

**SAFETY DATA SHEET**

according to the Global Harmonized System (and with all of the information required by the HPR)

Revision Date 06/17/2018

Version 1.4

**SECTION 1. Identification****Product identifier**

Product number	TX1167
Product name	1,1,2-Trichlorotrifluoroethane
CAS-No.	76-13-1

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

Identified uses	Reagent for analysis
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**Details of the supplier of the safety data sheet**

Company	Millipore (Canada) Ltd   109 Woodbine Downs Blvd. Unit 5   Etobicoke   Ontario M9W 6Y1   Canada   General Inquiries: +1 800-645-5476   Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5) MilliporeSigma is a business of Merck KGaA, Darmstadt, Germany.
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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**SECTION 2. Hazards identification****GHS-Labeling**

Not a dangerous substance according to GHS.

**Other hazards**

None known.

**SECTION 3. Composition/information on ingredients**

Formula	$\text{C}_1\text{ClF}_2\text{CCl}_2\text{F}$	$\text{C}_2\text{Cl}_3\text{F}_3$ (Hill)
Molar mass	187.37 g/mol	
Remarks	WHMIS hazardous composition: No ingredients are hazardous according to the CPR criteria.	

**SECTION 4. First aid measures****Description of first-aid measures***Inhalation*

After inhalation: fresh air.

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### *Skin contact*

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

### *Eye contact*

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

### *Ingestion*

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

Never give anything by mouth to an unconscious person.

### **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.

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

No information available.

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## **SECTION 5. Fire-fighting measures**

### **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.

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

Combustible.

Forms explosive mixtures with air on intense heating.

Vapors are heavier than air and may spread along floors.

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

Fire may cause evolution of:

Hydrogen chloride gas, Hydrogen fluoride, Phosgene

### **Advice for firefighters**

#### *Special protective equipment for fire-fighters*

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

#### *Further information*

Suppress (knock down) gases/vapors/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**

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

Advice for non-emergency personnel: Do not breathe vapors, 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.

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## Environmental precautions

Do not let product enter drains.

## 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. Chemizorb®). Dispose of properly. Clean up affected area.

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## SECTION 7. Handling and storage

### Precautions for safe handling

Observe label precautions.

### Conditions for safe storage, including any incompatibilities

Tightly closed.

Store at room temperature.

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## SECTION 8. Exposure controls/personal protection

### Exposure limit(s)

#### Ingredients

Basis	Value	Threshold limits	Remarks
<i>1,1,2-trichlorotrifluoroethane 76-13-1</i>			
CAD AB OEL	Time Weighted Average (TWA):	1,000 ppm 7,660 mg/m <sup>3</sup>	
	Short Term Exposure Limit (STEL):	1,250 ppm 9,580 mg/m <sup>3</sup>	
CAD BC OEL	Time Weighted Average (TWA):	500 ppm	
	Short Term Exposure Limit (STEL):	1,250 ppm	
CAD MB OEL	Time Weighted Average (TWA):	1,000 ppm	
	Short Term Exposure Limit (STEL):	1,250 ppm	
CAD ON OEL	Time Weighted Average (TWAEV):	1,000 ppm	
	Short Term Exposure Limit (STEV):	1,250 ppm	
OEL (QUE)	Time Weighted Average (TWA):	1,000 ppm 7,670 mg/m <sup>3</sup>	
	Short Term Exposure Limit (STEL):	1,250 ppm 9,590 mg/m <sup>3</sup>	

### Engineering measures

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

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## Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

### *Hygiene measures*

Change contaminated clothing. Wash hands after working with substance.

### *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

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 and supplied by us as well as to the purpose specified by us. 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 vapors/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 performed according to the instructions of the producer. These measures have to be properly documented.

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## SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	sweet
Odor Threshold	No information available.
pH	No information available.

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Melting point	-31 °F (-35 °C)
Boiling point/boiling range	117.7 °F (47.6 °C) at 1,013 hPa
Flash point	383 °F (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.
Vapor pressure	360 hPa at 68 °F (20 °C)
Relative vapor density	6.5
Density	1.58 g/cm <sup>3</sup> at 68 °F (20 °C)
Relative density	No information available.
Water solubility	0.17 g/l at 68 °F (20 °C)
Partition coefficient: n-octanol/water	log Pow: 3.16 (experimental) (Lit.) Bioaccumulation is not expected.
Autoignition temperature	No information available.
Decomposition temperature	> 572 °F (> 300 °C)
Viscosity, dynamic	0.73 mPa.s at 68 °F (20 °C)
Explosive properties	Not classified as explosive.
Oxidizing properties	none
Ignition temperature	1256 °F (680 °C)

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## SECTION 10. Stability and reactivity

### Reactivity

Forms explosive mixtures with air on intense heating.

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

## Chemical stability

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

## Possibility of hazardous reactions

Risk of explosion/exothermic reaction with:

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

## Conditions to avoid

Strong heating.

## Incompatible materials

Aluminum, zinc alloys

## Hazardous decomposition products

in the event of fire: See section 5.

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## SECTION 11. Toxicological information

### Information on toxicological effects

#### *Likely route of exposure*

Inhalation, Eye contact, Skin contact

#### *Acute oral toxicity*

LD50 Rat: 43,000 mg/kg (IUCLID)

#### *Acute inhalation toxicity*

LC50 Rat: 299.33 mg/l; 4 h ; vapor  
(RTECS)

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

#### *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)

#### *Sensitization*

Sensitization test: Guinea pig

Result: negative

(IUCLID)

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## *Genotoxicity in vitro*

Ames test

Result: negative

Method: OECD Test Guideline 471

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

The substance or mixture is not classified as specific target organ toxicant, single exposure.

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

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

## *Aspiration hazard*

Regarding the available data the classification criteria are not fulfilled.

## **Carcinogenicity**

IARC

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

OSHA

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

NTP

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

ACGIH

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

## **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**

### **Ecotoxicity**

#### *Toxicity to fish*

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

DIN 38412 (IUCLID)

#### *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)

### **Persistence and degradability**

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### *Biodegradability*

< 10 %; 27 d

(IUCLID)

Not readily biodegradable.

### **Bioaccumulative potential**

*Partition coefficient: n-octanol/water*

log Pow: 3.16

(experimental)

(Lit.) Bioaccumulation is not expected.

### **Mobility in soil**

No information available.

### **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**

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

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## **SECTION 14. Transport information**

### **Land transport (DOT)**

**UN number**

UN 3082

**Proper shipping name**

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,  
N.O.S. (1,1,2-TRICHLOROTRIFLUOROETHANE)

**Class**

9

**Packing group**

III

**Environmentally hazardous**

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### **Air transport (IATA)**

**UN number**

UN 3082

**Proper shipping name**

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,  
N.O.S. (1,1,2-TRICHLOROTRIFLUOROETHANE)

**Class**

9

**Packing group**

III

**Environmentally hazardous**

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**Special precautions for user**

no

**Sea transport (IMDG)**

**UN number**

UN 3082

**Proper shipping name**

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,  
N.O.S. (1,1,2-TRICHLOROTRIFLUOROETHANE)

**Class**

9

**Packing group**

III

**Environmentally hazardous**

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**Special precautions for user**

yes

EmS

F-A S-F

## SECTION 15. Regulatory information

**United States of America**

**Canada**

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

**Notification status**

TSCA:

All components of the product are listed in the TSCA-inventory.

DSL:

All components of this product are on the Canadian DSL

## SECTION 16. Other information

**Training advice**

Provide adequate information, instruction and training for operators.

**Labeling**

*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.

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## 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).

Revision Date 06/17/2018

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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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