SIGMA-ALDRICH

Material Safety Data Sheet
Version 6.0
Revision Date: 04/24/2012
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1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Trifluoroacetic acid
Product Number: 302031
Brand: Sigma-Aldrich
Supplier: Sigma-Aldrich
3350 Spuce Street
SAINT LOUIS MO 63133
USA
Telephone: +1 800-325-5852
Fax: +1 314-776-6555
Emergency Phone # (For both supplier and manufacturer): (314) 776-6555
Preparation Information: Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8936

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Delayed target organ effects, Corrosive
Target Organs
Liver

GHS Classification
Acute toxicity, Inhalation (Category 4)
Skin corrosion (Category 1A)
Serious eye damage (Category 1)
Acute aquatic toxicity (Category 3)

GHS Label elements, including precautionary statements

Pictogram

Signal word: Danger
Hazard statement(s): Causes severe skin burns and eye damage.
H314
H332
H402
Precautionary statement(s)
P280
Wear protective gloves/protective clothing/eye protection/face protection.
P305 + P351 + P338
If IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310
Immediately call a POISON CENTER or doctor/physician.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: TFA
Formula: C2H3O2F
Molecular Weight: 114.02 g/mol

Component | Concentration
--- | ---
Trifluoroacetic acid | 76-05-1
EC-No. | 200-029-3
Index-No. | 607-091-00-1

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

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

If in contact with skin
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

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.

5. FIREFIGHTING MEASURES

Conditions of flammability
Not flammable or combustible.

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions: Carbon oxides, Hydrogen fluoride
Hazardous decomposition products formed under fire conditions: Carbon oxides, Hydrogen fluoride

Further Information
The product itself does not burn.

6. ACCIDENTAL RELEASE MEASURES

Physical hazards: 1
NFPA Rating
Health hazard: 3
Fire: 0
Reactivity Hazard: 1

Potential Health Effects
Inhalation: May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Skin: May be harmful if absorbed through skin. Causes skin burns.
Eyes: Causes eye burns. Causes severe eye burns.
Ingestion: May be harmful if swallowed.
Personal precautions
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Hygroscopic Store under inert gas.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Where risk assessment shows air purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type APF (EN 14387) 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 CE (EU).

Hand protection
Hands 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.

Immersion protection

Material: Chloroprene
Minimum layer thickness: 0.6 mm
Break through time: > 480 min

Material tested: Campren® (Aldrich Z577403, Size M)

Splash protection

Material: Nature latex/chloroprene
Minimum layer thickness: 0.6 mm
Break through time: > 30 min

Material tested: Larpen® (Aldrich Z577558, Size M)

Data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374.

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the OF approved gloves. This recommendation is advisory only and must be evaluated by an industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin and body protection
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Form liquid
Colour colourless

Safety data
pH 1.0 at 1.00000 g/l at 20.0 °C (68.0 °F)
Melting point/freezing point -16.4 °C (4.3 °F) - lit.
Boiling point 72.4 °C (162.3 °F) - lit.
Flash point not applicable
Ignition temperature no data available
Auto-ignition temperature no data available
Lower explosive limit no data available
Upper explosive limit no data available
Vapour pressure 130.0 hPa (97.5 mmHg) at 20.0 °C (68.0 °F)
142.7 hPa (107.0 mmHg) at 50.0 °C (122.0 °F)
Density 1.489 g/cm³ at 20 °C (68 °F)
Water solubility soluble
Partition coefficient: n-octanol/water log Pow: -2.10
Relative vapour density no data available
Odour pungent
Odour Threshold no data available
Evaporation rate no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available
Conditions to avoid
no data available
Molecules to avoid
Strong bases, Metals, Oxidizing agents, Alcohols, Epoxies, Steel (all types and surface treatments), Aluminum, Exothermic in contact with water, Reacts violently with: alkali metals

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions.
- Carbon oxides, Hydrogen fluoride

Hazardous decomposition products formed under fire conditions.
- Carbon oxides, Hydrogen fluoride
Other decomposits products - no data available

11. TOXICOLOGICAL INFORMATION
Acute toxicity

Oral LD50
Inhalation LC50
LC50 Inhalation - rat - 10,000 mg/m³
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste); Eye: Conjunctival irritation. Behavioral: Somnolence (general depressed activity), lungs, Thorax, or Respiration/Dyspnea.

Dermal LD50
no data available

Other information on acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
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.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
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 identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Teratogenicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation
May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion
May be harmful if swallowed.

Skin
May be harmful if absorbed through skin. Causes skin burns.

Eyes
Causes eye burns. Causes severe eye burns.

Signs and Symptoms of Exposure

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

Synergistic effects
no data available

Additional information

RTECS: AJ865000

12. ECOLOGICAL INFORMATION

Toxicity
Toxicity to daphnia EC50 - Daphnia magna (Water flea) - 55.00 mg/l - 24 h and other aquatic invertebrates

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life.

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 2699 Class: 8 Pack ing group: 
Preparation name: Trifluoroacetic acid
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN number: 2699 Class: 8 Packing group: I
Preparation name: TRIFLUOROACETIC ACID
Marine pollutant: No

IATA
UN number: 2699 Class: 8 Packing group: I
Preparation name: Trifluoroacetic acid

15. REGULATORY INFORMATION

OSHA Hazards
Delayed target organ effects, Corrosive
SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: 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

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New Jersey Right To Know Components

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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.

10. OTHER INFORMATION
Further Information
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.