Material Safety Data Sheet

Fluoroacetamide

sc-25002

Hazard Alert Code Key: EXTREME HIGH MODERATE LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Fluoroacetamide

STATEMENT OF HAZARDOUS NATURE

NFPA

SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800

EMERGENCY
ChemWatch
Within the US & Canada: 877–715–9305
Outside the US & Canada: +800 2436 2255
(1–800-CHEMCALL) or call +613 9573 3112

SYNONYMS
C2-H4-F-N-O, CH2FCONH2, "acetamide, 2-fluoro-", FAA, 2-fluoroacetamide, "fluoroacetic acid amide", monofluoroacetamide, "RCRA Waste No.: P-057", "AFL 1081", "Fluorokil 100", Fussol, Megatox, Navron, Rodex, Yanock

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Toxicity:</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Body Contact:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Reactivity:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Chronic:</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

CANADIAN WHMIS SYMBOLS
EMERGENCY OVERVIEW

RISK
Toxic in contact with skin.
Very toxic if swallowed.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ Severely toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 5 gram may be fatal or may produce serious damage to the health of the individual.
■ Many potent rodenticides and insecticides (e.g.
■ 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.

EYE
■ Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn).
Slight abrasive damage may also result.

SKIN
■ Skin contact with the material may produce toxic effects; systemic effects may result following absorption.
■ The material is not thought to be a skin irritant (as classified using animal models).
Abrasive damage however, may result from prolonged exposures.
■ 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
■ The material is not thought to produce respiratory irritation (as classified using animal models).
Nevertheless inhalation of dusts, or fume, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
■ Inhalation of dusts, generated by the material during the course of normal handling, may produce severe damage to the health of the individual.
Relatively small amounts absorbed from the lungs may prove fatal.
■ Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

CHRONIC HEALTH EFFECTS
■ Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung.
Repeated occupational exposure to sodium fluoroacetate has been associated with kidney disease.
Chronic experience of fluoracetamide is thought to resemble that of workers exposed to fluoroacetates (the metabolite of fluoracetamide).

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>NAME</th>
<th>CAS RN</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>fluoroacetamide</td>
<td>640-19-7</td>
<td>&gt;98</td>
</tr>
</tbody>
</table>

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:

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.

SKIN
■ If skin or hair contact occurs: - Quickly but gently, wipe material off skin with a dry, clean cloth. - Immediately remove all contaminated clothing, including footwear.

INHALED
- If fumes or combustion products are inhaled remove from contaminated area. - Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN
■ For poisonings involving fluoroacetate:
- Induce vomiting immediately if possible.
- Gastric lavage with tap water unless convulsions/ imminent convulsions make this impracticable.
Section 5 - FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapour Pressure (mmHG)</td>
<td>Negligible</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not available</td>
</tr>
<tr>
<td>Specific Gravity (water=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not available</td>
</tr>
</tbody>
</table>

**EXTINGUISHING MEDIA**
- Water spray or fog.
- Foam.

**FIRE FIGHTING**
- Alert Emergency Responders and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.

When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 800 metres in all directions.

**GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS**
- Combustible solid which burns but propagates flame with difficulty.
- Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
- Combustion products include: carbon monoxide (CO), carbon dioxide (CO2), hydrogen fluoride, nitrogen oxides (NOx), 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: Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

**MINOR SPILLS**
- Clean up all spills immediately.
- Avoid contact with skin and eyes.

**MAJOR SPILLS**
- Clear area of personnel and move upwind.
- Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

**PROCEDURE FOR HANDLING**
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
- Do NOT cut, drill, grind or weld such containers.
- In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

**RECOMMENDED STORAGE METHODS**
- DO NOT use aluminium, galvanised or tin-plated containers.
- Lined metal can, Lined metal pail/drum
- Plastic pail.
- 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.

**STORAGE REQUIREMENTS**
- Store in original containers.
- Keep containers securely sealed.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION
**EXPOSURE CONTROLS**

<table>
<thead>
<tr>
<th>Source</th>
<th>Material</th>
<th>TWA ppm</th>
<th>TWA mg/m³</th>
<th>STEL ppm</th>
<th>STEL mg/m³</th>
<th>Peak ppm</th>
<th>Peak mg/m³</th>
<th>TWA F/CC</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>US - Hawaii Air Contaminant Limits</td>
<td>fluoroacetamide (Fluorides (as F))</td>
<td>2.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(CAS (Varies with compound))</td>
</tr>
</tbody>
</table>

**PERSONAL PROTECTION**

- **RESPIRATOR**
  - Particulate
  - Consult your EHS staff for recommendations

- **EYE**
  - Safety glasses with side shields
  - Chemical goggles.

- **HANDS/FEET**
  - Wear chemical protective gloves, eg. PVC.
  - 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.

- **OTHER**
  - Overalls.
  - Eyewash unit.

**ENGINEERING CONTROLS**

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.

**PHYSICAL AND CHEMICAL PROPERTIES**

**PHYSICAL PROPERTIES**

- Solid.
- Mixes with water.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Divided solid</td>
</tr>
<tr>
<td>Melting Range (°F)</td>
<td>225- 228</td>
</tr>
<tr>
<td>Boiling Range (°F)</td>
<td>Not available</td>
</tr>
<tr>
<td>Flash Point (°F)</td>
<td>None</td>
</tr>
<tr>
<td>Decomposition Temp (°F)</td>
<td>Not available</td>
</tr>
<tr>
<td>Autoignition Temp (°F)</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not available</td>
</tr>
<tr>
<td>Volatile Component (%vol)</td>
<td>Negligible</td>
</tr>
</tbody>
</table>

**APPEARANCE**
Off-white crystalline fibres; mix with water and acetone. Fluoroacetamide is metabolised in the body to produce highly toxic fluoroacetic acid

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY
· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY
 Avoid reaction with oxidizing agents, bases and strong reducing agents.
For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

fluoroacetamide

TOXICITY AND IRRITATION
FUROACETAMIDE:
 unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral (human) LDLo: 2 mg/kg</td>
<td>Nil Reported</td>
</tr>
<tr>
<td>Oral (rat) LD50: 5.75 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Dermal (rat) LD50: 80 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Intraperitoneal (rat) LD50: 12 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Oral (mouse) LD50: 25 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Inhalation (mouse) LC50: 25 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Dermal (mouse) LD50: 34 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

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. Altered sleep time, tremour, convulsions, excitement, coma, diarrhoea, nausea, paternal effects recorded.

Section 12 - ECOLOGICAL INFORMATION

This material and its container must be disposed of as hazardous waste.

Ecotoxicity

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
<th>Bioaccumulation</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>fluoroacetamide</td>
<td>LOW</td>
<td>LOW</td>
<td></td>
<td>HIGH</td>
</tr>
</tbody>
</table>

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

B. Component Waste Numbers
When fluoroacetamide is present as a solid waste as a discarded commercial chemical product, off-specification species, as a container residue, or a spill residue, use EPA waste number P057 (waste code T).

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. 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.
· Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility
can be identified.

**Section 14 - TRANSPORTATION INFORMATION**

**DOT:**
Symbols: G Hazard class or Division: 6.1
Identification Numbers: UN2811 PG: I
Label Codes: 6.1 Special provisions: IBA, T6, TP33
Packaging: Exceptions: None Packaging: Non-bulk: 211
Packaging: Exceptions: None Quantity limitations: 5 kg
Passenger aircraft/rail:
Quantity Limitations: Cargo 50 kg Vessel stowage: Location: B aircraft only:
Vessel stowage: Other: None

**Hazardous materials descriptions and proper shipping names:**
Toxic solids, organic, n.o.s.

**Air Transport IATA:**
ICAO/IATA Class: 6.1 ICAO/IATA Subrisk: None
UN/ID Number: 2811 Packing Group: I
Special provisions: A3 Cargo Only
Packing Instructions: 50 kg Maximum Qty/Pack: 5 kg
Passenger and Cargo Passenger and Cargo
Packing Instructions: 673 Maximum Qty/Pack: 666
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: Forbidden Maximum Qty/Pack: Forbidden
Shipping Name: TOXIC SOLID, ORGANIC, N.O.S. *(CONTAINS FLUOROACETAMIDE)*

**Maritime Transport IMDG:**
IMDG Class: 6.1 IMDG Subrisk: None
UN Number: 2811 Packing Group: I
EMS Number: F-A, S-A Special provisions: 274
Limited Quantities: 0
Shipping Name: TOXIC SOLID, ORGANIC, N.O.S. (contains fluoroacetamide)

**Section 15 - REGULATORY INFORMATION**

*fluoroacetamide (CAS: 640-19-7) is found on the following regulatory lists;*

**Section 16 - OTHER INFORMATION**

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- 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.