

1 PRODUCT AND COMPANY IDENTIFICATION**Fluorochemicals Group**

2000 Market Street

Philadelphia, PA 19103

Information Telephone Numbers

Product Information

EMERGENCY PHONE NUMBERS:

Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887

Medical: Rocky Mountain Poison Control Center

(303) 623-5716 (24Hrs)

Phone Number

800-245-5858

Available Hrs8:00 am - 5:30 pm
(Eastern)

Product Name Forane (R) 114

Product Synonym(s)

Chemical Family Chlorofluorocarbon

Chemical Formula CCIF₂CCIF₂

Chemical Name Dichlorotetrafluoroethane (R-114)

EPA Reg Num

Product Use Medical Inhaler Propellant

2 COMPOSITION / INFORMATION ON INGREDIENTS

<u>Ingredient Name</u>	<u>CAS RegistryNumber</u>	<u>Typical Wt. %</u>	<u>OSHA</u>
Ethane, 1,2-dichloro-1,1,2,2-tetrafluoro-	76-14-2	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**

Colorless liquified gas with faint ether odor.

WARNING!

LIQUID AND GAS UNDER PRESSURE, OVERHEATING AND 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. VAPOR REDUCES OXYGEN AVAILABLE FOR BREATHING AND IS HEAVIER THAN AIR. HARMFUL IF INHALED AND MAY CAUSE HEART IRREGULARITIES, UNCONSCIOUSNESS OR DEATH. LIQUID CONTACT WITH EYES OR SKIN MAY CAUSE FROSTBITE.

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 no more than slightly toxic if swallowed, practically non-toxic if inhaled, slightly irritating to eyes and non-irritating to skin. As with most liquified gases, contact with the rapidly volatilizing liquid or cold vapor can cause frostbite to any tissue. High vapor concentrations are irritating to the eyes and respiratory tract and may result in central nervous system (CNS) effects such as headache, dizziness, anesthesia, drowsiness and, in severe exposure, loss of consciousness and death. The dense vapor of this material may reduce the available oxygen for breathing and produce symptoms such as headache, dizziness, drowsiness,

cyanosis and lack of muscle control followed by collapse. Prolonged exposure to an oxygen-deficient atmosphere may be fatal. Inhalation of this material may cause an increase in the sensitivity of the heart to adrenaline, which could result in irregular or rapid heartbeats and reduced heart function. Workers with heart disease or compromised heart function should limit exposure to this material.

4 FIRST AID MEASURES

IF IN EYES, immediately flush with plenty of water. Get medical attention if irritation persists.

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.

IF SWALLOWED, Not applicable - product is a gas at ambient temperatures.

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	NA - GAS	Flash Point Method
Flammable Limits- Upper	NA	
Lower	NA	

Extinguishing Media

Use extinguishing media appropriate to surrounding fire conditions.

Fire Fighting Instructions

Stop the flow of gas if possible. Use water spray on person making shut-off. 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. 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.

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

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Handling

Avoid breathing gas. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Do not enter confined spaces unless adequately ventilated.

Storage

Do not apply direct flame to cylinder. Do not store cylinder in direct sun or expose it to heat above 120 F. Do not drop or refill this cylinder. Keep away from heat, sparks and flames.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION
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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. Rinse contaminated skin promptly. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.

Respiratory Protection

Avoid breathing gas. When airborne exposure limits are exceeded (see below), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components (full facepiece recommended). 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 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
Ethane, 1,2-dichloro-1,1,2,2-tetrafluoro-	
ACGIH TWA	- 6990 mg/m3 1000 ppm
OSHA TWA PEL	- 7000 mg/m3 1000 ppm

-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	Colorless liquified gas with faint ether odor.
pH	NE
Specific Gravity	1.44 @ 30/0 C
Vapor Pressure	27.26 PSIA @ 21 C/70 F
Vapor Density	5.9
Melting Point	NE
Freezing Point	-94 C (-137 F)
Boiling Point	3.8 C (38.8 F)
Solubility In Water	Slight
Percent Volatile	100
Molecular Weight	86.48

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 strong alkali or alkaline earth metals, finely powdered metals such as aluminum, magnesium or 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 and chlorine.

11 TOXICOLOGICAL INFORMATION**Toxicological Information**

Ethane, 1,2-dichloro-1,1,2,2-tetrafluoro-

Human volunteers using commonly available household aerosol products containing various fluorocarbon propellants including this material for 4-weeks, at an average exposure of 21,640 mg/day of the fluorocarbon propellants, showed no effects on health or detectable blood fluorocarbon levels.

No toxic effects were reported in male rats given this material orally at 1300 mg/kg for 10 days or 2000 mg/kg for 23-33 days. Repeated spraying of a 40% solution of this material in sesame oil daily for 12 applications had no effect on skin of rabbits. This material sprayed directly on the skin, tongue, soft palate and in the ear canal of rats for 5-10 seconds, 1-2 times per day, for 5-6 weeks showed only evidence of skin irritation. A number of acute studies with dogs, rats, mice and monkeys have shown that inhalation exposure to this material caused anesthesia, heart arrhythmia, reduced heart function, effects on blood pressure, bronchoconstriction, and other effects on the heart and respiratory systems in most animal species. As with many other chlorofluorocarbons, inhalation of this material (250,000 ppm) followed by intravenous injection of an agent to simulate human stress reactions, resulted in heart sensitization in dogs. Studies with mixtures of this material and other chlorofluorocarbons may produce heart effects that are greater than caused by the individual compounds. No toxic effects were reported in rats, cats, dogs and guinea pigs following inhalation of 100,000 ppm for 20 exposures, while 200,000 ppm for 2-weeks increased white blood cell counts and produced respiratory tract effects in rats and mice. Dogs exposed by inhalation to 141,000 ppm for up to 21-

11 TOXICOLOGICAL INFORMATION

days exhibited incoordination, tremors and occasionally convulsions at the start of the study, but they exhibited no symptoms after 3-5 exposures. No toxic effects occurred with longer-term inhalation by dogs (3-months at 5000 ppm), rats (3- or 8-months at 10,000 ppm) and rabbits (9-months at 10,000 ppm). No birth defects were noted in rats and rabbits exposed by inhalation during pregnancy to an aerosol drug formulation which used a mixture of this material and dichlorodifluoromethane as the propellant. This material produced no genetic changes in standard tests using bacterial cells.

Single exposure (acute) studies indicate

Oral - No More Than Slightly Toxic to Rats (LD50 > 2,250 mg/kg)

Inhalation - Practically Non-Toxic to Rats (4-hr LC50 600,000 ppm)

Eye Irritation - Slightly Irritating to Rabbits (tested as a mineral oil solution)

Skin Irritation - Non-irritating to Guinea Pigs (sprayed directly on the skin)

12 ECOLOGICAL INFORMATION**Ecotoxicological Information**

Ethane, 1,2-dichloro-1,1,2,2-tetrafluoro-
48-hr LC50 Atlantic oyster embryos: >100 mg/l, Practically Non-toxic
192-hr LC50 Grass Shrimp: 10% of saturation at 18oC
96-hr LC50 Killifish: 34.9% of saturation at 18oC

Chemical Fate Information

No data are available.

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	1,2 - Dichloro - 1,1,2,2 - tetrafluoroethane
DOT Technical Name	
DOT Hazard Class	2.2
UN Number	UN 1958
DOT Packing Group	PG NA
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	Y

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

Ingredient Related Regulatory Information:**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

Ethane, 1,2-dichloro-1,1,2,2-tetrafluoro-

Massachusetts Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Massachusetts Right to Know Substance List.

Ethane, 1,2-dichloro-1,1,2,2-tetrafluoro-

New Jersey Right to Know

This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.

Ethane, 1,2-dichloro-1,1,2,2-tetrafluoro-

Pennsylvania Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Hazardous Substance List.

Ethane, 1,2-dichloro-1,1,2,2-tetrafluoro-

16 OTHER INFORMATION**Revision Information**

Revision Date	17 JUN 2000	Revision Number	2
Supersedes Revision Dated	17-JUL-1999		

Revision Summary

The manufacturer has changed its name from Elf Atochem North America, Inc. to ATOFINA Chemicals, Inc.

Key

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

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