtain adequate protection an approved self contained breathing apparatus (SCBA) may be required in some situations. Provide adequate ventilation in warehouse or closed storage area.

Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

| Type of Contaminant:                                                                                                                                                                     | Air Speed:                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| solvent, vapors, degreasing etc., evaporating from tank (in still air).                                                                                                                  | 0.25-0.5 m/s (50-100 f/min.) |
| aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into | 0.5-1 m/s (100-200 f/min.)   |

zone of active generation)

direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion) 1-2.5 m/s (200-500 f/min.)

grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion). 2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range

Upper end of the range

1: Room air currents minimal or favorable to capture

1: Disturbing room air currents

2: Contaminants of low toxicity or of nuisance value only.

2: Contaminants of high toxicity

3: Intermittent, low production.

3: High production, heavy use

4: Large hood or large air mass in motion

4: Small hood-local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Liquid.

Toxic or noxious vapors/ gas.

|                           |               |                                |                 |
|---------------------------|---------------|--------------------------------|-----------------|
| State                     | Liquid        | Molecular Weight               | 96.49           |
| Melting Range (°F)        | Not available | Viscosity                      | Not Available   |
| Boiling Range (°F)        | Not available | Solubility in water (g/L)      | Reacts          |
| Flash Point (°F)          | Not available | pH (1% solution)               | Not applicable. |
| Decomposition Temp (°F)   | Not Available | pH (as supplied)               | Not applicable  |
| Autoignition Temp (°F)    | Not available | Vapour Pressure (mmHG)         | Not available   |
| Upper Explosive Limit (%) | Not available | Specific Gravity (water=1)     | Not available   |
| Lower Explosive Limit (%) | Not available | Relative Vapor Density (air=1) | >1              |
| Volatile Component (%vol) | Not available | Evaporation Rate               | Not available   |

### APPEARANCE

Liquid; does not mix well with water.

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

■

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerization will not occur.

### STORAGE INCOMPATIBILITY

■ Hydrogen chloride:

- reacts strongly with strong oxidisers (releasing chlorine gas), acetic anhydride, caesium cyanotridecahydrodecaborate(2-), ethylidene difluoride, hexalithium disilicide, metal acetylides, sodium, silicon dioxide, tetraselenium tetranitride, and many organic materials
- is incompatible with aliphatic amines, alkanolamines, alkylene oxides, aluminium, aluminium-titanium alloys, aromatic amines, amides, 2-aminoethanol, ammonia, ammonium hydroxide, calcium phosphide, chlorosulfonic acid, ethylenediamine, ethyleneimine, epichlorohydrin, isocyanates, metal acetylides, metal carbides, oleum, organic anhydrides, perchloric acid, 3-propiolactone, sulfuric acid, uranium phosphide, vinyl acetate, vinylidene fluoride
- attacks most metals forming flammable hydrogen gas, and some plastics, rubbers and coatings

Segregate from alcohol, water.

Avoid reaction with oxidizing agents.

- NOTE: May develop pressure in containers; open carefully. Vent periodically.

For incompatible materials - refer to Section 7 - Handling and Storage.

## Section 11 - TOXICOLOGICAL INFORMATION

fluoroacetyl chloride

### TOXICITY AND IRRITATION

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

■ for fluoroacetate salts:

Fluoroacetate in the mammalian body is converted to fluorocitrate. This compound inhibits the enzyme aconitase, thus blocking the citric acid cycle. This leads to accumulation of citric acid, which may cause convulsions and death from cardiac failure or respiratory arrest.

No significant acute toxicological data identified in literature search.

## CARCINOGEN

|                   |                                                                                             |                     |    |
|-------------------|---------------------------------------------------------------------------------------------|---------------------|----|
| Hydrochloric acid | International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs | Group               | 3  |
| Hydrogen chloride | US ACGIH Threshold Limit Values (TLV) - Carcinogens                                         | Carcinogen Category | A4 |

## Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:

HYDROGEN CHLORIDE:

FLUOROACETYL CHLORIDE:

■ DO NOT discharge into sewer or waterways.

FLUOROACETYL CHLORIDE:

■ fluoroacetate inorganic salts:

Environmental fate:

Leaching and metabolism are the major routes of dissipation. However, undegraded fluoroacetate is considered mobile and consequently has a high potential to move downward in the soil and reach ground water. Sodium fluoroacetate appears to degrade primarily by biologically mediated processes. Sodium fluoroacetate appears first to ionise to sodium and fluoroacetate with the fluoroacetate portion further degrading by biologically mediated processes. Microorganisms capable of dehalogenating compounds are reported to metabolise fluoroacetate to fluoride and glycolate faster than other microorganisms. Unvalidated data suggest that sodium fluoroacetate does not degrade substantially in 27 days in sterile soil.

Because there are no leaching adsorption-desorption data, mobility can only be assessed on the basis of solubility in water. Based on solubility in water, undegraded fluoroacetate may tend to leach. However, the potential for leaching may be reduced in some soils by adsorption to organic matter and clay particles and absorption by plants.

Hydrolysis: the stability of sodium monofluoroacetate in water and saline was determined for a period of approximately 6 months. An immediate loss of fluorine was detected in both the water and saline solutions. A progressive loss of fluorine was reported in the water solutions. However, the saline solutions indicated no significant decreases in fluorine content after the initial loss. The following reaction is indicated:  $\text{XCH COO}^- + \text{OH}^- = \text{HOCH}_2\text{COO}^- + \text{X}^-$  (where X = F, Cl, or I)

Ecotoxicity:

Very highly toxic to birds:

Avian acute oral LD50: ring-necked pheasant 6.4 mg/kg mallard duck 9.1 mg/kg; chukar 3.51 mg/kg; widgeon 3 mg/kg; golden eagle 5 mg/kg; black vulture 15 mg/kg; magpie 1.78-2.3 mg/kg

Avian subacute dietary LC50: bobwhite quail 486 ppm; mallard duck 231 ppm

Slightly toxic to coldwater fish; practically non-toxic to warm water fish:

Fish LC50 996 h: rainbow trout 54 mg/l; bluegill sunfish >970 mg/l

Practically non-toxic to freshwater invertebrates:

Daphnia EC50 (48 h): 350 mg/l (static)

The chemical is very highly toxic to mammals on an acute oral basis. Certain species may be exposed, primarily as a result of scavenging the carcasses of livestock bearing the sodium fluoroacetate livestock protection collars.

HYDROGEN CHLORIDE:

■ Although inorganic chloride ions are not normally considered toxic they can exist in effluents at acutely toxic levels (chloride >3000 mg/l). the resulting salinity can exceed the tolerances of most freshwater organisms.

Inorganic chlorine eventually finds its way into the aqueous compartment and as such is bioavailable. Incidental exposure to inorganic chloride may occur in occupational settings where chemicals management policies are improperly applied. The toxicity of chloride salts depends on the counter-ion (cation) present; that of chloride itself is unknown. Chloride toxicity has not been observed in humans except in the special case of impaired sodium chloride metabolism, e.g. in congestive heart failure. Healthy individuals can tolerate the intake of large quantities of chloride provided that there is a concomitant intake of fresh water.

Although excessive intake of drinking-water containing sodium chloride at concentrations.

above 2.5 g/litre has been reported to produce hypertension, this effect is believed to be related to the sodium ion concentration.

Chloride concentrations in excess of about 250 mg/litre can give rise to detectable taste in water, but the threshold depends upon the associated cations. Consumers can, however, become accustomed to concentrations in excess of 250 mg/litre. No health-based guideline value is proposed for chloride in drinking-water.

In humans, 88% of chloride is extracellular and contributes to the osmotic activity of body fluids. The electrolyte balance in the body is maintained by adjusting total dietary intake and by excretion via the kidneys and gastrointestinal tract. Chloride is almost completely absorbed in normal individuals, mostly from the proximal half of the small intestine. Normal fluid loss amounts to about 1.5?2 liters/day, together with about 4 g of chloride per day. Most (90 - 95%) is excreted in the urine, with minor amounts in faeces (4- %) and sweat (2%).

Chloride increases the electrical conductivity of water and thus increases its corrosivity. In metal pipes, chloride reacts with metal ions to form soluble salts thus increasing levels of metals in drinking-water. In lead pipes, a protective oxide layer is built up, but chloride enhances galvanic corrosion. It can also increase the rate of pitting corrosion of metal pipes.

### Ecotoxicity

|                       |                         |                  |                 |          |
|-----------------------|-------------------------|------------------|-----------------|----------|
| Ingredient            | Persistence: Water/Soil | Persistence: Air | Bioaccumulation | Mobility |
| fluoroacetyl chloride | HIGH                    |                  | LOW             | HIGH     |
| hydrogen chloride     | LOW                     |                  | LOW             | HIGH     |

## Section 13 - DISPOSAL CONSIDERATIONS

### Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

! Puncture containers to prevent re-use and bury at an authorized landfill.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction,
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult Waste Management Authority for disposal.
- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorized landfill.

## Section 14 - TRANSPORTATION INFORMATION



DOT:

|                                               |        |                                                   |                      |
|-----------------------------------------------|--------|---------------------------------------------------|----------------------|
| Symbols:                                      | G      | Hazard class or Division:                         | 6.1                  |
| Identification Numbers:                       | UN2810 | PG:                                               | I                    |
| Label Codes:                                  | 6.1    | Special provisions:                               | T14, TP2, TP13, TP27 |
| Packaging: Exceptions:                        | None   | Packaging: Non-bulk:                              | 201                  |
| Packaging: Exceptions:                        | None   | Quantity limitations:<br>Passenger aircraft/rail: | 1 L                  |
| Quantity Limitations: Cargo<br>aircraft only: | 30 L   | Vessel stowage: Location:                         | B                    |
| Vessel stowage: Other:                        | 40     |                                                   |                      |

Hazardous materials descriptions and proper shipping names:

Toxic, liquids, organic, n.o.s.

### Air Transport IATA:

|                     |      |                    |      |
|---------------------|------|--------------------|------|
| ICAO/IATA Class:    | 6.1  | ICAO/IATA Subrisk: | None |
| UN/ID Number:       | 2810 | Packing Group:     | I    |
| Special provisions: | A3   |                    |      |

Shipping Name: TOXIC LIQUID, ORGANIC, N.O.S. \*(CONTAINS FLUOROACETYL CHLORIDE)

### Maritime Transport IMDG:

|                     |         |                     |         |
|---------------------|---------|---------------------|---------|
| IMDG Class:         | 6.1     | IMDG Subrisk:       | None    |
| UN Number:          | 2810    | Packing Group:      | I       |
| EMS Number:         | F-A,S-A | Special provisions: | 274 315 |
| Limited Quantities: | None    |                     |         |

Shipping Name: TOXIC LIQUID, ORGANIC, N.O.S.(contains fluoroacetyl chloride)

## Section 15 - REGULATORY INFORMATION

### fluoroacetyl chloride (CAS: 359-06-8) is found on the following regulatory lists;

"Canada Non-Domestic Substances List (NDSL)", "US - Massachusetts Oil & Hazardous Material List", "US - Pennsylvania - Hazardous Substance List", "US DOE Temporary Emergency Exposure Limits (TEELs)", "US List of Lists - Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112(r) of the Clean Air Act", "US SARA Section 302 Extremely Hazardous Substances", "US Toxic Substances Control Act (TSCA) - Inventory Regulations for ingredients

### hydrogen chloride (CAS: 7647-01-0) is found on the following regulatory lists;

"Canada - Alberta Ambient Air Quality Objectives", "Canada - Alberta Occupational Exposure Limits", "Canada - British Columbia Occupational Exposure Limits", "Canada - Northwest Territories Occupational Exposure Limits (English)", "Canada - Nova Scotia Occupational Exposure Limits", "Canada - Ontario Occupational Exposure Limits", "Canada - Prince Edward Island Occupational Exposure Limits", "Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)", "Canada - Saskatchewan Industrial Hazardous Substances", "Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits", "Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances", "Canada Controlled Drugs and Substances Act Schedule VI", "Canada Domestic Substances List (DSL)", "Canada Ingredient Disclosure List (SOR/88-64)", "Canada National Pollutant Release Inventory (NPRI)", "Canada Prohibited Toxic Substances, Schedule 2, Concentration Limits (English)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (French)", "CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Council of Chemical Associations (ICCA) - High Production Volume List", "International Maritime Dangerous Goods

Requirements (IMDG Code) - Goods Forbidden for Transport", "OECD Representative List of High Production Volume (HPV) Chemicals", "United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances - Table II", "United Nations List of Precursors and Chemicals Frequently used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances Under International Control - Table II", "US - Alaska Limits for Air Contaminants", "US - California Air Toxics ""Hot Spots"" List (Assembly Bill 2588) Substances for which emissions must be quantified", "US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List", "US - California OEHHA/ARB - Acute Reference Exposure Levels and Target Organs (RELs)", "US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs)", "US - California Permissible Exposure Limits for Chemical Contaminants", "US - California Toxic Air Contaminant List Category II", "US - Connecticut Hazardous Air Pollutants", "US - Hawaii Air Contaminant Limits", "US - Idaho - Limits for Air Contaminants", "US - Massachusetts Oil & Hazardous Material List", "US - Michigan Exposure Limits for Air Contaminants", "US - Minnesota Hazardous Substance List", "US - Minnesota Permissible Exposure Limits (PELs)", "US - New Jersey Right to Know Hazardous Substances", "US - Oregon Hazardous Materials", "US - Oregon Permissible Exposure Limits (Z1)", "US - Pennsylvania - Hazardous Substance List", "US - Rhode Island Hazardous Substance List", "US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants", "US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants", "US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants", "US - Washington Permissible exposure limits of air contaminants", "US - Wyoming List of Highly Hazardous Chemicals, Toxics and Reactives", "US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants", "US ACGIH Threshold Limit Values (TLV)", "US ACGIH Threshold Limit Values (TLV) - Carcinogens", "US Clean Air Act - Hazardous Air Pollutants", "US CWA (Clean Water Act) - List of Hazardous Substances", "US CWA (Clean Water Act) - Reportable Quantities of Designated Hazardous Substances", "US Department of Homeland Security Chemical Facility Anti-Terrorism Standards - Chemicals of Interest", "US Department of Transportation (DOT) List of Hazardous Substances and Reportable Quantities - Hazardous Substances Other Than Radionuclides", "US DOE Temporary Emergency Exposure Limits (TEELs)", "US Drug Enforcement Administration (DEA) List I and II Regulated Chemicals", "US EPA Acute Exposure Guideline Levels (AEGs) - Final", "US EPA High Production Volume Chemicals Additional List", "US EPA Master Testing List - Index I Chemicals Listed", "US EPCRA Section 313 Chemical List", "US Food Additive Database", "US List of Lists - Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112(r) of the Clean Air Act", "US NFPA 45 Fire Protection for Laboratories Using Chemicals - Flammability Characteristics of Common Compressed and Liquefied Gases", "US NIOSH Recommended Exposure Limits (RELs)", "US OSHA List of Highly Hazardous Chemicals, Toxics and Reactives", "US OSHA Permissible Exposure Levels (PELs) - Table Z1", "US Postal Service (USPS) Hazardous Materials Table: Postal Service Mailability Guide", "US SARA Section 302 Extremely Hazardous Substances", "US Spacecraft Maximum Allowable Concentrations (SMACs) for Airborne Contaminants", "US Toxic Substances Control Act (TSCA) - Inventory"

## Section 16 - OTHER INFORMATION

### LIMITED EVIDENCE

- Skin contact may produce health damage\*.
  - Inhalation may produce severe health damage\*.
  - Cumulative effects may result following exposure\*.
  - May produce discomfort of the respiratory system\*.
- \* (limited evidence).

### Denmark Advisory list for selfclassification of dangerous substances

Substance CAS Suggested codes hydrogen chloride 7647- 01- 0

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- Classification of the mixture and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:  
[www.chemwatch.net/references](http://www.chemwatch.net/references).

- The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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