
DuPont(TM) ISCEON(R) MO99
6325FR Revised 3-APR-2009

Substance ID : 130000031356

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

Molecular Weight : 99.1

Tradenames and Synonyms

ISCEON(R)
ISCEON MO99
MO99
Isceon MO99
Isceon

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Fluoroproducts
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS
Product Information : 1-800-441-7515 (outside the U.S. 302-774-1000)
Transport Emergency : CHEMTREC 1-800-424-9300(outside U.S. 703-527-3887)
Medical Emergency : 1-800-441-3637 (outside the U.S. 302-774-1000)

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
Difluoromethane (R-32)	75-10-5	8.5
Pentafluoroethane (R-125)	354-33-6	45
1,1,1,2-Tetrafluoroethane (R-134a)	811-97-2	44.2
n-Butane	106-97-8	1.7
Isopentane	78-78-4	0.6

HAZARDS IDENTIFICATION

Potential Health Effects

Gross overexposure by inhalation may cause central nervous system depression with dizziness, confusion, incoordination,

drowsiness or unconsciousness; irregular heart beat with a strange sensation in the chest, "heart thumping", apprehension, lightheadedness, feeling of fainting,

dizziness, weakness, sometimes progressing to loss of consciousness and death; and suffocation, if air is displaced by vapors.

Skin contact with liquid or escaping vapor may cause frostbite. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

"Frostbite-like" effects may occur if liquid or escaping vapors contact the eyes.

Increased susceptibility to the effects of overexposure to this product may be observed in persons with pre-existing disease of the central nervous system or cardiovascular system.

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 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

Flush area with lukewarm water. Do not use hot water. If frostbite has occurred, call a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

Ingestion is not considered a potential route of exposure.

Notes to Physicians

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

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : No Flash point

Flammable Limits in Air, % by Volume:
LEL : None per ASTM E681-04
UEL : None per ASTM E681-04
Autoignition : Not determined

Fire and Explosion Hazards:

Cylinders may rupture under fire conditions. Decomposition may occur.

Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and color of torch flames. This flame effect will only occur in concentrations of product well above the recommended exposure limit, therefore stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames.

This product is not flammable in air at temperatures up to 100 deg. C (212 deg. F) at atmospheric pressure. However, mixtures of this product with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. This product can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing this product and air, or this product in an oxygen enriched atmosphere becomes combustible depends on the inter-relationship of 1) the temperature 2) the pressure, and 3) the proportion of oxygen in the mixture. In general, this product should not be allowed to exist with air above atmospheric pressure or at high temperatures, or in an oxygen-enriched environment. For example: This product should NOT be mixed with air under pressure for leak testing or other purposes.

Experimental data have also been reported which indicate combustibility of HFC-134a, a component in this blend, in the presence of chlorine.

Extinguishing Media

Use media appropriate for surrounding material.

Fire Fighting Instructions

Cool cylinders with water spray or fog. Self-contained breathing apparatus (SCBA) is required if cylinders rupture and contents are released 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.

Initial Containment

Prevent material from entering sewers, waterways, or low areas.

Spill Clean Up

Recover free liquid for reuse or reclamation.

Accidental Release Measures

Ventilate area using forced ventilation, especially in low or enclosed places where heavy vapors might collect. Remove open flames. Use self-contained breathing apparatus (SCBA) for large spills or releases.

HANDLING AND STORAGE

Handling (Personnel)

Avoid breathing vapor. Avoid liquid contact with eyes and skin. Use with sufficient ventilation to keep employee exposure below recommended limits. Contact with chlorine or other strong oxidizing agents should also be avoided. See Fire and Explosion Data section.

Handling (Physical Aspects)

Keep container tightly closed.

Storage

Store in a cool, dry place.

Store below 52 C (125 F).

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Avoid breathing vapors. Avoid contact with skin or eyes. Use with sufficient ventilation to keep employee exposure below the recommended exposure limit. Local exhaust should be used if large amounts are released. Mechanical ventilation should be used in low or enclosed places.

Refrigerant concentration monitors may be necessary to determine vapor concentrations in work areas prior to use of torches or other open flames, or if employees are entering enclosed areas.

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 large release occurs.

Exposure Guidelines

Applicable Exposure Limits

Difluoromethane (R-32)

AEL *	(DuPont)	: 1000 ppm, 8 & 12 Hr. TWA
WEEL	(AIHA)	: 1000 ppm, 8 Hr. TWA

Pentafluoroethane (R-125)

PEL	(OSHA)	: None Established
TLV	(ACGIH)	: None Established
AEL *	(DuPont)	: 1000 ppm, 8 & 12 Hr. TWA
WEEL	(AIHA)	: 1000 ppm, 4900 mg/m3, 8 Hr. TWA

1,1,1,2-Tetrafluoroethane (R-134a)

PEL	(OSHA)	: None Established
TLV	(ACGIH)	: None Established
AEL *	(DuPont)	: 1000 ppm, 8 & 12 Hr. TWA
WEEL	(AIHA)	: 1000 ppm, 8 Hr. TWA

n-Butane

PEL	(OSHA)	: None Established
AEL *	(DuPont)	: None Established

Isopentane

PEL	(OSHA)	: None Established
TLV	(ACGIH)	: 600 ppm, 8 Hr. TWA

* 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.

Exposure Guideline Comments

*n-Butane:

TLV (ACGIH) : 1,000 ppm, 8 Hr. TWA

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point:	-45.4 F (-43 C) @ atmospheric pressure
Vapor Pressure:	161.3 psia @ 77 F (25 C)
Vapor Density:	3.5 (Air = 1) @ 77 F (25 C)
% Volatile:	100%
Solubility in Water:	<0.5 wt% @ 77 F (25 C)
pH:	Neutral
Odor:	Slight Ether-like
Form:	Liquified Gas
Color:	Colorless
Specific Gravity:	1.14 @ 77 F (25 C)
Density:	Liquid = 71.13 lb/cu ft @ 77 F (25 C)

STABILITY AND REACTIVITY

Chemical Stability

Stable.

Incompatibility with Other Materials

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

Decomposition

Decomposes with heat.

Potential decomposition products are hydrofluoric acid and possibly carbonyl fluoride. These materials are toxic and irritating. Contact should be avoided.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

The blend has not been tested for toxicity.

R-125:

4-hr LC50: rat, > 709,000 ppm, anesthetic effects

Cardiac sensitization: epinephrine challenged dog, NOAEL = 50,000 ppm, LOAEL = 100,000 ppm

Genetic: Not mutagenic or damaging to DNA when

tested in cell cultures and laboratory animals.

Repeated inhalation exposure: rat, 90 days, NOAEL = 50,000 ppm

Pre-natal development: rat and rabbit, maternal NOAEL = 15,000 ppm, fetal NOAEL = 50,000 ppm, not uniquely toxic to the fetus.

R-32:

4-hr LC50: rat, >760,000 ppm, anesthetic effects

Cardiac sensitization: epinephrine challenged dog, threshold = 250,000 ppm

Genetic: Not mutagenic or damaging to DNA when tested in cell cultures and laboratory animals.

Repeated inhalation exposure: rat, 90 days, NOAEL = 50,000 ppm

Pre-natal development: rat, maternal LOAEL = 50,000 ppm, fetal LOAEL = 50,000 ppm; rabbit, maternal and fetal NOAEL = 50,000 ppm, not uniquely toxic to the fetus

R-134a:

4-hr LC50: rat, 359,300 ppm, anesthetic effects

Cardiac sensitization: epinephrine challenged dog, NOAEL = 50,000 ppm, LOAEL = 75,000 ppm

Genetic: Not mutagenic or damaging to DNA when tested in cell cultures and laboratory animals.

Repeated inhalation exposure: rat, 90 days, NOAEL = 50,000 ppm; human, 1hr/wk for 8 wks did not result in any adverse effects on pulse, blood pressure, electrocardiogram or lung function, NOAEL = 8000 ppm (highest concentration tested)

Chronic/Carcinogenicity: rat, 2 years, NOAEL = 10,000 ppm, LOAEL = 50,000 ppm, Leydig cell hyperplasia and a significant increase in the incidence of benign

Leydig cell tumors in male rats exposed to 50,000 ppm.

Pre-natal development: rat, maternal and fetal NOAEL = 10,000 ppm, LOAEL = 50,000 ppm; rabbit, maternal NOAEL = 2,500 ppm, fetal NOAEL = 50,000 ppm, not uniquely toxic to the fetus

Reproductive: rat, mutli-generation. NOAEL = 50,000 ppm.

n-Butane:

Inhalation 4 hour LC50: 658 mg/L in rats

A single exposure to large amounts of butane produced central nervous system depression, anesthesia, and depression of the heart with lowered blood pressure. Repeated exposure produced lowered respiratory rate and narcosis.

n-Butane does not produce genetic damage in bacterial cell cultures but has not been tested in animals.

ECOLOGICAL INFORMATION

Ecotoxicological Information

Aquatic Toxicity:

1,1,1,2-Tetrafluoroethane:

48 hour LC50 - daphnia magna: 980 mg/L
96 hour LC50 - rainbow trout: 450 mg/L

n-Butane:

96 hour LC50 - >1,000 mg/L

DISPOSAL CONSIDERATIONS

Waste Disposal

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO
Proper Shipping Name : Refrigerant Gas, N.O.S.

(1,1,1,2-tetrafluoroethane and Pentafluoroethane)

Hazard Class	: 2.2
UN No.	: 1078
Reportable quantity	: No
Marine Pollutant	: No
DOT/IMO Label	: Nonflammable Gas

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : Listed.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

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

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.

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.

Responsible for MSDS	: MSDS Coordinator
>	: DuPont Chemical Solutions Enterprise
Address	: Wilmington, DE 19898
Telephone	: (800) 441-7515

# Indicates updated section.

End of MSDS