

Refrigerant 23**1. PRODUCT AND COMPANY IDENTIFICATION****Company**

Arkema Inc.
900 First Avenue
King of Prussia, Pennsylvania 19406

Fluorochemicals

Customer Service Telephone Number: (800) 245-5858
(Monday through Friday, 8:00 AM to 5:00 PM EST)

Emergency Information

Transportation: CHEMTREC: (800) 424-9300
(24 hrs., 7 days a week)
Medical: Rocky Mountain Poison Center: (866) 767-5089
(24 hrs., 7 days a week)

Product Information

Product name: Refrigerant 23
Synonyms: R-23, HFC-23
Molecular formula: CHF₃
Chemical family: Hydrofluorocarbon
Molecular weight: 70 g/mol
Product use: Refrigerant

2. HAZARDS IDENTIFICATION**Emergency Overview**

Color: Clear - colourless
Physical state: gaseous
Form: compressed liquefied gas
Odor: Ether-like (slightly)

***Classification of the substance or mixture:**

Gases under pressure, Liquefied gas, H280

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

GHS-Labeling

Hazard pictograms:



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Signal word: **Warning**

Hazard statements:

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

Supplemental Hazard Statements:

Overheating or overpressurizing may cause gas release or violent cylinder bursting. May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products. May cause frostbite. May cause headache, nausea, dizziness, drowsiness, loss of consciousness. May cause cardiac sensitization/cardiac arrhythmia. May displace oxygen and cause rapid suffocation.

Precautionary statements:

Storage:

P403 : Store in a well-ventilated place.
P410 : Protect from sunlight.

Supplemental information:

Potential Health Effects:

Liquid : Rapid evaporation of the liquid may cause frostbite. Vapor: Vapor is heavier than air and can cause suffocation by reducing oxygen available for breathing. Central nervous system effects: headache, nausea, dizziness, drowsiness, loss of consciousness. Stress induced heart effects: Inhalation may cause an increase in the sensitivity of the heart to adrenaline, which could result in irregular or rapid heartbeats and reduced heart function.

Medical conditions aggravated by overexposure:

Heart disease or compromised heart function.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Trifluoromethane	75-46-7	100 %	H280

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

4. FIRST AID MEASURES

Refrigerant 23**Inhalation:**

If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Skin:

If on skin, flush exposed skin with lukewarm water (not hot), or use other means to warm skin slowly. Get medical attention if frostbitten by liquid or if irritation occurs. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:

Immediately flush eye(s) with plenty of water.

Ingestion:

Ingestion is not applicable - product is a gas at ambient temperatures.

Notes to physician:

Do not give drugs from adrenaline-ephedrine group.

5. FIREFIGHTING MEASURES**Extinguishing media (suitable):**

Use extinguishing media appropriate to surrounding fire conditions.

Protective equipment:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

Further firefighting advice:

Fight fire with large amounts of water from a safe distance.

Stop the flow of gas if possible.

Water mist should be used to reduce vapor concentrations in air.

Cool closed containers exposed to fire with water spray.

Closed containers of this material may explode when subjected to heat from surrounding fire.

After a fire, wait until the material has cooled to room temperature before initiating clean-up activities.

Fire fighting equipment should be thoroughly decontaminated after use.

Fire and explosion hazards:

May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products.

Liquid and gas under pressure, overheating or overpressurizing may cause gas release and/or violent cylinder bursting.

Container may explode if heated due to resulting pressure rise.

Some mixtures of HCFCs and/or HFCs, and air or oxygen may be combustible if pressurized and exposed to extreme heat or flame.

When burned, the following hazardous products of combustion can occur:

Carbon oxides

Carbonyl halides

Hydrogen fluoride

Refrigerant 23**6. ACCIDENTAL RELEASE MEASURES****In case of spill or leak:**

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Eliminate all ignition sources. Use Halogen leak detector or other suitable means to locate leaks or check atmosphere. Keep upwind. Evacuate enclosed spaces and disperse gas with floor-level forced-air ventilation. Avoid breathing leaked material. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7. HANDLING AND STORAGE**Handling****General information on handling:**

Avoid breathing gas.
Avoid contact with skin, eyes and clothing.
Keep away from heat, sparks and flames.
Wear cold-insulating gloves/face shield/eye protection.
Keep container closed.
Use only with adequate ventilation.
Use equipment rated for cylinder pressure.
Use a backflow preventative device in piping.
Wash thoroughly after handling.
Do NOT change or force fit connections.
Close valve after each use and when empty.
Do not enter confined spaces unless adequately ventilated.
DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.
Follow label warnings even after container is emptied.
Emptied container retains product residue.
Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

Storage**General information on storage conditions:**

Keep away from direct sunlight. Keep cylinders restrained. Store in cool, dry, well ventilated area away from sources of ignition such as flame, sparks and static electricity.

Storage stability – Remarks:

Do not apply direct flame to cylinder. Do not store cylinder in direct sun or expose it to heat above 120 F (48.9 C.).
Do not drop or refill this cylinder.

Storage incompatibility – General:

Store separate from:

Strong bases

Alkali metals

Alkaline earth metals

Strong oxidizing agents

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Odor:	Ether-like (slightly)
Odor threshold:	No data available
Flash point	Not applicable
Auto-ignition temperature:	Not determined
Lower flammable limit (LFL):	(Method: ASTM E681-01) None.
Upper flammable limit (UFL):	(Method: ASTM E681-01) None.
pH:	not determined
Density:	0.78 g/cm ³ (68 °F (20 °C))
Vapor pressure:	30,201.51 mmHg (64.9 °F (18.3 °C))
Vapor density:	2.43 kg/m ³ (Air = 1.0)
Boiling point/boiling range:	-116 °F (-82 °C)
Evaporation rate:	Not applicable
Solubility in water:	0.1 % 77 °F (25 °C) slightly soluble
% Volatiles:	100 %
Molecular weight:	70 g/mol
Oil/water partition coefficient:	No data available
Thermal decomposition	2,102 °F (1,150 °C)
Critical point:	Critical pressure: 36,227.97 mmHg Critical temperature: 78.6 °F (25.9 °C)
Flammability:	See GHS Classification in Section 2

10. STABILITY AND REACTIVITY

Stability:

This material is chemically stable under normal and anticipated storage, handling and processing conditions.

Materials to avoid:

- Alkaline earth metals
- Finely divided metals (aluminium, magnesium, zinc...)
- Alkali metals

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Strong bases
Strong oxidizing agents

Conditions / hazards to avoid:
Heat

Hazardous decomposition products:

Thermal decomposition giving toxic and corrosive products :
Carbonyl halides
Hydrogen fluoride
Carbon oxides

11. TOXICOLOGICAL INFORMATION

Data on this material and/or a similar material are summarized below.

Data for Trifluoromethane (75-46-7)**Acute toxicity****Inhalation:**

No deaths occurred. (rat) 4 h LC0 > 1,898 mg/l. signs: anesthetic effects (Gas)

Sensitization:

Causes cardiac sensitization Inhalation. (Dog) Stress induced heart effects: irregular heart beat, rapid heart beat, in some cases, sudden death (Reaction may occur in response to stress (natural adrenaline release) or administration of epinephrine.)

Repeated dose toxicity

Repeated inhalation administration to rat and guinea pig / No adverse effects reported.

Repeated inhalation administration to dog / No adverse effects reported.

Genotoxicity**Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria, animal cells

Genotoxicity**Assessment in Vivo:**

No genetic changes were observed in laboratory tests using: mice

Developmental toxicity

Exposure during pregnancy. inhalation (rat) / No birth defects were observed.

Human experience**Inhalation:**

Central nervous system: Loss of reflexes, central nervous system depression, narcosis. Exposures exceeded

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recommended occupational exposure limit. (studied using human volunteers) (effects of excessive exposure)

12. ECOLOGICAL INFORMATION

Chemical Fate and Pathway

Data on this material and/or a similar material are summarized below.

Data for Trifluoromethane (75-46-7)

Octanol Water Partition Coefficient:

log Pow = 0.84 (measured)

Photodegradation:

air reaction with OH radicals Half-life direct photolysis: 180 y

Global Warming Potential:

GWP 14,800 (Global warming potential with respect to CO₂ (time horizon 100 years))

Ozone Depletion Potential:

ODP 0

Ecotoxicology

No data are available.

13. DISPOSAL CONSIDERATIONS

Waste disposal:

Do not vent the container contents, or product residuals, to the atmosphere. Recover and reclaim unused contents or residuals as appropriate. Recovered/reclaimed product can be returned to an approved certified reclaimer or back to the seller depending on the material. Completely emptied disposable containers can be disposed of as recyclable steel. Returnable cylinders must be returned to seller. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14. TRANSPORT INFORMATION

US Department of Transportation (DOT)

UN Number : 1984
 Proper shipping name : Trifluoromethane
 Class : 2.2
 Marine pollutant : no

International Maritime Dangerous Goods Code (IMDG)

UN Number : 1984
 Proper shipping name : TRIFLUOROMETHANE (REFRIGERANT GAS R 23)
 Class : 2.2

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Marine pollutant : no

15. REGULATORY INFORMATION

Chemical Inventory Status

EU. EINECS	EINECS	Conforms to
United States TSCA Inventory	TSCA	The components of this product are all on the TSCA Inventory.
Canadian Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL.
China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC (CN)	Conforms to
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	Conforms to
Japan. ISHL - Inventory of Chemical Substances	ISHL (JP)	Conforms to
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	Conforms to
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	Conforms to
Australia Inventory of Chemical Substances (AICS)	AICS	Conforms to

United States – Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:

The components in this product are either not SARA Section 302 regulated or regulated but present in negligible concentrations.

SARA Title III - Section 311/312 Hazard Categories:

Acute Health Hazard, Sudden Release of Pressure Hazard

SARA Title III – Section 313 Toxic Chemicals:

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.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):

The components in this product are either not CERCLA regulated, regulated but present in negligible concentrations, or regulated with no assigned reportable quantity.

United States – State Regulations

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New Jersey Right to Know

<u>Chemical Name</u>	<u>CAS-No.</u>
Trifluoromethane	75-46-7

Pennsylvania Right to Know

<u>Chemical Name</u>	<u>CAS-No.</u>
Trifluoromethane	75-46-7

Pennsylvania Right to Know – Environmentally Hazardous Substance(s)

<u>Chemical Name</u>	<u>CAS-No.</u>
Trifluoromethane	75-46-7

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive defects.

16. OTHER INFORMATION

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

H280 Contains gas under pressure; may explode if heated.

Latest Revision(s):

Reference number:	000000063254
Date of Revision:	05/09/2015
Date Printed:	05/09/2015

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