1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Fluorosilicic Acid
CHEMICAL FORMULA: H2SiF6

COMPANY NAME: PELCHEM: The Chemical Division of NECSA
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2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME OF SUBSTANCE: Fluorosilicic Acid
SYNONYMS: Hydrogen hexafluorosilicate
CONCENTRATION: 40%
UN No: 1778
CAS-No: 16961-83-4

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:
Corrosive. Causes burns. Decomposes when heated, with possible emanation of toxic hydrofluoric acid vapours.

4. FIRST AID MEASURES

SKIN CONTACT:
Remove all contaminated clothing and shoes. Wash skin with soap and large amounts of water for at least 20 minutes. Then rub with calcium gluconate gel.

INHALATION:
Remove to fresh air and rest in half upright position. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

INGESTION:
Do not induce vomiting. If swallowed wash out mouth with water provided person is conscious.

EYE CONTACT:
Flush with copious amounts of water or saline for at least 20 minutes. Assure adequate flushing by separating the eyelids with fingers.

LOCAL SAFETY PRECAUTIONS:
A shower and eye bath should be installed near the work stations.

After first aid seek medical attention.

5. FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA:
None, does not burn. Fight surrounding fire with an agent appropriate for the burning material.

EXTINGUISHING MEDIA NOT SUITABLE:

SPECIFIC FIRE-FIGHTING HAZARDS:
Emits toxic fumes under fire conditions. Decomposition products upon heating include toxic hydrogen fluoride.

SPECIFIC METHODS:
Carbon dioxide, dry chemical powder or appropriate foam.
Cool exposed containers with large quantities of water from unattended equipment or remove intact containers.

PROTECTION FOR FIRE FIGHTERS:
Wear self-contained breathing apparatus and adequate protective clothing

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves.

ENVIRONMENTAL PRECAUTIONS:
Seal off all sewer exits

METHODS FOR CLEANING UP:
Stop release and prevent material from entering sewers and waterways.
Evacuate area and confine vapours.
Cover with dry lime or soda ash, pick up, keep in a closed container and hold for waste disposal.
Ventilate confined area and wash spill site after material pickup is complete.

7. HANDLING AND STORAGE

TECHNICAL MEASURE TO PREVENT USER EXPOSURE
Use extractor hoods

TECHNICAL MEASURES TO PREVENT FIRE AND EXPLOSION

SAFE HANDLING PRECAUTIONS
Handle with care to prevent accidental dispersion, splashing or emission of fumes. Avoid contact with incompatible materials.
TECHNICAL STORAGE MEASURES
The floor of the work area should be adapted to enable recuperation or neutralisation of all the product spilt if leakage occurs.

STORAGE CONDITIONS
Containers must be labelled and kept tightly closed.
Store in a well aired, cool, dry place away from all fire hazards and reactive materials.

INCOMPATIBLE PRODUCTS
Steel, glass, copper, aluminium. Separate from strong bases, food and foodstuffs.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

APPROPRIATE ENGINEERING MEASURES
Ventilate work stations with local exhaust or breathing protection. Avoid prolonged or repeated exposure.

SPECIFIC CONTROL PARAMETER (EXPOSURE LIMITS)
TLV (as F): ppm; 2.5mg F/m^3 (as TWA) (ACGIH 1995-1996)

PPE: RESPIRATORY PROTECTION
Use only in a chemical fume hood.
NIOSH/MSHA-approved respirator

PPE: HAND
Anti-acid gloves made of rubber, nitrile or butyl.

PPE: EYE
Chemical safety glasses; in combination with breathing protection.
Face shield (8-inch minimum)

PPE: SKIN AND BODY
Overalls adequate for use with acids.
Rubber boots

INGESTION
Do not eat, drink or smoke whilst handling product

HYGIENE MEASURES
Wash contaminated clothing before reuse.
Discard contaminated shoes.
Wash thoroughly after handling.

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.
9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE
Fuming liquid

COLOUR
Colourless to straw coloured liquid.

FORM & ODOUR
Unpleasant sour, pungent odour.

pH
Acid (pH=1 at 42%)

BOILING, MELTING AND/OR DECOMPOSITION POINTS
The substance decomposes on heating or on burning, producing toxic fumes of fluoride.

FLASHPOINT
Non-flammable.

MOLECULAR WEIGHT:
144.08

EXPLOSION PROPERTIES (LEL/UEL)
Non-explosive

SPECIFIC GRAVITY:
1.220

DENSITY
1.39kg/litre

SOLUBILITY IN WATER:
Infinite with the release of heat. Soluble in water.

FREEZING POINT:
4°F (-15.5°C)

PURITY:
Made to meet specification

F content by mass:
0.3167kg/F/kg 40% H2SiF6

F content by volume:
0.4402kg/F/litre 40% H2SiF6
10. **STABILITY AND REACTIVITY**

**STABILITY:**
Stable in normal conditions.

**MATERIALS TO AVOID**
Strong oxidising agents, bases and water. Glass, stoneware.

**HAZARDOUS DECOMPOSITION PRODUCTS**
Silicon tetrafluoride and corrosive and toxic hydrogen fluoride. Carbon monoxide, Carbon dioxide, Silicon oxide.

11. **TOXICOLOGICAL INFORMATION**

**ACUTE TOXICITY:**
- LD50 = 200 mg/kg for guinea pig (orally)
- LDL0 = 140 mg/kg (with skin)

**ACUTE EFFECTS:**
Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract, eyes and skin.
Inhalation may result in spasm, inflammation and oedema of the larynx and bronchi, chemical pneumonitis and pulmonary oedema.
Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting.
Symptoms of exposure to inorganic fluorides may include valivation, nausea, vomiting, abdominal pain, fever and laboured breathing. Chronic fluorine poisoning can result in sclerosis of the bones. Calcification of ligaments, loss of weight, anorexia, anaemia, dental effects. Ingestion of large doses can cause severe diarrhoea, and cramp-like pains.
Symptoms may be delayed up to 24 hours depending upon the fluoride ion concentration. Prevention of absorption of the fluoride ion in cases of ingestion can be obtained by giving milk, chewable calcium carbonate tablets or milk of magnesia to conscious victims. Conditions such as hypocalcaemia, hypomagnesaemia and cardiac arrhythmias should be monitored for, since they can occur after exposure.

12. **ECOLOGICAL INFORMATION:**

**AQUATIC ENVIRONMENT:**
Accidental spillage would suddenly reduce pH level due to the product's acidic properties. Local disastrous effects are possible. Do not discharge into the natural environment. Neutralise all waste products and follow current guidelines and legislation.

13. **DISPOSAL CONSIDERATIONS**

**SAFE AND PREFERRED DISPOSAL METHODS:**
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all Federal, State and Local Environmental Regulations or contact manufacturer.
CONTAMINATED PACKAGING:
According to local and national legislation or contact manufacturer. Indicate the presence of fluorosilicic acid in the waste and handling precautions.

14. TRANSPORT INFORMATION

UN NO: 1778  Corrosive

ADR/RID:
Class: 8  Labels: Corrosive  Proper shipping name: Fluorosilicic acid
Packaging group: II

IMDG:
Class: 8  Labels: Corrosive  Proper shipping name: Fluorosilicic acid
Packaging group: II

IATA:
Class: 8  Labels: Corrosive  Proper shipping name: Fluorosilicic acid
Packaging group: II

15. REGULATORY INFORMATION

APPLICABLE REGULATIONS:
Refer to country of destination.

SAFETY AND RISK PHRASES:
Refer to country of destination.

According to (National equivalent of EC-Dir.67/548), as amended, the product is labeled as follows:

R34 : Corrosive
S26 : In case of contact with eyes, rinse immediately with plenty of water and seek medical advise.
S27 : Take off immediately all contaminated clothing.
S45 : In case of accident or if you feel unwell, seek medical advise immediately (show the product label where possible).

16. OTHER INFORMATION

RECOMMENDED USE:
Sterilization of equipment
Electroplating
Tanning of animal hides.
Ceramics and Glass: Glass etching.
Commercial Laundry: As a neutralizer for alkalis
Hardening of cement
Oil well acidising
Rust and stain removal for textiles
Wood preservative
Water fluoridation

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