



## 1 PRODUCT AND COMPANY IDENTIFICATION

**DFO**  
2000 Market Street

Philadelphia, PA 19103

Information Telephone Numbers

Product Information

Product Name Forane (R) 11  
Product Synonym(s) R-11, CFC-11, ISOTRON 11

Chemical Family chlorofluorocarbon  
Chemical Formula CCl<sub>3</sub>F  
Chemical Name trichlorofluoromethane  
EPA Reg Num  
Product Use Refrigerant, aerosol propellant

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

##### Storage

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



**7 HANDLING AND STORAGE**

**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. When airborne exposure limits are exceeded (see below), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. 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

**trichlorofluoromethane**

ACGIH CEILING	-	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.

-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	1.48 @ 25 C
Vapor Pressure	13.3 psia @ 21.1 C (70 F)
Vapor Density	(AIR = 1) 4.77
Melting Point	NE
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 could include Halogen acids (HCl and HF), Halogens, Carbon monoxide, Carbon dioxide, and Carbonyl halides.

**11 TOXICOLOGICAL INFORMATION****Toxicological Information**

Inhalation of high concentrations has been reported to cause acute reduction in lung capacity, bradycardia, increased variability in heart rate, effects on electrocardiograms, heart arrhythmias leading to rapid death and damage to the lining of the lungs; however, at lower levels, no effects on blood, lung or nervous system function or cognitive tests were observed. Acute inhalation produced heart reactions and bronchoconstriction in rats, mice, dogs and monkeys. This material is a potent heart sensitizer, triggering heart arrhythmias in animals at low dose levels (5,000-10,000 ppm). Repeated inhalation produced brain, liver, lung and spleen changes in rats, but only at high doses while no adverse effects were observed in guinea pigs, cats, dogs or monkeys. This material did not increase the incidence of tumors in long-term inhalation or oral studies in rats or mice. No genetic changes were observed in tests using bacteria or animal cells. 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 (liquid) to Slightly Irritating (aerosol spray) to Rabbits

**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 NOT REGULATED  
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**

**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:**

<b>SARA Reportable Quantities</b>	<b>CERCLA RQ</b>	<b>SARA TPQ</b>
trichlorofluoromethane	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 Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. See Section 2

trichlorofluoromethane

**Massachusetts Right to Know**

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

trichlorofluoromethane

**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.

trichlorofluoromethane

**Pennsylvania Environmental Hazard**

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

trichlorofluoromethane

**Pennsylvania Right to Know**

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

trichlorofluoromethane

**16 OTHER INFORMATION**



**Revision Information**

Revision Date                      11 OCT 2004                      Revision Number 9  
Supercedes Revision Dated    18-FEB-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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