

1 PRODUCT AND COMPANY IDENTIFICATION**Fluorochemicals Group**
2000 Market Street

Philadelphia, PA 19103

EMERGENCY PHONE NUMBERS:
Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(303) 623-5716 (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)	
Chemical Family	Hydrochlorofluorocarbons
Chemical Formula	CHCl ₂ CF ₃
Chemical Name	1,1-dichloro-2,2,2-trifluoroethane (HCFC - 123)
EPA Reg Num	
Product Use	Refrigerant, foam blowing agent, 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 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, this material is considered to be practically non-toxic if swallowed or inhaled, no more than slightly toxic if absorbed through skin, severely 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. Transient liver effects have been reported in workers overexposed to a

mixture of this material and another fluorocarbon. Medical conditions aggravated by exposure to this material include heart or liver disease or compromised heart or liver 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	NA	
Flash Point	none	Flash Point Method
Flammable Limits- Upper	NA	
Lower	NA	

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

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.

Storage

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

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.

Airborne Exposure Guidelines for Ingredients

Exposure Limit	Value
2,2-Dichloro-1,1,1-trifluoroethane	
WEEL TWA	-
	50 ppm 310 mg/m3

-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.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Odor	Clear, colorless liquid and vapor with faint ether odor
pH	NA
Specific Gravity	1.46 @25 C / 77 F
Vapor Pressure	13 psia @ 77 F / 25 C
Vapor Density	5.3
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 - Severely 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 skin application of a 50% solution of this material in propylene glycol. Acute inhalation of high concentrations of this material (generally exceeding 5000 ppm) produces anesthetic-like effects, such as weakness, loss of coordination and unresponsiveness to sound in experimental animals. As with many other halogenated hydrocarbons, inhalation of high concentrations of this material (20,000 ppm), followed by intravenous injection of epinephrine to simulate human stress reactions, resulted in heart sensitization. No adverse effects were reported in rats following inhalation exposure to 10,000 ppm for 2 weeks. With longer-term inhalation (4-13 weeks) of 5000 or 10,000 ppm, laboratory animals exhibited anesthetic-like effects, including lethargy, reductions in activity and responsiveness to sound, liver effects (10,000 ppm only), changes in heart, kidney and body weights, and increased urine fluoride levels. Based on a battery of functional tests and post-mortem examination of tissues, there was no evidence of any neurotoxic effect caused by inhalation exposure for 13-weeks at levels up to 5000 ppm. Life-time (2-year) inhalation at levels of 300-5000 ppm resulted in an increased incidence of benign tumors of the liver, pancreas and testes in rats; no malignant tumors due to this material were reported. No birth defects were noted in rats

11 TOXICOLOGICAL INFORMATION

and rabbits exposed to this material by inhalation during pregnancy, even at levels (5000 ppm in rabbits and 10,000 ppm in rats) which produced toxic effects in the mothers. Preliminary results from another study also show no birth defects in pregnant rabbits exposed to levels of 10,000 and 20,000 ppm during pregnancy. These concentrations produced toxic effects in the mothers and their offspring. Following inhalation exposure to this material at 30-1000 ppm for 2 successive generations, reduced weight gains were observed in the adult rats exposed at the 100 ppm level and in the offspring at the 30 ppm level. Decreased implantation counts at 1000 ppm and effects on the liver and on some clinical chemistry parameters were also reported. This material has produced no genetic changes in a variety of standard tests using animals, and animal, bacterial or yeast cells. A positive response was reported in one test using human white blood cells. Following inhalation exposure, this material is oxidatively metabolized with trifluoroacetic acid and fluorides occurring in the urine of rats.

12 ECOLOGICAL INFORMATION**Ecotoxicological Information**

48-hr LC50 *Daphnia magna* (static): 17.3 - 22.8 mg/l, Slightly Toxic
48-hr EC50 *Selenastrum capricornutum* (biomass reduction): 67.8 mg/l, Slightly Toxic
48-hr EC50 *Selenastrum capricornutum* (growth rate reduction): 96.6 mg/l, Slightly Toxic
96-hr LC50 Rainbow trout (static): 65.4 mg/l, Slightly Toxic

Chemical Fate Information

The 28-day biological oxygen demand (BOD) in a closed bottle test was 24%. This material has a chemical oxygen demand (COD) of 4%.

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	Refrigerants or Dispersants NOI, Liquid or Gas
DOT Technical Name	
DOT Hazard Class	
UN Number	
DOT Packing Group	PG
RQ	
DOT Special Information	Not regulated when shipped by ground.

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**

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

CERCLA RQ

NE

SARA TPQ

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	13 JUL 2000	Revision Number	4
Supersedes Revision Dated	16-JUN-2000		

Revision Summary

revised molecular weight value

Key

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

ATOFINA Chemicals, Inc. believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use are beyond the control of ATOFINA Chemicals, ATOFINA Chemicals expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.