

## SAFETY DATA SHEET

Version 6.0  
Revision Date 09/28/2019  
Print Date 10/04/2019

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifiers**

Product name : Titanium(III) fluoride

Product Number : 399817  
Brand : Aldrich  
CAS-No. : 13470-08-1

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses : Laboratory chemicals, Synthesis of substances

**1.3 Details of the supplier of the safety data sheet**

Company : Sigma-Aldrich Inc.  
3050 Spruce Street  
ST. LOUIS MO 63103  
UNITED STATES

Telephone : +1 314 771-5765  
Fax : +1 800 325-5052

**1.4 Emergency telephone number**

Emergency Phone # : +1-703-527-3887

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Skin corrosion (Category 1B), H314  
Serious eye damage (Category 1), H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2 GHS Label elements, including precautionary statements**

Pictogram



Signal word : Danger

Hazard statement(s)  
H314 : Causes severe skin burns and eye damage.

Precautionary statement(s)  
P260 : Do not breathe dust or mist.  
P264 : Wash skin thoroughly after handling.

|                           |                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P280                      | Wear protective gloves/ protective clothing/ eye protection/ face protection.                                                                                             |
| P301 + P330 + P331        | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.                                                                                                                        |
| P303 + P361 + P353        | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.                                                                       |
| P304 + P340 + P310        | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.                                                       |
| P305 + P351 + P338 + P310 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. |
| P363                      | Wash contaminated clothing before reuse.                                                                                                                                  |
| P405                      | Store locked up.                                                                                                                                                          |
| P501                      | Dispose of contents/ container to an approved waste disposal plant.                                                                                                       |

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

Reacts violently with water., Contact with acids liberates very toxic gas.  
Strong hydrogen fluoride-releaser

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Synonyms : Titanium trifluoride

Formula :  $F_3Ti$

Molecular weight : 104.86 g/mol

CAS-No. : 13470-08-1

EC-No. : 236-732-4

| Component                   | Classification                        | Concentration |
|-----------------------------|---------------------------------------|---------------|
| <b>Titanium trifluoride</b> |                                       |               |
|                             | Skin Corr. 1B; Eye Dam. 1; H314, H318 | <= 100 %      |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area. Hydrofluoric (HF) acid burns require immediate and specialized first aid and medical treatment. Symptoms may be delayed up to 24 hours depending on the concentration of HF. After decontamination with water, further damage can occur due to penetration/absorption of the fluoride ion. Treatment should be directed toward binding the fluoride ion as well as the effects of exposure. Skin exposures can be treated with a 2.5% calcium gluconate gel repeated until burning ceases. More serious skin exposures may require subcutaneous calcium gluconate except for digital areas unless the physician is experienced in this technique, due to the potential for tissue injury from increased pressure. Absorption can readily occur through the subungual areas and should be

considered when undergoing decontamination. 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 hypocalcemia, hypomagnesemia and cardiac arrhythmias should be monitored for, since they can occur after exposure.

**If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician. First treatment with calcium gluconate paste.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

**If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**4.2 Most important symptoms and effects, both acute and delayed**

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

**4.3 Indication of any immediate medical attention and special treatment needed**

No data available

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**SECTION 5: Firefighting measures**

**5.1 Extinguishing media**

**Suitable extinguishing media**

Dry powder

**5.2 Special hazards arising from the substance or mixture**

Hydrogen fluoride, Titanium/titanium oxides

**5.3 Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

**5.4 Further information**

No data available

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**SECTION 6: Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures**

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

**6.2 Environmental precautions**

Do not let product enter drains.

**6.3 Methods and materials for containment and cleaning up**

Pick up and arrange disposal without creating dust. Sweep up and shovel. Do not flush with water. Keep in suitable, closed containers for disposal.

## 6.4 Reference to other sections

For disposal see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed.

For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Never allow product to get in contact with water during storage. Do not store near acids.

Keep in a dry place. Do not store in glass

Storage class (TRGS 510): 8B: Non-combustible, corrosive hazardous materials

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Components with workplace control parameters

| Component            | CAS-No.    | Value                                                                                                                                                                | Control parameters    | Basis                                                                                   |
|----------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------|
| Titanium trifluoride | 13470-08-1 | TWA                                                                                                                                                                  | 2.5 mg/m <sup>3</sup> | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants        |
|                      | Remarks    | CAS number varies with compound                                                                                                                                      |                       |                                                                                         |
|                      |            | TWA                                                                                                                                                                  | 2.5 mg/m <sup>3</sup> | USA. ACGIH Threshold Limit Values (TLV)                                                 |
|                      |            | Bone damage<br>Fluorosis<br>Substances for which there is a Biological Exposure Index or Indices (see BEI® section)<br>Not classifiable as a human carcinogen varies |                       |                                                                                         |
|                      |            | PEL                                                                                                                                                                  | 2.5 mg/m <sup>3</sup> | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |

#### Biological occupational exposure limits

| Component            | CAS-No.    | Parameters                                      | Value  | Biological specimen | Basis                                     |
|----------------------|------------|-------------------------------------------------|--------|---------------------|-------------------------------------------|
| Titanium trifluoride | 13470-08-1 | Fluoride                                        | 2 mg/l | Urine               | ACGIH - Biological Exposure Indices (BEI) |
|                      | Remarks    | Prior to shift (16 hours after exposure ceases) |        |                     |                                           |

|  |  |                                                          |        |       |                                                    |
|--|--|----------------------------------------------------------|--------|-------|----------------------------------------------------|
|  |  | Fluoride                                                 | 3 mg/l | Urine | ACGIH -<br>Biological<br>Exposure Indices<br>(BEI) |
|  |  | End of shift (As soon as possible after exposure ceases) |        |       |                                                    |

## 8.2 Exposure controls

### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### Personal protective equipment

#### Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

#### Body Protection

Complete suit protecting against chemicals, Flame retardant protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Control of environmental exposure

Do not let product enter drains.

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- |                                            |                                     |
|--------------------------------------------|-------------------------------------|
| a) Appearance                              | Form: powder<br>Colour: light brown |
| b) Odour                                   | No data available                   |
| c) Odour Threshold                         | No data available                   |
| d) pH                                      | No data available                   |
| e) Melting point/freezing point            | No data available                   |
| f) Initial boiling point and boiling range | No data available                   |
| g) Flash point                             | ( )Not applicable                   |
| h) Evaporation rate                        | No data available                   |

|    |                                              |                                        |
|----|----------------------------------------------|----------------------------------------|
| i) | Flammability (solid, gas)                    | No data available                      |
| j) | Upper/lower flammability or explosive limits | No data available                      |
| k) | Vapour pressure                              | No data available                      |
| l) | Vapour density                               | No data available                      |
| m) | Relative density                             | 3.4 g/cm <sup>3</sup> at 25 °C (77 °F) |
| n) | Water solubility                             | No data available                      |
| o) | Partition coefficient: n-octanol/water       | No data available                      |
| p) | Auto-ignition temperature                    | No data available                      |
| q) | Decomposition temperature                    | No data available                      |
| r) | Viscosity                                    | No data available                      |
| s) | Explosive properties                         | No data available                      |
| t) | Oxidizing properties                         | No data available                      |

## 9.2 Other safety information

No data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Reacts violently with water.

### 10.4 Conditions to avoid

Heat

Exposure to moisture

Reacts dangerously with glass.

### 10.5 Incompatible materials

Water, Strong oxidizing agents, acids, glass

### 10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Hydrogen fluoride, Titanium/titanium oxides

Other decomposition products - No data available

In the event of fire: see section 5

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### **Acute toxicity**

No data available

Inhalation: No data available

Dermal: No data available

No data available

#### **Skin corrosion/irritation**

No data available

#### **Serious eye damage/eye irritation**

No data available

#### **Respiratory or skin sensitisation**

No data available

#### **Germ cell mutagenicity**

No data available

#### **Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

#### **Reproductive toxicity**

No data available

No data available

#### **Specific target organ toxicity - single exposure**

No data available

#### **Specific target organ toxicity - repeated exposure**

No data available

#### **Aspiration hazard**

No data available

#### **Additional Information**

RTECS: Not available

Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia.

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

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## SECTION 12: Ecological information

### 12.1 Toxicity

No data available

### 12.2 Persistence and degradability

No data available

### 12.3 Bioaccumulative potential

No data available

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### 12.6 Other adverse effects

No data available

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

#### Contaminated packaging

Dispose of as unused product.

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## SECTION 14: Transport information

### DOT (US)

UN number: 3260 Class: 8

Packing group: II

Proper shipping name: Corrosive solid, acidic, inorganic, n.o.s. (Titanium trifluoride)

Poison Inhalation Hazard: No

### IMDG

UN number: 3260 Class: 8

Packing group: II

EMS-No: F-A, S-B

Proper shipping name: CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (Titanium trifluoride)

### IATA

UN number: 3260 Class: 8

Packing group: II

Proper shipping name: Corrosive solid, acidic, inorganic, n.o.s. (Titanium trifluoride)

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## SECTION 15: Regulatory information

### SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

#### **SARA 311/312 Hazards**

Acute Health Hazard, Chronic Health Hazard

#### **Massachusetts Right To Know Components**

No components are subject to the Massachusetts Right to Know Act.

#### **Pennsylvania Right To Know Components**

|                      |                       |                             |
|----------------------|-----------------------|-----------------------------|
| Titanium trifluoride | CAS-No.<br>13470-08-1 | Revision Date<br>2008-06-01 |
|----------------------|-----------------------|-----------------------------|

#### **New Jersey Right To Know Components**

|                      |                       |                             |
|----------------------|-----------------------|-----------------------------|
| Titanium trifluoride | CAS-No.<br>13470-08-1 | Revision Date<br>2008-06-01 |
|----------------------|-----------------------|-----------------------------|

#### **California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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### **SECTION 16: Other information**

#### **Further information**

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