

Material Safety Data Sheet

Version 5.2

Revision Date 02/23/2012

Print Date 06/04/2012

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : 1,1,2-Trichlorotrifluoroethane

Product Number : 270369

Brand : Aldrich

Supplier : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

No known OSHA hazards

GHS Classification

Skin irritation (Category 3)

Eye irritation (Category 2B)

Acute aquatic toxicity (Category 2)

Chronic aquatic toxicity (Category 2)

Hazardous to the ozone layer (Category 1)

GHS Label elements, including precautionary statements

Pictogram



Signal word

Warning

Hazard statement(s)

H316

Causes mild skin irritation.

H320

Causes eye irritation.

H411

Toxic to aquatic life with long lasting effects.

H420

Harms public health and the environment by destroying ozone in the upper atmosphere

Precautionary statement(s)

P273

Avoid release to the environment.

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

HMIS Classification

Health hazard: 0

Flammability: 0

Physical hazards: 0

NFPA Rating

Health hazard: 0

Fire: 0
Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.
Ingestion May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : $\text{C}_2\text{Cl}_3\text{F}_3$
Molecular Weight : 187.38 g/mol

| Component | | Concentration |
|---------------------------------------|-----------|---------------|
| 1,1,2-Trichlorotrifluoroethane | | |
| CAS-No. | 76-13-1 | - |
| EC-No. | 200-936-1 | |

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

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

In case of skin contact

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.

If swallowed

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 water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

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 chloride gas, Hydrogen fluoride

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.

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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

| Components | CAS-No. | Value | Control parameters | Basis |
|--------------------------------|--|-------|--------------------------------------|--|
| 1,1,2-Trichlorotrifluoroethane | 76-13-1 | TWA | 1,000 ppm | USA. ACGIH Threshold Limit Values (TLV) |
| Remarks | Central Nervous System impairment Not classifiable as a human carcinogen | | | |
| | | STEL | 1,250 ppm | USA. ACGIH Threshold Limit Values (TLV) |
| | Central Nervous System impairment Not classifiable as a human carcinogen | | | |
| | | TWA | 1,000 ppm 7,600 mg/m ³ | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000 |
| | | STEL | 1,250 ppm 9,500 mg/m ³ | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000 |
| | | TWA | 1,000 ppm 7,600 mg/m ³ | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants |
| | The value in mg/m ³ is approximate. | | | |
| | | TWA | 1,000 ppm 7,600 mg/m ³ | USA. NIOSH Recommended Exposure Limits |
| | | ST | 1,250 ppm 9,500 mg/m ³ | USA. NIOSH Recommended Exposure Limits |

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 AXBEK (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 CEN (EU).

Hand 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.

Eye protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Impervious clothing. 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, clear |
| Colour | colourless |

Safety data

| | |
|--|---|
| pH | no data available |
| Melting point/freezing point | Melting point/range: -35 °C (-31 °F) - lit. |
| Boiling point | 47 - 48 °C (117 - 118 °F) - lit. |
| Flash point | no data available |
| Ignition temperature | 680 °C (1,256 °F) |
| Autoignition temperature | 680.0 °C (1,256.0 °F) |
| Lower explosion limit | no data available |
| Upper explosion limit | no data available |
| Vapour pressure | 360 - 363 hPa (270 - 272 mmHg) at 20 °C (68 °F) 1,094 hPa (821 mmHg) at 50 °C (122 °F) |
| Density | 1.57 g/cm ³ at 25 °C (77 °F) |
| Water solubility | 0.17 g/l at 20 °C (68 °F) |
| Partition coefficient: n-octanol/water | log Pow: 3.16 at 20 °C (68 °F) |
| Relative vapour density | no data available |
| Odour | no data available |
| 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

Materials to avoid

Powdered metals, Sodium/sodium oxides, Aluminum, Potassium, Magnesium, Zinc

Hazardous decomposition products

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

Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

LD50 Oral - rat - 43,000 mg/kg

Remarks: Behavioral:Somnolence (general depressed activity). Gastrointestinal:Other changes. Skin and Appendages: Other: Hair. Behavioral:General anesthetic.

Inhalation LC50

LC50 Inhalation - rat - 4 h - 52500 ppm

Dermal LD50

no data available

Other information on acute toxicity

no data available

Skin corrosion/irritation

Skin - rabbit - Mild skin irritation - 24 h - Draize Test

Serious eye damage/eye irritation

Eyes - rabbit - Mild eye irritation

Respiratory or skin sensitization

Maximisation Test - guinea pig - Did not cause sensitization on laboratory animals.

Germ cell mutagenicity

no data available

Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

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. May cause respiratory tract irritation. |
| Ingestion | May be harmful if swallowed. |
| Skin | May be harmful if absorbed through skin. May cause skin irritation. |

Eyes May cause eye irritation.

Signs and Symptoms of Exposure

prolonged or repeated exposure can cause:, narcosis

Synergistic effects

no data available

Additional Information

RTECS: KJ4000000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish static test LC50 - Danio rerio (zebra fish) - 7 - 14 mg/l - 96.0 h
Method: DIN 38412

Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 71.00 mg/l - 48 h

Persistence and degradability

Biodegradability aerobic
Result: < 10 % - Not readily biodegradable.

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.

Toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

Product

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

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 3082 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substances, liquid, n.o.s. (1,1,2-Trichlorotrifluoroethane)
Reportable Quantity (RQ): 5000 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN number: 3082 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (1,1,2-Trichlorotrifluoroethane)
Marine pollutant: No

IATA

UN number: 3082 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, liquid, n.o.s. (1,1,2-Trichlorotrifluoroethane)

Further information

EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

15. REGULATORY INFORMATION**OSHA Hazards**

No known OSHA hazards

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

No SARA Hazards

Massachusetts Right To Know Components

| | | |
|--------------------------------|--------------------|-----------------------------|
| 1,1,2-Trichlorotrifluoroethane | CAS-No. 76-13-1 | Revision Date 2007-07-01 |
|--------------------------------|--------------------|-----------------------------|

Pennsylvania Right To Know Components

| | | |
|--------------------------------|--------------------|-----------------------------|
| 1,1,2-Trichlorotrifluoroethane | CAS-No. 76-13-1 | Revision Date 2007-07-01 |
|--------------------------------|--------------------|-----------------------------|

New Jersey Right To Know Components

| | | |
|--------------------------------|--------------------|-----------------------------|
| 1,1,2-Trichlorotrifluoroethane | CAS-No. 76-13-1 | Revision Date 2007-07-01 |
|--------------------------------|--------------------|-----------------------------|

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.

16. OTHER INFORMATION**Further information**

Copyright 2012 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only. 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.