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## 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Fluorosilicic Acid      **CHEMICAL FORMULA:** H<sub>2</sub>SiF<sub>6</sub>      **PRODUCT CODE:**

**COMPANY NAME:**

**PELICHEM:** The Chemical Division of NECSA

P O Box 582, Pretoria, 0001, South Africa

Tel: 27 12 305-3396 / Fax: 27 12 305-3728

E-mail: [cheminfo@pelchem.necsa.co.za](mailto:cheminfo@pelchem.necsa.co.za) / Cell: +27 83 628 0831

Emergency tel: +27 12 305-3333/4

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

**CHEMICAL NAME OF SUBSTANCE:**

**SYNONYMS:**

**CONCENTRATION:**

Fluorosilicic Acid

Hydrogen hexafluorosilicate 40%  
Hydrofluorosilicic acid, Fluosilicic acid, Hexafluosilicic acid, Silicofluoric acid, Sand acid

**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<sup>3</sup> (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% H<sub>2</sub>SiF<sub>6</sub>

### F content by volume:

0,4402kg/F/litre 40% H<sub>2</sub>SiF<sub>6</sub>

## 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)

LDL<sub>0</sub> = 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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