

**FORANE® 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:** FORANE® 23  
**Synonyms:** Not available  
**Molecular formula:** Not available  
**Chemical family:** Hydrofluorocarbon  
**Product use:** Refrigerant, Synthesis intermediate., Laboratory chemicals, Fire extinguishing agent

**2. HAZARDS IDENTIFICATION****Emergency Overview**

**Color:** colourless  
**Physical state:** gaseous @ 68 °F (20 °C)  
( 760 mmHg)

**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.

**FORANE® 23****GHS-Labeling**

Hazard pictograms:



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 displace oxygen and cause rapid suffocation.

May cause headache, nausea, dizziness, drowsiness, loss of consciousness.

**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: Gas/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**

Product code: F0023

Version 1.0

Issued on: 12/19/2019

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**FORANE® 23**

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**

**4.1. Description of necessary first-aid measures:**

**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. Wash clothing before reuse. Thoroughly clean shoes before reuse. Remove contaminated clothing and shoes.

**Eyes:**

Immediately flush eye(s) with plenty of water.

**Ingestion:**

If swallowed, DO NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

**4.2. Most important symptoms/effects, acute and delayed:**

For most important symptoms and effects (acute and delayed), see Section 2 (Hazard Statements and Supplemental Information if applicable) and Section 11 (Toxicology Information) of this SDS.

**4.3. Indication of immediate medical attention and special treatment needed, if necessary:**

Unless otherwise noted in Notes to Physician, no specific treatment noted; treat symptomatically.

**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:**

**FORANE® 23**

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 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:  
hydrofluoric acid  
Carbon oxides  
Carbonyl halides

**6. ACCIDENTAL RELEASE MEASURES****Personal precautions, Emergency procedures, Methods and materials for containment/clean-up:**

Eliminate all ignition sources. Evacuate area of all unnecessary personnel. Use Halogen leak detector or other suitable means to locate leaks or check atmosphere. Prevent further leakage or spillage if you can do so without risk. 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.

**Protective equipment:**

Appropriate personal protective equipment is set forth in Section 8.

**FORANE® 23****7. HANDLING AND STORAGE****Handling****General information on handling:**

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

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

**Storage incompatibility – General:**

Store separate from:  
Finely divided metals (aluminum, magnesium, zinc...)  
Strong bases  
Alkali metals  
Alkaline earth metals  
Strong oxidizing agents

**Temperature tolerance – Do not store below:**

32 °F (0 °C)

**Temperature tolerance – Do not store above:**

122 °F (50 °C)

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Airborne Exposure Guidelines:****Trifluoromethane (75-46-7)**

Arkema Occupational Exposure Limits

**FORANE® 23**

Time weighted average 1,000 ppm

Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

**Engineering controls:**

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Consult ACGIH ventilation manual, NFPA Standard 91 and NFPA Standard 654 for design of exhaust system and safe handling.

**Respiratory protection:**

Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components (full facepiece recommended). Avoid breathing gas. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

**Skin protection:**

Minimize skin contamination by following good industrial hygiene practice. Wearing protective gloves is recommended. Wash hands and contaminated skin thoroughly after handling.

**Eye protection:**

Use good industrial practice to avoid eye contact.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Color:</b>	colourless
<b>Physical state:</b>	gaseous 68 °F (20 °C) (760 mmHg)
<b>Odor:</b>	Ether-like (slightly)
<b>Odor threshold:</b>	No data available.
<b>Flash point</b>	Not applicable
<b>Auto-ignition temperature:</b>	No data available.
<b>Lower flammable limit (LFL):</b>	No data available.
<b>Upper flammable limit (UFL):</b>	No data available.

**FORANE® 23**

<b>pH:</b>	No data available.
<b>Density:</b>	No data available.
<b>Specific Gravity (Relative density):</b>	No data available
<b>Vapor pressure:</b>	No data available.
<b>Vapor density:</b>	2.86 kg/m <sup>3</sup> (77 °F (25 °C)) (Method: calculated) 76.0 mmHg
<b>Boiling point/boiling range:</b>	No data available.
<b>Melting point/range:</b>	No data available.
<b>Freezing point:</b>	No data available.
<b>Evaporation rate:</b>	No data available.
<b>Solubility in water:</b>	No data available.
<b>Solubility in other solvents: [qualitative and quantitative]</b>	Soluble in:  Chlorinated solvents
<b>Viscosity, dynamic:</b>	No data available.
<b>Oil/water partition coefficient:</b>	No data available.
<b>Thermal decomposition:</b>	No data available.
<b>Flammability:</b>	See GHS Classification in Section 2 if applicable

<b>10. STABILITY AND REACTIVITY</b>
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**Stability:**

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

**Hazardous reactions:**

Powdered metals  
Risk of : Explosive reaction

**Materials to avoid:**

Finely divided metals (aluminum, magnesium, zinc...)  
Strong bases  
Alkali metals  
Alkaline earth metals  
Strong oxidizing agents

**FORANE® 23****Conditions / hazards to avoid:**

Heat

**Hazardous decomposition products:**

Thermal decomposition giving toxic and corrosive products :

Hydrogen fluoride

Carbon oxides

Carbonyl halides

**11. TOXICOLOGICAL INFORMATION**

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

**Data for FORANE® 23****Acute toxicity****Inhalation:**

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

**Sensitization:**

Causes cardiac sensitization Inhalation. (dog) Stress induced heart effects: signs: Stress induced heart effects: (Reaction may occur in response to stress (natural adrenaline release) or administration of epinephrine.)

**Repeated dose toxicity**

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

**Genotoxicity****Assessment in Vitro:**

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

**Assessment in Vivo:**

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 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.



**FORANE® 23****Data for FORANE® 23****Biodegradation:**

Not biodegradable. Water / calculated

**Octanol Water Partition Coefficient:**

log Pow: = 0.84, = 77 °F (25 °C) (Method: 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 CO<sub>2</sub> (time horizon 100 years))**Ozone Depletion Potential:**

ODP 0

**Ecotoxicology**

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

**Data for FORANE® 23****Aquatic toxicity data:**No effect up to the limit of solubility. Pimephales promelas (fathead minnow) 96 h LC<sub>50</sub> = 633.26 mg/l**Aquatic invertebrates:**No effect up to the limit of solubility. Daphnia magna (Water flea) 48 h EC<sub>50</sub> = 323.05 mg/l**Algae:**No effect up to the limit of solubility. Algae 96 h EC<sub>50</sub> = 154.54 mg/l**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

**FORANE® 23**

**Class** : 2.2  
**Marine pollutant** : no

**International Maritime Dangerous Goods Code (IMDG)**

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

**15. REGULATORY INFORMATION**

**Chemical Inventory Status**

US. Toxic Substances Control Act	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:**

Sudden Release of Pressure Hazard, Acute Health 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):**

**FORANE® 23**

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****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:	200005594
Date of Revision:	12/19/2019
Date Printed:	12/19/2019

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*Arkema has implemented a Medical Policy regarding the use of Arkema products in Medical Devices applications that are in contact with the body or circulating bodily fluids (<http://www.arkema.com/en/social-responsibility/responsible-product-management/medical-device-policy/index.html>) Arkema has designated Medical grades to be used for such Medical Device applications. Products that*

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*have not been designated as Medical grades are not authorized by Arkema for use in Medical Device applications that are in contact with the body or circulating bodily fluids. In addition, Arkema strictly prohibits the use of any Arkema products in Medical Device applications that are implanted in the body or in contact with bodily fluids or tissues for greater than 30 days. The Arkema trademarks and the Arkema name shall not be used in conjunction with customers' medical devices, including without limitation, permanent or temporary implantable devices, and customers shall not represent to anyone else, that Arkema allows, endorses or permits the use of Arkema products in such medical devices.*

*It is the sole responsibility of the manufacturer of the medical device to determine the suitability (including biocompatibility) of all raw materials, products and components, including any medical grade Arkema products, in order to ensure that the final end-use product is safe for its end use; performs or functions as intended; and complies with all applicable legal and regulatory requirements (FDA or other national drug agencies) It is the sole responsibility of the manufacturer of the medical device to conduct all necessary tests and inspections and to evaluate the medical device under actual end-use requirements and to adequately advise and warn purchasers, users, and/or learned intermediaries (such as physicians) of pertinent risks and fulfill any postmarket surveillance obligations. Any decision regarding the appropriateness of a particular Arkema material in a particular medical device should be based on the judgment of the manufacturer, seller, the competent authority, and the treating physician.*