

Material Safety Data Sheet

According to 1907/2006/EC, Article 31

Version number 1.2

SECTION 1: Identification of the substance and of the company.

1.1 Product identifier:

Trade name: Titan-Etch

1.2 Relevant identified uses of the substance or mixture and uses advised against: Etching Titanium

Product category: Laboratory chemicals

Application of the substance / the mixture: Titanium etchant

1.3 Details of the supplier of the safety data sheet

Supplier:

Titanetch.com
Botsestraat 9
6578JA, Leuth
Netherlands

1.4 Emergency telephone number:

No further relevant information available.

SECTION 2: Hazards identification.

2.1. Classification of the substance or mixture

Acute Tox. 4;H332 Harmful if inhaled.

Skin Irrit. 2;H315 Causes skin irritation.

Ox. Sol. 3;H272 May intensify fire; oxidizer.

Acute Tox. 4;H302 Harmful if swallowed.

Resp. Sens. 1;H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

STOT SE 3;H335 May cause respiratory irritation.

Acute Tox. 5;H313 May be harmful in contact with skin.

Eye Irrit. 2;H319 Causes serious eye irritation.

Skin Sens. 1;H317 May cause an allergic skin reaction.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

• Hazard pictograms



Signal word : Danger

Hazard statements:

H319 Causes serious eye irritation.

H332 Harmful if inhaled. H272 May intensify fire; oxidizer.

H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation. H302 Harmful if swallowed.

H313 May be harmful in contact with skin.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

Precautionary Statements:

P102 Keep out of reach of children.

P103 Read label before use.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P210 Keep away from heat / sparks / open flames / hot surfaces - No smoking.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P220 Keep / Store away from clothing combustible materials.

P221 Take any precaution to avoid mixing with combustibles.

P261 Avoid breathing dust / fume / gas / mist / vapors / spray.

Storage:

P403+233 Store in a well ventilated place. Keep container tightly closed.

P405 Store locked up.

Response:

P301+312 IF SWALLOWED: Call a POISON CENTER or doctor / physician if you feel unwell.

P302+352 IF ON SKIN: Wash with plenty of soap and water.

P304+340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+351+338 IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.

P313 Get medical advice / attention.

P321 Specific treatment (see information on this label).

P330 Rinse mouth.

P333+313 If skin irritation or a rash occurs: Get medical advice / attention.

P337+313 If eye irritation persists: Get medical advice / attention.

P341 If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

P342+311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor / physician.

P362 Take off contaminated clothing and wash before reuse.

P363 Wash contaminated clothing before reuse.

[Disposal]:

P501 Dispose of contents / container in accordance with local / national regulations.

SECTION 3: Composition/information on ingredients.

3.1 Chemical characterisation: Mixtures

Description: Mixture of substances listed below with nonhazardous additions.

Dangerous components:

| Ingredient/Chemical Designations | Weight % | GHS Classification | Notes |
|---|----------|--|-------|
| Sodium fluoride CAS Number: 0007681-49-4 | 10 - 25 | Acute Tox. 3;H301 Eye Irrit. 2;H319 Skin Irrit. 2;H315 | |
| Ammonium persulphate CAS Number: 0007727-54-0 | 75 - 100 | Ox. Sol. 3;H272 Acute Tox. 4;H302 Eye Irrit. 2;H319 STOT SE 3;H335 Skin Irrit. 2;H315 Resp. Sens. 1;H334 Skin Sens. 1;H317 | |

SECTION 4: First aid measures.

4.1. Description of first aid measures

General information: In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

After Inhalation: Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.

After eye contact: Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.

After skin contact: Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.

After swallowing: Drink 1-2 glasses of milk or water and rinse mouth well. Do not induce vomiting. Never give anything by mouth to an unconscious person. Obtain immediate medical attention.

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

Overview :

Ingestion: Moderate oral toxicity.

Eye Contact: May cause irritation.

Inhalation: May cause difficulty in breathing for sensitive persons.

Skin: May cause irritation.

This product has moderate oral toxicity and is minimally irritating to the eyes. Flooding of exposed areas with water is suggested, but gastric lavage or emesis induction for ingestions must consider the possible aggravation of esophageal injury and the expected absence of systemic effects. Treatment is controlled removal of exposure followed by symptomatic and supportive care. See section 2 for further details.

Inhalation: Harmful if inhaled. May cause allergy or asthma symptoms of breathing difficulties if inhaled.

Eyes: Causes serious eye irritation.

Skin: May be harmful in contact with skin. May cause an allergic skin reaction. Causes skin irritation.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

SECTION 5: Firefighting measures.

5.1. Extinguishing media

Deluge with water

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: No hazardous decomposition data available.

Keep away from: heat / sparks / open flames / hot surfaces - No smoking.

Keep / Store away from: clothing combustible materials.

Take any precaution to avoid: mixing with combustibles.

Avoid breathing: dust / fume / gas / mist / vapors / spray.

5.3. Advice for firefighters

Do not use carbon dioxide or other gas filled fire extinguishers; they will have no effect on decomposing persulfates. Wear full protective clothing and self-contained breathing apparatus.

On decomposition releases oxygen which may intensify fire. Presence of water accelerates decomposition.

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SECTION 6. Accidental release measures.

6.1. Personal precautions, protective equipment and emergency procedures

Put on appropriate personal protective equipment (see section 8).

6.2. Environmental precautions

Disposal: Disposal is to be performed in compliance with all Federal, State and Local regulations. Do not allow spills to enter drains or waterways.

6.3. Methods and material for containment and cleaning up

Steps To Be Taken in Case Quantities of Material are Released or Spilled: Put on safety glasses, or goggles and rubber gloves. Spilled material should be collected and put in approved DOT container and isolated for disposal. Isolated material should be monitored for signs of decomposition (fuming/smoking). If spilled material is wet, dissolve with large quantity of water and dispose according to regulatory agencies procedures.

SECTION 7: Handling and storage.

7.1. Precautions for safe handling

See **section 2** for further details.

7.2. Conditions for safe storage, including any incompatibilities

Handle containers carefully to prevent damage and spillage.
Incompatible materials: Acids, alkalis, halides, combustible materials, oxidizers. Keep away from glass.
See section 2 for further details.

7.3. Specific end use(s)

No further relevant information available.

SECTION 8: Exposure controls/personal protection.

Additional information about design of technical facilities: No further data

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:

| CAS No. | Ingredient | Source | Value |
|--------------|-----------------|----------|---|
| 0007681-49-4 | Sodium fluoride | OSHA | TWA 2.5 mg/m ³ [*Note: The REL also applies to other inorganic, solid fluorides (as F).] |
| | | ACGIH | No Established Limit |
| | | NIOSH | TWA 2.5 mg/m ³ [*Note: The REL also applies to other inorganic, solid fluorides (as F).] |
| | | Supplier | No Established Limit |

| | | | |
|---|----------------------|----------|----------------------|
| 0007727-54-0 | Ammonium persulphate | OSHA | No Established Limit |
| remove soiled clothing and wash thoroughly before | | ACGIH | No Established Limit |
| | | NIOSH | No Established Limit |
| | | Supplier | No Established Limit |

8.2. Exposure controls

Respiratory If workers are exposed to concentrations above the exposure limit they must use the appropriate, certified respirators.

Eyes Use cup type chemical type goggles. Face shield should be worn if there is a likelihood of splashing.

Skin Neoprene or rubber oil and chemical resistant gloves should be worn. Thoroughly wash gloves prior to removal.

Engineering Controls Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

Other Work Practices Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

SECTION 9. Physical and chemical properties.

9.1 Information on basic physical and chemical properties

Appearance White Solid

Odor Odor-less or light acidic

Odor threshold Not Measured

pH Not Measured

Melting point / freezing point Decomposes

Initial boiling point and boiling range Not Measured

Flash Point Not Measured

Evaporation rate (Ether = 1) Not Measured

Flammability (solid, gas) Not Applicable

Upper/lower flammability or explosive limits Lower Explosive Limit: Not Measured

Upper Explosive Limit: Not Measured

Vapor pressure (Pa) Not Measured

Vapor Density Not Measured

Specific Gravity 1.98

Solubility in Water Partially (87%)

Partition coefficient n-octanol/water (Log Kow) Not Measured

Auto-ignition temperature Not Measured

Decomposition temperature Not Measured

Viscosity (cSt) Not Measured

VOC Content 0

9.2. Other information

No further relevant information available.

SECTION 10: Stability and reactivity.

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

Heat, moisture and contamination.

10.5. Incompatible materials

Acids, alkalis, halides, combustible materials, oxidizers. Keep away from glass.

10.6. Hazardous decomposition products

No hazardous decomposition data available.

SECTION 11. Toxicological information.

11.1 Information on toxicological effects

| Ingredient | Oral LD50, mg/kg | Skin LD50, mg/kg | Inhalation Vapor LD50, mg/L/4hr | Inhalation Dust/Mist LD50, mg/L/4hr | Inhalation Gas LD50, ppm |
|------------------------------------|---------------------------|-----------------------------|---------------------------------|-------------------------------------|--------------------------|
| Ammonium persulphate - (7727-54-0) | 689.00, Rat - Category: 4 | 2,000.00, Rat - Category: 4 | No data available | 2.95, Rat - Category: 4 | No data available |
| Sodium fluoride - (7681-49-4) | No data available | No data available | No data available | No data available | No data available |

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

| Classification | Category | Hazard Description |
|-------------------------------|----------|--|
| Acute toxicity (oral) | 4 | Harmful if swallowed. |
| Acute toxicity (dermal) | 5 | May be harmful in contact with skin. |
| Acute toxicity (inhalation) | 4 | Harmful if inhaled. |
| Skin corrosion/irritation | 2 | Causes skin irritation. |
| Serious eye damage/irritation | 2 | Causes serious eye irritation. |
| Respiratory sensitization | 1 | May cause allergy or asthma symptoms of breathing difficulties if inhaled. |
| Skin sensitization | 1 | May cause an allergic skin reaction. |
| Germ cell mutagenicity | --- | Not Applicable |

| | | |
|------------------------|-----|----------------|
| Carcinogenicity | --- | Not Applicable |
| Reproductive toxicity | --- | Not Applicable |
| STOT-single exposure | --- | Not Applicable |
| STOT-repeated exposure | --- | Not Applicable |
| Aspiration hazard | --- | Not Applicable |

SECTION 12. Ecological information.

12.1. Toxicity

Aquatic toxicity

| Ingredient | 96 hr LC50 fish, mg/l | 48 hr EC50 crustacea, mg/l | ErC50 algae, mg/l |
|------------------------------------|------------------------|----------------------------|--------------------------------------|
| Ammonium persulphate - (7727-54-0) | 22.00, Cyprinus carpio | 87.00, Daphnia pulex | 13.20 (96 hr), Myriophyllum spicatum |
| Sodium fluoride - (7681-49-4) | Not Available | Not Available | Not Available |

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available.

SECTION 13. Disposal considerations.

13.1. Waste treatment methods

Recommendation:

Must not be disposed together with household garbage. Do not allow product to reach sewage system. Observe all federal, state and local environmental regulations when disposing of this material.

SECTION 14. Transport information.

| | DOT (Domestic Surface Transportation) | IMO / IMDG (Ocean Transportation) | ICAO/IATA |
|---|---------------------------------------|--|---------------------|
| 14.1. UN number | UN1444 | UN1444 | UN1444 |
| 14.2. UN proper shipping name | N1444, Ammonium persulfate, 5.1, III | Ammonium persulfate | Ammonium persulfate |
| 14.3. Transport hazard class(es) | DOT Hazard Class: 5.1 | IMDG: 5.1 Sub Class: Not Applicable | Air Class: 5.1 |
| 14.4. Packing group | III | III | III |

14.5. Environmental hazards

IMDG Marine Pollutant: No

14.6. Special precautions for user : No further information

SECTION 15: Regulatory information.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Directive 2012/18/EU : No information available

Named dangerous substances - ANNEX I: No information available

LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV): No information available

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16. Other information.

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H272 May intensify fire; oxidizer.

H301 Toxic if swallowed.

H302 Harmful if swallowed.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the

International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Skin Corr. 1A: Skin corrosion/irritation – Category 1A

Eye Dam. 1: Serious eye damage/eye irritation – Category 1