



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

DuPont
Material Safety Data Sheet

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Fluorocarbon Refrigerant Additive TD2 for R-407C
6224FR Revised 27-JAN-2011

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Tradenames and Synonyms

Fluorocarbon Refrigerant Blend
Fluorocarbon Blend TD2

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	%
Fluorocarbon A		0-49
Fluorocarbon B		0-49
Fluorocarbon C		0-49

HAZARDS IDENTIFICATION

Potential Health Effects

Gross overexposure by inhalation may cause suffocation if air is displaced by vapors and central nervous system stimulation with increased activity or sleeplessness, tremors or convulsions. These effects may be followed by central nervous system depression with dizziness, confusion, incoordination, drowsiness or unconsciousness.

Inhalation of high concentrations of this product such as those that may be achieved under conditions of abuse or inappropriate use, may cause adverse central nervous system and cardiac effects. The effects may include dizziness, lightheadedness, confusion, weakness and unconsciousness, and in extreme cases the heart may become sensitized to

(HAZARDS IDENTIFICATION - Continued)

epinephrine and may result in death without warning.

Skin contact may cause frostbite if liquid or escaping vapor contacts the skin.

Eye contact may cause "frostbite-like" effects if the liquid or escaping vapors contact the eyes. Eye contact may cause eye irritation with tearing, pain or blurred vision.

Individuals with preexisting diseases of the cardiovascular system or nervous system may have increased susceptibility from 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 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. Treat for frostbite if necessary by gently warming affected area.

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 an expected route of exposure but if ingested, immediately give 2 glasses of water and induce vomiting. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physicians

THIS MATERIAL MAY MAKE THE HEART MORE SUSCEPTIBLE TO ARRHYTHMIAS. Catecholamines such as adrenaline, and other compounds having similar effects, should be reserved for emergencies and then used only with special caution.

FIRE FIGHTING MEASURES

Flammable Properties

Autoignition : >400 C (>752 F)

Nonflammable fluorocarbon mixture.

Extinguishing Media

Water Spray, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Evacuate personnel to a safe area. Wear self-contained breathing apparatus (SCBA) and full protective equipment.

If exposed to flame, can decompose and generate HF.

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.

HANDLING AND STORAGE

Handling (Personnel)

Do not inhale. Avoid contact with eyes, skin or clothing. Wash thoroughly after handling. Wash clothing after use.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use only with adequate ventilation.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses, or where splash potential exists wear chemical splash goggles.

RESPIRATORS

Where the potential exists for airborne exposure, wear NIOSH approved respiratory protection.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

PROTECTIVE CLOTHING

Where there is potential for skin contact, have available and wear as appropriate impervious gloves, apron or smock.

Exposure Guidelines

Exposure Limits

Fluorocarbon Refrigerant Additive TD2 for R-407C
PEL (OSHA) : None Established
TLV (ACGIH) : None Established

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point : -15 to -20 C (5 to -4 F)
Freezing Point : <-80 C (<-112 F)
Vapor Pressure : 70 psia @ 25 C
% Volatiles : 100 %
Solubility in Water : 0 % Very Low
pH : Neutral
Odor : (slight), Ethereal.
Form : Liquified Gas.
Color : Clear.
Specific Gravity : 1.4 Liquid

STABILITY AND REACTIVITY

Chemical Stability

Stable.

Avoid strong oxidizers such as concentrated oxidizing acids or highly caustic materials. Avoid oxygen enriched atmospheres.

Incompatibility with Other Materials

None reasonably foreseeable.

Decomposition

Decomposition will not occur.

Combustion in air. If exposed to flame, HF can form.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Fluorocarbon A:

Inhalation 4 hour LC50: > 457,000 ppm in rats

Single exposure by inhalation caused narcosis and cardiac sensitization, a potentially fatal disturbance of heart rhythm associated with a heightened sensitivity to the action of epinephrine; in a cardiac sensitization screening test in dogs exposed to concentrations of 50,000 to 250,000 ppm evidence of sensitization occurred at 150,000 ppm. Repeated exposures caused a reduced startling response in rats. No other significant toxicological effects were observed. No-Observed-Adverse-Effect-Level (NOAEL): 20,000 ppm.

Developmental studies conducted in rats and rabbits at dose levels of 5000, 20,000 or 50,000 ppm produced no evidence of developmental toxicity. Fluorocarbon A was not uniquely toxic to the rat or rabbit conceptus. Specific studies to evaluate the effect on female reproductive performance have not been conducted; however, limited information obtained from studies on developmental toxicity do not indicate adverse effects on female reproductive performance. Tests have shown that Fluorocarbon A does not cause genetic damage in bacterial or mammalian cell cultures. No animal data are available to define carcinogenic effects.

Fluorocarbon B:

Oral LD50: > 5,000 mg/kg in rats
Dermal ALD: > 5,000 mg/kg in rabbits
Inhalation, 4 hour LC50: 11,100 ppm in rats

Animal testing indicates that Fluorocarbon B is a slight skin irritant and a mild eye irritant, but is not a skin sensitizer.

Fluorocarbon B did not cause cardiac sensitization in dogs exposed to 1000 or 5000 ppm. The cardiac sensitization potential was not evaluated at or above 10,000 ppm due to clinical signs consistent with central nervous system toxicity.

Single exposure to 5,000 ppm by inhalation caused tremors. A different single exposure study by inhalation in rats caused incoordination, hyperactivity and prostration; pathological examination of rats from this study revealed kidney and lung changes, and external hair loss. Repeated exposures to 1,900 - 3,500 ppm caused tremors or convulsions, behavioral effects, and altered clinical chemistry.

(TOXICOLOGICAL INFORMATION - Continued)

In developmental toxicity studies with laboratory animals, Fluorocarbon B was not uniquely toxic to the developing fetus. No animal data are available to define the carcinogenic or reproductive hazards. Fluorocarbon B does not cause genetic damage in bacterial or mammalian cell cultures. It has not produced genetic damage in tests on animals.

Fluorocarbon C:

Exposures to eye caused temporary, reversible effects in rabbits. Rats exposed to 800,000 ppm for one hour exhibited hyperactivity initially followed by hypoactivity, hyperemia, and closed eyes. Rats and guinea pigs exposed for 10 days to 113,000 ppm did not exhibit compound related changes or toxicity. Biochemical mutation in E. coli was observed in a 24 hour exposure study. No data is available on carcinogenicity, reproductive, embryotoxic, or skin effects from exposure.

ECOLOGICAL INFORMATION

Ecotoxicological Information

Aquatic Toxicity:

Fluorocarbon A:

96 hour LC50 - Zebra fish: 292 mg/L
96 hour LC50 - Freshwater algae: > 186 mg/L
48 hour LC50 - Daphnia magna: 299 mg/L

Fluorocarbon B:

96 hour LC50 - Fathead minnows: 27.2 mg/L
96 hour LC50 - Rainbow trout: 13.9 mg/L
48 hour LC50 - Daphnia magna: 11.7 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/IATA/ADR

UN Number : 1078
Proper Shipping Name : Refrigerant Gas, N.O.S.
(Fluorinated Hydrocarbons)
Hazard Class : 2.2
Label : Non-flammable gas

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : Listed.

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.

Responsibility for MSDS : MSDS Coordinator
> : DuPont Fluoroproducts
Address : Wilmington, DE 19898
Telephone : (800) 441-7515

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