



1 PRODUCT AND COMPANY IDENTIFICATION

DFO
2000 Market Street

Philadelphia, PA 19103

EMERGENCY PHONE NUMBERS:
Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 767-5089 (24Hrs)

Information Telephone Numbers	Phone Number	Available Hrs
Product Information	800-245-5858	8:00 am - 5:30 pm (Eastern)

Product Name	Forane (R) 123
Product Synonym(s)	R-123, HCFC-123
Chemical Family	Hydrochlorofluorocarbons
Chemical Formula	CHCl ₂ CF ₃
Chemical Name	2,2-dichloro-1,1,1-trifluoroethane
EPA Reg Num	
Product Use	Refrigerant, aerosol propellant

2 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS RegistryNumber	Typical Wt. %	OSHA
2,2-Dichloro-1,1,1-trifluoroethane	306-83-2	100%	Y

The substance(s) marked with a "Y" in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

This material is classified as hazardous under Federal OSHA regulation.

The components of this product are all on the TSCA Inventory list.

3 HAZARDS IDENTIFICATION

Emergency Overview

Clear, colorless liquid and vapor with faint ether odor

WARNING!

VAPOR REDUCES OXYGEN AVAILABLE FOR BREATHING.

HARMFUL IF INHALED AND MAY CAUSE HEART IRREGULARITIES, UNCONSCIOUSNESS OR DEATH. NON-FLAMMABLE VOLATILE LIQUID WHICH MAY CAUSE EYE IRRITATION OR DRYING OF THE SKIN. MAY DECOMPOSE ON CONTACT WITH FLAMES OR EXTREMELY HOT METAL SURFACES TO PRODUCE TOXIC AND CORROSIVE PRODUCTS.

Potential Health Effects

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on single exposure animal tests, it is considered to be practically non-toxic if swallowed or inhaled, no more than slightly toxic if absorbed through skin, slightly to moderately irritating to eyes and slightly irritating to non-irritating to skin. Prolonged or repeated contact removes oils from the skin and may dry skin causing irritation, redness and rash. High vapor concentrations are irritating to the eyes and respiratory tract and may result in central nervous system (CNS) effects such as headache, dizziness, drowsiness and, in severe exposure, loss of consciousness and death. The dense vapor of this material may reduce the available oxygen for breathing. Prolonged exposure to an oxygen-deficient atmosphere may be fatal. Inhalation may cause an increase in the sensitivity of the heart to adrenaline, which could result in irregular or rapid heartbeats. Medical conditions that may be aggravated by exposure to this material



include heart disease or compromised heart function.

4 FIRST AID MEASURES

IF IN EYES, immediately flush with plenty of water for at least 15 minutes. Get medical attention.

IF ON SKIN, flush the area with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if irritation develops and persists.

IF SWALLOWED, do NOT induce vomiting. Give water to drink. Get medical attention immediately. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. Do not give adrenaline, epinephrin or similar drugs following exposure to this product.

5 FIRE FIGHTING MEASURES

Fire and Explosive Properties

Auto-Ignition Temperature	NE	
Flash Point	none	Flash Point Method
Flammable Limits- Upper	NONE	
Lower	NONE	

Extinguishing Media

Use water spray, water fog, carbon dioxide, or dry chemical

Fire Fighting Instructions

Cool fire exposed containers well after the fire is out to prevent possible explosions. 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). 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. Some mixtures of HCFCs and/or HFCs, and air or oxygen may be combustible if pressurized and exposed to extreme heat or flame. Container may explode if heated due to resulting pressure rise.

6 ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

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. Exhaust vapors outdoors. Do not smoke or operate internal combustion engines. Remove flames and heating elements.

7 HANDLING AND STORAGE

Handling

Do not get in eyes, on skin or clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Keep away from heat, sparks and flame. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is destroyed. Do not reuse this container. Do not cut or weld on or near this container.

7 HANDLING AND STORAGE

Storage

Store out of direct sunlight in a cool, well-ventilated place. Store at temperatures below 120 F.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

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

Eye / Face Protection

Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment available.

Skin Protection

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear face shield and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse contaminated skin promptly. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.

Respiratory Protection

Avoid breathing fume. When airborne exposure limits are exceeded (see below), use NIOSH approved respirator with an N 95 particulate filter. Consult respirator manufacturer if exposure levels are greater than ten times the recommended exposure limits. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions 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.

Other Exposure Limits - Ingredients

The manufacturer has adopted an internal 8 hour time weighted average exposure limit of 10 ppm or 625 mg/m³ for 2,2-dichloro-1,1,1-trifluoroethane.

Airborne Exposure Guidelines for Ingredients

Exposure Limit	Value
2,2-Dichloro-1,1,1-trifluoroethane	
Arkema 8-hour TWA	10 ppm
WEEL TWA	50 ppm (310 mg/m ³)

- Only those components with exposure limits are printed in this section.
- Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.
- ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.
- WEEL-AIHA Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic skin reactions.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Odor	Clear, colorless liquid and vapor with faint ether odor
pH	NA
Specific Gravity	1.46 @ 25 C
Vapor Pressure	11.5 psia @ 21.1 C (70 F)
Vapor Density	(AIR = 1) 5.31
Melting Point	NA
Freezing Point	-160.6 F / -107 C
Boiling Point	82 F / 27.8 C
Solubility In Water	Slight
Percent Volatile	100
Molecular Weight	152.93

10 STABILITY AND REACTIVITY**Stability**

This material is chemically stable under specified conditions or storage, shipment and/or use. See HANDLING AND STORAGE section of this MSDS for specified conditions.

Incompatibility

Avoid contact with hydrochloric acid, alkali or alkaline earth metals, finely powdered metals (aluminum, magnesium, zinc) and strong oxidizers since they may react or accelerate decomposition.

Hazardous Decomposition Products

Thermal decomposition products include hydrogen fluoride, hydrogen chloride, carbon monoxide, carbon dioxide, chlorine and carbonyl halides (phosgene).

11 TOXICOLOGICAL INFORMATION**Toxicological Information**

Single exposure (acute) studies indicate:

Oral - Practically Non-toxic to Rats (LD50 9,000 mg/kg)

Dermal - No More than Slightly Toxic to Rabbits (LD50 >2,000 mg/kg)

Inhalation - Practically Non-toxic to Rats (4-hr LC50 32,000 ppm)

Eye Irritation - Slightly to Moderately Irritating to Rabbits

Skin Irritation - Non-irritating to Slightly Irritating to Rabbits (4-hr occluded exposure) No skin allergy was observed in guinea pigs following repeated exposure. Liver abnormalities were reported in a group of workers who had accidentally been exposed to excessive amounts of a blend of this material and another fluorocarbon. Following acute inhalation exposure, anesthetic effects such as weakness, loss of coordination and sound responsiveness and liver effects were observed in animals. Inhalation of high concentrations, followed by intravenous injection of epinephrine to simulate stress reactions, resulted in heart sensitization in dogs.

Following repeated inhalation exposure to high concentrations, anesthetic effects including lethargy, reduction in activity and responsiveness to sound and slight liver effects were observed in rats. This material increased the incidence of benign liver, pancreatic and testicular tumors in long-term inhalation studies in rats. No birth defects were observed in the offspring of rats and rabbits exposed by inhalation during pregnancy. No adverse effects on reproductive ability were observed in rats following exposure for 2-generations. No genetic changes were observed in tests using bacteria, animal cells, whole animals or human cells.

12 ECOLOGICAL INFORMATION

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Ecotoxicological Information

This material is slightly toxic to Daphnia magna (48-hr LC50 17.3-22.8 mg/l), algae (48-hr EC50 67.8-96.6 mg/l) and rainbow trout (96-hr LC50 65.4 mg/l).

Chemical Fate Information

This material is not readily biodegradable (24% after 28-days) and slightly bioaccumulable (log Pow 2.82). It rapidly evaporates in an aqueous environment (half-life 3.6-hrs) and is slightly adsorptive in soils and sediments (log Koc 2.6). In air, it has a half-life in the atmosphere of 1 year, an ozone depletion potential (ODP) of 0.02, a halocarbon global warming potential (HGWP) of 0.017-0.020, and a global warming potential with respect to CO2 of 90. It is moderately adsorbed in soils and sediments (log Koc 1.8).

13 DISPOSAL CONSIDERATIONS

Waste Disposal

Recover, reclaim or recycle when practical. Dispose of in accordance with federal, state and local regulations. 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

DOT Name Not regulated when shipped by ground.
 DOT Technical Name
 DOT Hazard Class
 UN Number
 DOT Packing Group PG
 RQ

15 REGULATORY INFORMATION

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370)

Immediate (Acute) Health	Y	Fire	N
Delayed (Chronic) Health	N	Reactive	N
		Sudden Release of Pressure	N

The components of this product are all on the TSCA Inventory list.

Ingredient Related Regulatory Information:

SARA Reportable Quantities	CERCLA RQ	SARA TPQ
2,2-Dichloro-1,1,1-trifluoroethane	NE	

SARA Title III, Section 313

This product does contain chemical(s) which are defined as toxic chemicals under and subject to the reporting requirements of, Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. See Section 2

2,2-Dichloro-1,1,1-trifluoroethane

16 OTHER INFORMATION



Revision Information

Revision Date 11 OCT 2004 Revision Number 13
Supersedes Revision Dated 10-MAY-2004

Revision Summary

A TOFINA Chemicals, Inc. has changed its name to Arkema Inc.

Key

NE= Not Established NA= Not Applicable (R) = Registered Trademark

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