

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

Revision Date 05.04.2018

Version 1.2

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**SECTION 1. Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Catalogue No. TX1167

Product name 1,1,2-Trichlorotrifluoroethane

REACH Registration Number A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

CAS-No. 76-13-1

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

Identified uses Reagent for analysis  
For additional information on uses please refer to the Merck Chemicals portal ([www.merckgroup.com](http://www.merckgroup.com)).

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

Company Merck Life Science Private Limited \* 8th Floor, Godrej One,  
Pirojshanagar, Eastern Express Highway/Vikhroli (E), Mumbai – 400079  
India \* Tel: 0091 22 6210 9000

Responsible Department Quality Assurance \* Merck Life Science Private Limited \*  
e-mail: [quality.chemicals@merckgroup.com](mailto:quality.chemicals@merckgroup.com) \*  
Tel : +91-2267863131-6

**1.4 Emergency telephone Please contact the regional company representation in your country.**

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number

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## SECTION 2. Hazards identification

### 2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Chronic aquatic toxicity, Category 2, H411

Hazardous to the ozone layer, Category 1, H420

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

### 2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

*Hazard pictograms*



*Signal word*

Warning

*Hazard statements*

H411 Toxic to aquatic life with long lasting effects.

H420 Harms public health and the environment by destroying ozone in the upper atmosphere.

*Precautionary statements*

Prevention

P273 Avoid release to the environment.

**Reduced labelling (≤125 ml)**

*Hazard pictograms*



*Signal word*

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Warning

*Hazard statements*

H420 Harms public health and the environment by destroying ozone in the upper atmosphere.

CAS-No. 76-13-1

## 2.3 Other hazards

None known.

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## SECTION 3. Composition/information on ingredients

### 3.1 Substance

Formula	C <sub>2</sub> Cl <sub>2</sub> F <sub>2</sub> CCl <sub>2</sub> F	C <sub>2</sub> Cl <sub>3</sub> F <sub>3</sub> (Hill)
EC-No.	200-936-1	
Molar mass	187.37 g/mol	

### Hazardous components (REGULATION (EC) No 1272/2008)

*Chemical name (Concentration)*

CAS-No.	Registration number	Classification
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1,1,2-trichlorotrifluoroethane (<= 100 % )

76-13-1 \*)

Chronic aquatic toxicity, Category 2, H411

Hazardous to the ozone layer, Category 1, H420

\*) A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

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

### 3.2 Mixture

Not applicable

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## SECTION 4. First aid measures

### 4.1 Description of first aid measures

The Safety Data Sheets for catalogue items are available at [www.merckgroup.com](http://www.merckgroup.com)

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After inhalation: fresh air.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower.

After eye contact: rinse out with plenty of water. Remove contact lenses.

After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

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

irritant effects, Cough, Shortness of breath, narcosis

The following applies to aliphatic halogenated hydrocarbons in general: systemic effect: narcosis, cardiovascular disorders. Toxic effect on liver, kidneys.

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

No information available.

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## SECTION 5. Firefighting measures

### 5.1 Extinguishing media

*Suitable extinguishing media*

Water, Foam, Carbon dioxide (CO<sub>2</sub>), Dry powder

*Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

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

Combustible.

Forms explosive mixtures with air on intense heating.

Vapours are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire.

Fire may cause evolution of:

Hydrogen chloride gas, Hydrogen fluoride, Phosgene

### 5.3 Advice for firefighters

*Special protective equipment for firefighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

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## *Further information*

Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## **SECTION 6. Accidental release measures**

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

Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

### **6.2 Environmental precautions**

Do not let product enter drains.

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

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

### **6.4 Reference to other sections**

Indications about waste treatment see section 13.

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## **SECTION 7. Handling and storage**

### **7.1 Precautions for safe handling**

#### *Advice on safe handling*

Observe label precautions.

#### *Hygiene measures*

Change contaminated clothing. Wash hands after working with substance.

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

#### *Storage conditions*

Tightly closed.

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Recommended storage temperature see product label.

## 7.3 Specific end use(s)

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

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## SECTION 8. Exposure controls/personal protection

### 8.1 Control parameters

Contains no substances with occupational exposure limit values.

### 8.2 Exposure controls

#### Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

#### Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

#### *Eye/face protection*

Safety glasses

#### *Hand protection*

full contact:

Glove material:	Viton (R)
Glove thickness:	0.70 mm
Break through time:	480 min

splash contact:

Glove material:	polychloroprene
Glove thickness:	0.65 mm
Break through time:	30 min

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The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 890 Vitoject® (full contact), KCL 720 Camapren® (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet<(>,<)> supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

#### *Other protective equipment*

protective clothing

#### *Respiratory protection*

required when vapours/aerosols are generated.

Recommended Filter type: Filter AX (EN 371)

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

#### **Environmental exposure controls**

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**

Form	liquid
Colour	colourless
Odour	sweet
Odour Threshold	No information available.
pH	No information available.

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Melting point	-35 °C
Boiling point/boiling range	47.6 °C at 1,013 hPa
Flash point	195 °C Method: open cup
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapour pressure	360 hPa at 20 °C
Relative vapour density	6.5
Density	1.58 g/cm <sup>3</sup> at 20 °C
Relative density	No information available.
Water solubility	0.17 g/l at 20 °C
Partition coefficient: n-octanol/water	log Pow: 3.16 (experimental) (Lit.) Bioaccumulation is not expected.
Auto-ignition temperature	No information available.



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Decomposition temperature	> 300 °C
Viscosity, dynamic	0.73 mPa.s at 20 °C
Explosive properties	Not classified as explosive.
Oxidizing properties	none

## 9.2 Other data

Ignition temperature	680 °C
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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

Forms explosive mixtures with air on intense heating.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions

Risk of explosion/exothermic reaction with:

Alkali metals, Alkaline earth metals, Aluminium, Powdered metals, sodium amide, magnesium, sodium, Potassium, Barium, Calcium

### 10.4 Conditions to avoid

Strong heating.

### 10.5 Incompatible materials

Aluminium, zinc alloys

### 10.6 Hazardous decomposition products

in the event of fire: See section 5.

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## SECTION 11. Toxicological information

### 11.1 Information on toxicological effects

#### *Acute oral toxicity*

LD50 Rat: 43,000 mg/kg

(IUCLID)

#### *Acute inhalation toxicity*

LC50 Rat: 299.33 mg/l; 4 h ; vapour

(RTECS)

Symptoms: Possible damages:, Irritation symptoms in the respiratory tract.

#### *Acute dermal toxicity*

This information is not available.

#### *Skin irritation*

Rabbit

Result: slight irritation

(IUCLID)

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

#### *Eye irritation*

Rabbit

Result: slight irritation

(IUCLID)

#### *Sensitisation*

Sensitisation test: Guinea pig

Result: negative

(IUCLID)

#### *Germ cell mutagenicity*

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## *Genotoxicity in vitro*

Ames test

Result: negative

Method: OECD Test Guideline 471

## *Carcinogenicity*

This information is not available.

## *Reproductive toxicity*

This information is not available.

## *Teratogenicity*

This information is not available.

## *Specific target organ toxicity - single exposure*

This information is not available.

## *Specific target organ toxicity - repeated exposure*

This information is not available.

## *Aspiration hazard*

This information is not available.

## **11.2 Further information**

Possible effects:

In high doses:

narcosis

The following applies to aliphatic halogenated hydrocarbons in general: systemic effect:

narcosis, cardiovascular disorders. Toxic effect on liver, kidneys.

However, when the product is handled appropriately, hazardous effects are unlikely to occur.

Handle in accordance with good industrial hygiene and safety practice.

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## **SECTION 12. Ecological information**

### **12.1 Toxicity**

#### *Toxicity to fish*

LC50 Danio rerio (zebra fish): 7 - 14 mg/l; 96 h

DIN 38412

(IUCLID)

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### *Toxicity to daphnia and other aquatic invertebrates*

EC50 Daphnia magna (Water flea): 71 mg/l; 48 h  
(IUCLID)

### *Toxicity to bacteria*

EC50 Bacteria: ca. 3.7 mg/l; 24 h  
(IUCLID)

## **12.2 Persistence and degradability**

### *Biodegradability*

< 10 %; 27 d

(IUCLID)

Not readily biodegradable.

## **12.3 Bioaccumulative potential**

### *Partition coefficient: n-octanol/water*

log Pow: 3.16

(experimental)

(Lit.) Bioaccumulation is not expected.

## **12.4 Mobility in soil**

No information 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**

### *Henry constant*

39700 Pa\*m<sup>3</sup>/mol

Distribution preferentially in air.

### *Additional ecological information*

Substance which may present a danger to the structure and/or the functioning of the stratospheric ozone layer according to EC Regulation No 2037/2000 (listed in Annex I, Group I).

Discharge into the environment must be avoided.

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## SECTION 13. Disposal considerations

### *Waste treatment methods*

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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## SECTION 14. Transport information

### Land transport (ADR/RID)

14.1 UN number UN 3082  
14.2 Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (1,1,2-TRICHLOROTRIFLUOROETHANE)  
14.3 Class 9  
14.4 Packing group III  
14.5 Environmentally hazardous yes  
14.6 Special precautions for user yes

Tunnel restriction code -

Packages smaller than or equal to 5 kg / L , not dangerous goods of Class 9

### Inland waterway transport (ADN)

Not relevant

### Air transport (IATA)

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**14.1 UN number** UN 3082  
**14.2 Proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,  
N.O.S. (1,1,2-TRICHLOROTRIFLUOROETHANE)  
**14.3 Class** 9  
**14.4 Packing group** III  
**14.5 Environmentally hazardous** yes  
**14.6 Special precautions for user** no

Packages smaller than or equal to 5 kg / L , not dangerous goods of Class 9

## Sea transport (IMDG)

**14.1 UN number** UN 3082  
**14.2 Proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,  
N.O.S. (1,1,2-TRICHLOROTRIFLUOROETHANE)  
**14.3 Class** 9  
**14.4 Packing group** III  
**14.5 Environmentally hazardous** yes  
**14.6 Special precautions for user** yes

EmS F-A S-F

Packages smaller than or equal to 5 kg / L , not dangerous goods of Class 9

## 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not relevant

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## SECTION 15. Regulatory information

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

#### *National legislation*

Storage class 10 - 13

### 15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

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## SECTION 16. Other information

### Full text of H-Statements referred to under sections 2 and 3.

H411 Toxic to aquatic life with long lasting effects.  
H420 Harms public health and the environment by destroying ozone in the upper atmosphere.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling

*Hazard pictograms*



*Signal word*

Warning

*Hazard statements*

H411 Toxic to aquatic life with long lasting effects.  
H420 Harms public health and the environment by destroying ozone in the upper atmosphere.

*Precautionary statements*

Prevention  
P273 Avoid release to the environment.

### Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

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*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*