













Product name / chemical name: R23 / Trifluoromethane

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#### Skin protection

**Hand protection:** Wear working gloves while handling containers. (Guidelines: EN 388 Protective gloves against mechanical risks)

**Body protection:** No special precautions.

**Other:** Wear safety shoes while handling containers.  
Guideline: ISO 20345 Persona protective equipment – safety footwear.

**Respiratory protection:** Not required.

**Thermal hazards:** No precautionary measures are necessary.

**Hygiene measures:** Specific risk management measures are not required beyond good industrial hygiene and safety procedures. Do not eat, drink or smoke when using the product.

**Environmental exposure controls:** Waste disposal, see sec. 13.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

Appearance, physical state, form and color	Gas, liquefied gas, colorless.
Odor	Slight ethereal.
Odor threshold	Subjective and inadequate to warn of over exposure.
pH	Not applicable.
Melting point	-155,1°C, experimental result, key study
Boiling point	-82,03°C (1.013 hPa), experimental result, key study
Critical temperature (°C)	25,6
Flash point	Not applicable to gases and gas mixtures.
Evaporation rate	Not applicable to gases and gas mixtures.
Flammability (solid, gas)	This product is not flammable.
Flammability limit upper / lower	Not applicable.
Vapor pressure 25°C	47.054 hPa, experimental result, key study
Vapor density (air=1)	2,4
Relative density	1,4
Solubility (ies), 25°C	733 mg/l
Partition coefficient, n-oktanol/water	0,64
Autoignition temperature	Not applicable.
Decomposition temperature	All fluorocarbons will undergo thermal decomp when

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<b>Viscosity, kinematic / dynamic)</b>	exposed to flame or red-hot metal. When heated to decomp, emits toxic fumes of hydrogen fluoride.
<b>Explosive properties</b>	No data available.
<b>Oxidizing properties</b>	Not applicable.
	Not applicable.

## 9.2 Other information

Gas/vapour is heavier than air. May accumulate in confined spaces, particularly at or below ground level.

Molecular weight: CHF<sub>3</sub> 70,01 g/mol

## SECTION 10: STABILITY AND REACTIVITY

### 10.1 Reactivity

See the effects described in sub-section below.

### 10.2 Chemical stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

Thermal decomposition yields toxic (see beneath) which can be corrosive in the presence of moisture.

### 10.4 Conditions to avoid

None.

### 10.5 Incompatible materials

May react with aluminium.

### 10.6 Hazardous decomposition products

Under normal conditions of storage and use hazardous decomposition products should not be produced.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

**General information:** None.



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**Acute toxicity / Oral**

Product: Based on the available data, the classification criteria are not met.

**Acute toxicity /Dermal**

Product: Based on the available data, the classification criteria are not met.

**Acute toxicity / Inhalation**

Product: High exhibitions can cause a cardiac anomalous pace and can turn out to be suddenly fatal. Atmospheric very high concentrations can produce anesthetic effects and it asphyxiates.

**Tepeated dose toxicity**

Trifluoromethane, LOAEL (Rat (female, male), inhalation, 90 d): > 10.000 ppm(m) inhalation, experimental result, key study.

**Skin corrosion / irritation**

Product: Based on the available data, the classification criteria are not met.

**Serious eye damage / eye irritation**

Product: Based on the available data, the classification criteria are not met.

**Serious eye damage /eye irritation**

Product: Based on the available data, the classification criteria are not met. The splashes of the liquid or the pulverizations it can cause burns for cold.

**Respiratory or skin sensitization**

Product: Based on the available data, the classification criteria are not met.

**Germ cell mutagenicity**

Product: Based on the available data, the classification criteria are not met.

**Carcinogenicity**

Product: Based on the available data, the classification criteria are not met.

**Reproductive toxicity**

Product: Based on the available data, the classification criteria are not met.

**Specific target organ toxicity – single exposure**

Product: Based on the available data, the classification criteria are not met.

**Specific target organ toxicity – repeated exposure**

Product: Based on the available data, the classification criteria are not met.

**Aspiration hazard**

Product: Based on the available data, the classification criteria are not met.

**Other relevant toxicity information**

**Trifluoromethane:** Cardiac sensitisation threshold limit >172,414 mg/m<sup>3</sup>, dog

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- Light hydrocarbons have been associated with cardiac sensitization in abuse situations.
- Hypoxia or the injection of adrenaline-like substances enhances effects.
- May produce irregular heart beat and nervous symptoms.

**SECTION 12: ECOLOGICAL INFORMATION****12.1 Toxicity**

**Trifluoromethane R23:** No ecological damage caused by this product.

**Acute toxicity – Fish:** LC 50 (Pimephales promelas, 96h): 633,23 mg/l.

Remarks: QSAR QSAR, key study

**Acute toxicity – Aquatic invertebrates:** LC 50 (Daphnia magna, 48h): 323,05 mg/l.

Remarks: QSAR QSAR, key study.

**12.2 Persistence and degradability**

Product: Not applicable to gases and gas mixtures.

**12.3 Bioaccumulative potential**

Product: This product is expected to biodegrade and is not expected to persist for long periods in an aquatic environment. N.A.

**12.4 Mobility in soil**

Because of its high volatility, the product is unlikely to cause ground water pollution.

Henry's Law Constant: 533,9 MPa (25°C)

**12.5 Results of PBT and vPvB**

Not classified as PBT or vPvB.

**12.6 Other adverse effects**

Global Warming Potential: 14800.

**SECTION 13: DISPOSAL CONSIDERATIONS****13.1. Waste treatment methods**

Recover is possible. In so doing, comply with the local and national regulations currently in force.

**General information:**

Do not discharge into any place where its accumulation could be dangerous. Consult supplier for specific recommendations.

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Do not discharge into areas where there is a risk of forming an explosive mixture with air.  
Waste gas should be flared through a suitable burner with flash back arrestor.

**Disposal methods**

Refer to the EIGA code of practice (Doc.30 "Disposal of Gases", <http://www.eiga.org>) for more guidance on suitable disposal methods. Dispose of container via supplier only. Discharge, treatment, or disposal may be subject to national, state, or local laws.

**European Waste Codes:**

Container: 14 06 01\*: chlorofluorocarbons, HCFC, HFC

EU legislation: Directive 2008/98/ETY, 2014/955/EU, EU Commission Regulation nr 1357/2014.

National legislation (FI): Waste Act, 646/2011, 1104/2011, 195/2015, 1178/2013, 25/2014, 410/2014, 528/2014.

**SECTION 14: TRANSPORT INFORMATION, ADR 2015 ja RID 2015, IMDG 37-14, IATA/ICAO 2015**

**14.1 UN Number**

UN 1984

**14.2 UN proper shipping name**

Trifluoromethane, Refrigerant gas R23

**14.3 Transport hazard class**

2 (IMDG 2.2), Labels 2.2, Hazard nr (ADF) 20, EmS No: F-C, S-V

**14.4 Packing Group**

N.A.

**14.5 Environmental hazards**

Marine pollutant: No.

**14.6 Special Precautions fo Users**

ADR-Tunnel restriction code C/E.

Rail (RID): 1984

IMDG-EmS No: F-C, S-V

Matkustaja- ja rahtilentokone: Sallittu.

Vain rahtilennolla: Sallittu.

**14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code**

Not applicable.

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**Additional identification:**

- Avoid transport on vehicles where the load space is not separated from the driver's compartment.
- Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
- Before transporting product containers ensure that they are firmly secured.
- Ensure that the container valve is closed and not leaking.
- Container valve guards or caps should be in place.
- Ensure adequate air ventilation

**SECTION 15: REGULATORY INFORMATION****15.1 Safety, health and environmental regulations / legislation specific for the substance or mixture****National regulations:**

- Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work.
- Directive 89/686/EEC on personal protective equipment.
- Directive 2014/34/EU on equipment and protective systems intended for use in potentially explosive atmospheres (ATEX).
- Only products that comply with the food regulations (EC) No. 1333/2008 and (EU) No. 231/2012 and are labelled as such may be used as food additives.
- This Safety Data Sheet has been produced to comply with Regulation (EU) 2015/830.

**EU Regulations**

Directive 96/61/EC: concerning integrated pollution prevention and control (IPPC): Article 15, European Pollution Emission Registry (EPER):

Chemical nema	CAS no	Concentration
Trifluoromethane	75-46-7	100%

**Other legislation:**

- Chemicals Act 599/2013
- Chemical Regulation 675/1993
- Classification and Labeling of Chemicals 807/2001: amendment 687/2005, 206/2007, 655/2008,6/2010
- Security seal for the cover and danger symbol for the visually impaired 414/2011
- Regulation on the names of substances 5/2010, amendment 1123/2010
- Government Decree on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products 837/2005.
- Government Decree on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations 435/2001, as amended
- Waste Act 646/2011
- Concentrations known as harmful 268/2014

**15.2 Chemical safety assessment**

The supplier has not performed a chemical safety assessment.

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## SECTION 16: OTHER INFORMATION

### Revision information -

#### Data sources of this SDS

Safety Data Sheet provided by the manufacturer.

Legislation on hazardous chemicals valid at the time of writing.

European Chemicals Agency, Guidance on the compilation of safety data sheets / REACH Regulation (EU) 1907/2006, ARTICLE 31: Requirements for safety data sheets.  
European Chemicals Agency, Information on registered substances.

International Programme on Chemical Safety.

#### WWW-SOURCES

[echa.europa.eu](http://echa.europa.eu)

[eiga.org](http://eiga.org)

[esis.jrc.ec.europa.eu](http://esis.jrc.ec.europa.eu)

[eur-lex.europa.eu](http://eur-lex.europa.eu)

[atsdr.cc.gov](http://atsdr.cc.gov)

[www.lvm.fi/en/home](http://www.lvm.fi/en/home)

<http://toxnet.nlm.nih.gov/>

<http://www.who.int/ipcs/en/>

[www.ericards.net](http://www.ericards.net)

#### Rating methods of classification

Regulation (EU) No 1272/2008 (CLP), Regulation on classification, labeling and packaging of substances and mixtures. Regulation (EU) 1999/45 (DPD)

#### Precautionary, Wording of the H-statements in section 2 and 3

H280: Contains gas under pressure, may explode if heated.

#### Classification according to Regulation (EC) N:o 1272/2008 as amended

Press. Gas Liq. Gas, H280

#### Training information

It is recommended that persons handling the product have minimum training in the prevention and protection of work-related hazards. This makes it easier to understand and interpret the safety data sheet and product labels. Users of breathing apparatus must be trained. Ensure all operators understand the flammability hazard.

#### Other information

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Ensure adequate air ventilation. Ensure all national/local regulations are observed. Ensure equipment is adequately earthed. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. ASHRAE: A2L

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#### **Lisätiedot**

##### **Disclaimer:**

This information is provided without warranty. The data is trusted to be flawless. This information should be used to make an independent determination of the practices that protect workers and the environment.

The information contained in this MSDS is based on sources, scientific and technical knowledge, existing national and EU legislation.

The release is intended to serve the safe use of the product. We do not know or control the working methods or conditions of the users of the product. The user is always ultimately responsible for taking measures to ensure compliance with the regulations in force in the handling, storage, use and disposal of chemicals.

In this context, it is noted that the information provided in the SDS also helps employers to fulfill their obligations under Directive 98/24 / EU10 on the protection of the health and safety of workers from the risks related to chemical agents at work.

On the basis of the safety data sheet, users should be able to take the necessary measures in the field of health and safety to ensure safety and protect the environment.

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The Safety Data Sheet is provided for in Article 31 of REACH Regulation (EU) No 1907/2006 and in Annex II to the Regulation.

# DARMENT