

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

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Material Safety Data Sheet

REFRIGERANT-11
2090FR Revised 19-OCT-1996

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

Corporate MSDS Number : DU000026
CAS Number : 75-69-4
Formula : CCl₃F
Molecular Weight : 137.36

Tradenames and Synonyms

F-11
CCl₃F

Company Identification

MANUFACTURER/DISTRIBUTOR

ALTAIR PARTNERS, LP
343 Millburn Avenue
Suite 201
Millburn, NJ 07041 USA

PHONE NUMBERS

Telephone: 973-564-6400
Fax: 973-564-6401

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
*METHANE, TRICHLOROFLUORO- (R-11)	75-69-4	100

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Potential Health Effects

Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air. Causes skin and eye irritation.

HUMAN HEALTH EFFECTS:

Human health effects of overexposure by eye contact may include eye irritation with discomfort, tearing, or blurring of vision. Skin contact with the liquid may cause drying of the skin with repeated contact resulting in mild skin irritation with discomfort or rash. Overexposure by inhalation may cause temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness; temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation, or the effects of exclusion of oxygen with grossly excessive exposures. Ingestion may include nonspecific discomfort, such as nausea, headache, or weakness.

Individuals with preexisting diseases of the central nervous or cardiovascular system may have increased susceptibility to the toxicity of excessive exposures.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

If high concentrations are inhaled, immediately remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

In case of skin contact, flush skin with plenty of water for 15 minutes. Get medical attention if irritation is present.

EYE CONTACT

In case of eye contact, immediately flush eyes with

(FIRST AID MEASURES - Continued)

plenty of water for 15 minutes. Call a physician.

INGESTION

If swallowed, no specific intervention is indicated as the compound is not likely to be hazardous by ingestion. However, consult a physician if necessary.

Notes to Physicians

Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution in situations of emergency life support.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point	: Will not burn
Method	: TOC
Flammable limits in Air, % by Volume	
LEL	: Not applicable
UEL	: Not applicable
Autoignition	: Not determined
Autodecomposition	: >593 C (>1099 F)

Fire and Explosion Hazards:

Drums may rupture under fire conditions. Decomposition may occur.

Extinguishing Media

As appropriate for combustibles in area.

Fire Fighting Instructions

Self-contained breathing apparatus (SCBA) is required if containers rupture and contents are spilled under fire conditions. Water runoff should be contained and neutralized prior to release.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

(ACCIDENTAL RELEASE MEASURES - Continued)

Accidental Release Measures

Ventilate area. Do not flush into sewers. Dike spill. Collect on absorbent material and transfer to steel drums for recovery or disposal. Use self-contained breathing apparatus (SCBA) for large spills. Comply with Federal, State and local regulations on reporting releases.

HANDLING AND STORAGE

Handling (Personnel)

Use with sufficient ventilation to keep employee exposure below recommended limits.

Storage

Clean, dry area. Do not store above 125 deg F (52 deg C).

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Normal ventilation for standard manufacturing procedures is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places.

Personal Protective Equipment

Impervious gloves should be used to avoid prolonged or repeated exposure. Chemical splash goggles should be available for use as needed to prevent eye contact. Under normal manufacturing conditions, no respiratory protection is required when using this product. Self-contained breathing apparatus (SCBA) is required if a spill occurs.

Exposure Guidelines

Exposure Limits

"R-11"

PEL (OSHA)	: 1,000 ppm, 5,600 mg/m ³ , 8 Hr. TWA
TLV (ACGIH)	: Ceiling 1,000 ppm, 5,620 mg/m ³ , A4
AEL * (DuPont)	: None Established

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point : 23.9 C (75 F)
Vapor Pressure : 14.7 psia at 25 deg C (77 deg F)
Vapor Density : 4.9 (Air = 1)
% Volatiles : 100 WT%
Evaporation Rate : (CCl4 = 1)
 Greater than 1
Solubility in Water : 0.1 WT% @ 25 C (77 F)
pH : Neutral
Odor : Slight ethereal
Form : Liquid
Color : Colorless
Density : 1.48 g/cc at 25 deg C (77 deg F)

Appearance : Clear

STABILITY AND REACTIVITY

Chemical Stability

Stable.

However, avoid open flames and high temperatures.

Incompatibility with Other Materials

Incompatible with alkali or alkaline earth metals- powdered
Al, Zn, Be, etc.

Decomposition

Decomposition products are hazardous. R-11 can be
decomposed by high temperatures (open flames, glowing metal
surfaces, etc.) forming hydrochloric and hydrofluoric acids,
and possibly carbonyl halides. These materials are toxic
and irritating. Contact should be avoided.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Inhalation 4-hour LC50: 26,200 ppm in rats
Oral ALD : 3725 mg/kg in rats

The compound is not a skin irritant but is a mild eye
irritant. Toxic effects in rats exposed by inhalation

(TOXICOLOGICAL INFORMATION - Continued)

include central nervous system and anesthetic effects at high concentrations. Concentrations of 0.35% and higher caused cardiac sensitization in dogs. Various cardiovascular and circulatory abnormalities have also been reported in other animals. Changes in the lungs, liver, brain and spleen were observed in a study of rats exposed by inhalation to 12 times the TLV. In another study at 25 times the TLV, rats, guinea pigs, and cats exhibited no microscopic evidence of damage to the heart, lungs, kidney, liver or spleen. Exposures by ingestion or skin resulted in no evidence of toxicity in rats, dogs or rabbits.

ECOLOGICAL INFORMATION

Ecotoxicological Information

Aquatic Toxicity

R-11: 96-hour LC50, rainbow trout: 190 mg/L

DISPOSAL CONSIDERATIONS

Waste Disposal

Reclaim by distillation or remove to a permitted waste disposal facility. Comply with Federal, State, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT

DOT/IMO

Proper Shipping Name : RQ ENVIRONMENTALLY HAZARDOUS SUBSTANCE
LIQUID, N.O.S.
(TRICHLOROFLUOROMETHANE)

Hazard Class : 9
UN No. : 3082
DOT/IMO Label : CLASS 9
Packing Group : III

Shipping Containers

Tank Cars.
Tank Trucks.
Drums.

Reportable Quantity : 5000 lb

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(TRANSPORTATION INFORMATION - Continued)

NOT REGULATED AS A HAZARDOUS MATERIAL BY DOT, IMO OR ICAO IN
CONTAINERS LESS THAN 5000 LBS.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : Reported/Included.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes
Chronic : No
Fire : No
Reactivity : No
Pressure : No

HAZARDOUS CHEMICAL LISTS

SARA Extremely
Hazardous Substance - No
CERCLA Hazardous Substance - Yes
SARA Toxic Chemical - See Components Section

Superfund reportable discharge = 5000 lb.

OTHER INFORMATION

NFPA, NPCA-HMIS

NPCA-HMIS Rating
Health : 1
Flammability : 0
Reactivity : 1

Personal Protection rating to be supplied by user depending on use
conditions.

Additional Information

"FREON" 11 contains very low levels of carbon tetrachloride
and chloroform, chemicals known to the State of California
to cause cancer.

The data in this Material Safety Data Sheet relates only to the
specific material designated herein and does not relate to use in
combination with any other material or in any process.

Responsibility for MSDS : MSDS Coordinator
> : Weltron, Inc.

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS