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CRYOLITE, synth. powder

Material Safety Data Sheet

Date prepared 04.01.1998

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Data concerning producers

Solvay Fluorides, Inc.
1630 Des Peres Road, Ste. 305
St. Louis, MO 63131
Tel: 1-314-965-7100

Fax: 1-314-966-2907

Emergency telephone number
1-800-325-3332

Identification of the substance or the preparation

Product name

- CRYOLITE, synth. powder

Chemical name

- Trisodium hexafluoroaluminate

Formula: $3\text{NaF}\cdot\text{AlF}_3$

Molecular Weight: 210

EC Number (EINECS) : 239-148-8

2. COMPOSITION/ INFORMATION ON INGREDIENTS

- Trisodium hexafluoroaluminate

Concentration : > 95 %

CAS Number : 15096-52-3

ID Number (Annex I): 009-016-00-2

EC Number (EINECS) : 239-148-8

3. HAZARDS IDENTIFICATION

- Hazardous product for the human health and the aquatic environment.
- Presents hazards from its ionizing fluorine.
- In case of decomposition, releases hydrogen fluoride.

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References: FDS/SDE041/P14/US011140/19.08.1998/US/en

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Effects

Main effects

- Possible irritation of the mucous membranes, eyes and skin.
- Risk of respiratory sensitization.
- Chronic exposure to the product can cause bone or dental fluorosis.

Inhalation

- Nose and throat irritation.
- Cough.
- At high concentrations, risk of chemical pneumonitis.
- In case of repeated or prolonged exposure : risk of bronchial hyperreactivity.
- In case of repeated or prolonged exposure: risk of sore throat, nose bleeds, chronic bronchitis.
- In case of repeated or prolonged exposure, at high concentrations: risk of pulmonary fibrosis.

Eyes contact

- Slight irritation.

Skin contact

- Slight irritation.
- In case of repeated contact: risk of allergic dermatitis.

Ingestion

- By ingestion of large quantities: nausea and vomiting, abdominal cramps and diarrhea.
- By ingestion of large quantities: risk of hypocalcemia with nervous disorders (tetany) and cardiac rhythm disorders.
- By ingestion of large quantities: risk of liver alterations.
- By ingestion of large quantities: risk of general symptoms.

4. FIRST-AID MEASURES

General recommendations

- Personal protective equipment required for rescuers (see section 8).
- Strict hygiene during and at the end of working shifts.

First aid

Inhalation

- Remove the subject from dusty environment and let him blow his nose.
- Consult with a physician in case of respiratory symptoms.

Eyes contact

- Flush eyes with running water for 15 minutes, while keeping the eyelids wide open.
- Consult with an ophthalmologist in case of persistent pain.

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Skin contact

- Remove contaminated shoes, socks and clothing; wash the affected skin with soap and water.

Ingestion

General recommendations

- Contact a physician for advice.

If the subject is completely conscious:

- Rinse mouth with fresh water.
- Give to drink a 1% aqueous calcium gluconate solution.
- If the subject presents nervous, respiratory or cardiovascular disorders: administer oxygen.

If the subject is unconscious:

- Classical resuscitation measures.

Medical treatment

General informations

- The measurement of the urinary excretion of fluorides can be used to estimate the personal exposure.

Inhalation

- Monitor respiratory function on the 2nd, 3rd days following exposure.

Eyes contact

- Negligible

Skin contact

- Negligible

Ingestion

- Careful gastric lavage after administration of 10 vials of calcium gluconate (to be repeated as frequently as needed).
- In case of hypocalcemia, I.V. perfusion of 20 ml of a 10% calcium gluconate solution diluted in 1 liter of physiological serum.
- Surveillance of cardiac (ECG), hepatic and central nervous system functions.

5. FIRE FIGHTING MEASURES

Flash point

- Not applicable

Danger of explosion

- No data

Common extinguishing means

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- In case of fire in close proximity, all means of extinguishing are acceptable.

Inappropriate extinguishing means

- No restriction.

Specific hazards

- Non-combustible
- Formation of dangerous gas/vapours in case of decomposition (see section 10).

Protective measures in case of intervention

- Wear self contained breathing apparatus when in close proximity or in confined spaces.
- When intervention in close proximity wear acid resistant over suit.
- After intervention, proceed to clean the equipment (take a shower, remove clothing carefully, clean and check).

6. ACCIDENTAL RELEASE MEASURES

Precautions

- Follow the protective measures given in section 8.
- Avoid dispersing the dust into a cloud.

Cleanup methods

- Collect the product with suitable means avoiding dust formation.
- Place everything into a closed, labelled container compatible with the product.
- For disposal methods, refer to section 13.
- Clean the area with large quantities of water.

Precautions for protection of the environment

- Immediately notify the appropriate authorities in case of important discharge.
- Do not discharge into the environment (sewers, rivers, soils, ...).

7. HANDLING AND STORAGE

Handling

- Keep away from reactive products (see section 10).
- Avoid heating the product above the decomposition temperature (see section 9).

Storage

- Keep in original packaging, closed.

Other precautions

- Avoid dust and formation of dust clouds.
- Follow the protective measures given in section 8.
- Warn people about the dangers of the product.

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Packaging
- Paper

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Engineering controls

- Provide local ventilation suitable for the dust risk
- Maintain employee exposures to levels below the applicable exposure limits.
- Follow the protective measures given in section 7.

Authorized limit values

- CRYOLITE, synth. powder
National remark: (US)
OSHA PEL is 5 mg/fluorides/m³ as 8 hrs. TWA
- Trisodium hexafluoroaluminate
TLV (ACGIH-USA) 1997-98
TWA = 2.5 mg/m³
Remark:
Fluorides, as F

Respiratory protection

- Use only respiratory protection that conforms to international/ national standards.
- NIOSH - approved respiratory protection
- Comply with OSHA respiratory protection requirements.

Hand protection

- Protective gloves - chemical resistant:
- Recommended materials: PVC

Eye protection

- Dust proof goggles, if dusty.

Skin protection

- Protective clothing suitable for the handling of chemicals.

Other precautions

- Shower and eye wash stations.
- Take off contaminated clothing immediately after work.
- Do not smoke, eat and drink in the working area.
- Consult your industrial hygienist or safety manager for the selection of personal protective equipment suitable for the working conditions.
- STRICT HYGIENE

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: crystalline powder
Color/Colour: slightly coloured

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Odor/Odour: odorless/odourless

Change of state

- Melting point/range:
1027 °C
- Boiling point/range:
Not applicable (Decomposition)

Density

- Specific gravity (D 20/4)
from 2.9 to 2.96
temperature 20 °C
- Bulk density
500 to 800 kg/m³
temperature 20 °C

Solubility

- Water
0.41 g/l
temperature 25 °C

pH

- 6
Concentration : 0.42 g/l
temperature 20 °C

Partition coefficient P (n-octanol/water)

- Not applicable

Decomposition temperature

- > 1000 °C

Granulometry

- 99 % < 0.06 mm

10. STABILITY AND REACTIVITY

Stability

- Stable under normal conditions of use (see section 7).

Conditions to avoid

- Negligible

Materials to avoid

- Strong acids
- Strong bases

Hazardous decomposition products

- Hydrogen fluoride

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11. TOXICOLOGICAL INFORMATION

Acute toxicity

- Oral route, LD 50, > 2000 mg/kg, Rat.

Irritation

- Rabbit, non irritant (skin).
- Rabbit, non irritant (eyes).

Chronic toxicity

- Inhalation, after prolonged exposure, rat, ≥ 1 mg/m³, observed effect.
- Oral route (diet), after repeated exposure, various species, Target organ: skeleton, ≥ 14 ppm, observed effect.
- Oral route (diet), after prolonged exposure, rat/mouse, Target organ: skeleton, 25 ppm, observed effect (Sodium fluoride).
- In vitro, no mutagenic effect.
- In vivo, Ambiguous mutagenic effect.
- No teratogenic effect.
- No carcinogenic effect (Sodium fluoride).

Comments

- Chronic exposure may entail dental or skeletal fluorosis

12. ECOLOGICAL INFORMATION

Acute ecotoxicity

- Fishes, *Salmo gairdneri*, LC 50, 96 hour(s), 47 mg/l.
- Crustaceans, *Daphnia pulex*, EC 50, 48 hour(s), 5 mg/l.
- Algae, *Scenedesmus quadricauda*, NOEC, 96 hour(s), 5000 mg/l.

Mobility

- Air.
Result: mobility as solid aerosols.
- Water/soil.
Result: low solubility and mobility.
- Soil/sediments.
Result: adsorption on mineral and organic soil constituents.

Abiotic degradation

- Water/soil.
Result: acid/base equilibrium as a function of pH.
Degradation's products: fluoro-complexes (acid pH)/hydroxy-aluminum (environmental pH)/fluorhydric acid/fluoride.
- Water/soil.
Result: complexation/precipitation of inorganic and organic materials.

Biotic degradation

- Result: not applicable (Inorganic compound).

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Potential for bioaccumulation

- Bioconcentration : log Po/w.
Result: not applicable (ionizable inorganic compound).
- Bioconcentration.
Result: accumulation into vegetable leaves (Fluorides).

Comments

- Toxic for aquatic organisms.
- Product fate is highly depending on environmental conditions: pH, temperature, oxidoreductive potential, mineral and organic content of the medium,...

13. DISPOSAL CONSIDERATIONS

Waste treatment

- Dispose in compliance with local/federal and national regulations.
- It is recommended to contact the producer for recycling/recovery.
- Or
- Dispose of the product at a landfill authorised for hazardous waste taking care of elution risks.
- Listed RCRA Hazardous Waste - No

Packaging treatment

- Dispose of the containers by dispatching them to an approved incineration facility for hazardous waste.

14. TRANSPORT INFORMATION

- Not a DOT Hazardous Material (45 CFR 172.101)

15. REGULATORY INFORMATION

National regulations (US)

- TSCA Inventory 8(b) - yes
- SARA Extremely Hazardous Substance (Sec. 302) - No
- CERCLA Hazardous Substance (Sec. 304) - No
- SARA (Sec. 313) Toxic Chemical Emissions Reporting - No

16. OTHER INFORMATION

Reason for update

- General revision
- Distribute new edition to clients

Other information

- This product also exists under the CAS number: 13775-53-6 and the EINECS number: 237-410-6.

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This

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applies to product which conforms to the specification, unless otherwise stated. In the case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.

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