

**1 PRODUCT AND COMPANY IDENTIFICATION**

Fluorochemicals
2000 Market Street

Philadelphia, PA 19103

Information Telephone Numbers

Product Information

Product Name Forane (R) 11

Product Synonym(s)

Chemical Family Chlorofluorocarbons

Chemical Formula CCl₃F

Chemical Name Trichlorofluoromethane (CFC - 11)

EPA Reg Num

Product Use Refrigerant, foam blowing agent, aerosol propellant

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 Hrs

8:00 am - 5:30 pm (Eastern)

2 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS RegistryNumber	Typical Wt. %	OSHA
Methane, trichlorofluoro-	75-69-4	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!

HARMFUL IF INHALED AND MAY CAUSE HEART IRREGULARITIES, UNCONSCIOUSNESS OR DEATH. LIQUID CONTACT WITH EYES OR SKIN MAY CAUSE FROSTBITE. 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 no more than slightly toxic if swallowed, practically non-toxic if inhaled and slightly to non-irritating to eyes. 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. Overexposure can cause lung damage. Medical conditions aggravated by exposure to this material include heart or lung disease or compromised respiratory or 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	NA		
Flash Point	none	Flash Point Method	TCC
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 HCFs, 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 vapor or mist. Use NIOSH approved respiratory protection equipment appropriate to the material and/or its components when airborne exposure limits are exceeded (see below). Consult respirator manufacturer to determine appropriate type equipment for 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
Methane, trichlorofluoro-		
ACGIH STEL	-	1000 ppm 5620 mg/m3
OSHA TWA PEL	-	1000 ppm 5600 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.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Odor	Clear, colorless liquid and vapor with faint ether odor
pH	NA
Specific Gravity	1.46 @ 30 F / 0 C
Vapor Pressure	13.3 psia @ 70 F / 21 C
Vapor Density	4.74
Melting Point	NA
Freezing Point	-168 F / -111 C
Boiling Point	74.8 F / 23.8 C
Solubility In Water	Slight
Percent Volatile	100
Molecular Weight	137.38

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

Human volunteers exposed to this material at concentrations between 2800 and 27,000 ppm for 15-60 seconds exhibited an acute reduction of ventilatory lung capacity, bradycardia, increased variability in heart rate, and effects on their electrocardiograms. Individuals exposed to concentrations up to 1000 ppm for 8 hours exhibited no effects on blood, lung and nervous system function or cognitive tests. There was an apparent effect on the cognitive test of individuals exposed to this material at 1000 ppm for 8 hours/day, for 2-4 weeks. Intentional inhalation of high concentrations of aerosol propellant mixtures of this material with other chlorofluorocarbons has caused rapid death which was attributed to heart arrhythmias. Chronic abuse of aerosol propellant mixtures containing this material was reported to damage lung surfactant function.

A number of studies with dogs, rats, mice and monkeys have shown that depending on conditions, acute inhalation exposure to high concentrations of this material caused effects on the heart and respiratory systems in most animal species. This material is considered one of the more potent heart sensitizers of the chlorofluorocarbons, triggering heart arrhythmias in animals at 5000-10,000 ppm. Subacute and chronic inhalation studies have shown few adverse effects. Following inhalation exposure for 4 weeks to this material at 25,000 ppm, no effects were reported in rats and guinea pigs. Inhalation exposure for 8 hours/day, for 6 weeks or continuous exposure for 13-weeks to this material at 10,250 and 10,000 ppm, respectively, was also without adverse effect in rats, guinea pigs, monkeys or dogs. Inhalation of higher concentrations (above 12,000 ppm)

11 TOXICOLOGICAL INFORMATION

for 6 hours/day for 13-weeks was reported to result in changes in brain, liver, lung and spleen of rats. Long-term inhalation of 1000 or 5000 ppm by rats (104-weeks) and mice (78-weeks) showed no treatment-related increase in tumors. Long-term (78-weeks) oral administration to mice at 1962 and 3925 mg/kg/day or rats at 500 and 1000 mg/kg/day also produced no tumors. Due to a high rate of early deaths in the rats, the oral test was not considered conclusive for prediction of carcinogenicity in rats. No birth defects were noted in rats or rabbits exposed to a mixture of 10% of this material and 90% dichlorodifluoromethane by inhalation during pregnancy at a concentration of 200,000 ppm. This material produced no genetic changes in standard tests using animal or bacterial cells. It rapidly diffuses into the blood and cerebrospinal fluid and is eliminated almost completely, unaltered, from the lungs by exhaled air. Single exposure (acute) studies indicate:

- Oral - No More Than Slightly Toxic to Rats (LD50 > 3,725 mg/kg)
- Inhalation - Practically Non-toxic to Rats (4-hr LC50 26,200 ppm)
- Eye Irritation - Non-irritating to Rabbits (Liquid - nine applications of 0.1 ml)
- Eye Irritation - Slightly Irritating to Rabbits (Aerosol spray)

12 ECOLOGICAL INFORMATION

Ecotoxicological Information

No data are available.

Chemical Fate Information

This material was degradable in anaerobic degradation systems.

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	5000#
DOT Special Information	Not regulated when shipped by ground in quantities less than 5000 pounds.

15 REGULATORY INFORMATION

Forane (R) 11
-Material Safety Data Sheet-
Elf Atochem North America, Inc.

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

Methane, trichlorofluoro-

5000 LBS

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 Ammendments and Reauthorization Act of 986 and 40 CFR Part 372. See Section 2

Methane, trichlorofluoro-

Massachusetts Right to Know

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

Methane, trichlorofluoro-

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.

Methane, trichlorofluoro-

Pennsylvania Environmental Hazard

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

Methane, trichlorofluoro-

Pennsylvania Right to Know

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

Methane, trichlorofluoro-

16 OTHER INFORMATION

Revision Information

Revision Date	27 JUL 1999	Revision Number	2
Supersedes Revision Dated	17-JUL-1999		

Revision Summary

initial entry into 16 section format

Key

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

Forane (R) 11

-Material Safety Data Sheet-

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