

Material Safety Data Sheet

IDENTIFICATION

R-236FA REFRIGERANT

1,1,1,3,3,3- Hexafluoropropane

TRADE NAMES AND SYNONYMS

HFC-236fa; Suva® 236fa, FE-36™; FE 36™; FC-236fa; CCO610; HCFC 236fa; R 236fa; 2,2-dihydroperfluoropropane; bistrifluoromethylmethane

MANUFACTURER/ DISTRIBUTOR

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DISTRIBUTION DATE

01/01/2013

HAZARD(S) IDENTIFICATION

POTENTIAL HEALTH EFFECTS

INHALATION

Inhalation of high concentrations of HFC-236fa, 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 epinephrine and may result in death without warning.

SKIN CONTACT

HFC-236fa may cause frostbite if liquid or escaping vapor contacts the skin.

EYE CONTACT

HFC-236fa may cause "frostbite-like" effects if the liquid or escaping vapors contact the eyes.

ADDITIONAL HEALTH EFFECTS

Ingestion is not considered a probable route of exposure for HFC-236fa.

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.

COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENTS

Material:	1,1,1,3,3,3-HEXAFLUOROPROPANE (HFC-236fa)	
CAS Number	690-39-1	Weight 99 - 100%



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FIRST-AID MEASURES

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

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

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

Flash Point: No flash point

Will not burn. Not a fire or explosion hazard. "FE-36" is used as a fire extinguishant. Hazardous gas/vapor produced in fire is hydrogen fluoride.

EXTINGUISHING MEDIA

Use media appropriate for surrounding material.

FIRE FIGHTING INSTRUCTIONS

(For example: when "FE-36" is exposed to fire from surrounding material) - Wear self-contained breathing apparatus. Wear full protective equipment. Cool tank/container with water spray.

ACCIDENTAL RELEASE MEASURES

Ventilate area before reentering.

HANDLING AND STORAGE

HANDLING (PERSONNEL)

Do not breathe gas. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling.

HANDLING (PHYSICAL)

Keep away from sparks, flames and hot (glowing) surfaces.

STORAGE

Valve protection caps and valve cutlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point. Do NOT drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Never attempt to lift cylinder by its cap. Use a pressure reducing regulator when connecting cylinder to lower pressure (>3000 psig) piping or systems. DO NOT heat cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.



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Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Separate full containers from empty containers. Storage area temperatures should not exceed 125 deg F (52 deg C) and should be free of combustible materials. Avoid area where salt or other corrosive materials are present. Avoid excessive inventory and storage time. Use a first-in first-out system. Keep accurate inventory records.

ENGINEERING CONTROLS

Use only with adequate ventilation. Keep container tightly closed. Vapors of the compound are heavier than air, posing a hazard of asphyxia if they are trapped in enclosed or low places.

PERSONAL PROTECTIVE EQUIPMENT

Impervious gloves and chemical splash goggles should be used when handling liquid. 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 LIMITS

236FA Refrigerant

PEL (OSHA):	None Established
TLV (ACGIH):	None Established
WEEL (AIHA):	1000 ppm, 8 Hr. TWA

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

Boiling Point:	-1.4 C (29.5 F) @ 760 mm Hg
Vapor Pressure:	272.4 kPa @ 25 C (77 F)
Melting Point:	-98 C (-144 F)
Freezing Point:	-103 C (-153 F)
Odor:	Ether (slight).
Form:	Liquified Gas.
Color:	Colorless. Specific Gravity:
1.370 gm/cc	
Vapor Density:	5.4 at 25°C (77°F) and 1013 hPa (Air=1.0)
% Volatiles:	0.5% by weight

STABILITY AND REACTIVITY

CHEMICAL STABILITY

Stable.

CONDITIONS TO AVOID

Avoid open flames and high temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS

Incompatible with strong bases, metallic sodium, potassium, lithium.

DECOMPOSITION

Decomposition products are hazardous. This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrogen fluoride. These materials are toxic and irritating. Contact should be avoided.

POLYMERIZATION

Polymerization will not occur.



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TOXICOLOGICAL INFORMATION

ANIMAL DATA

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.

CARCINOGENIC, DEVELOPMENTAL, REPRODUCTIVE, MUTAGENIC EFFECTS:

Developmental studies conducted in rats and rabbits at dose levels of 5000, 20,000 or 50,000 ppm produced no evidence of developmental toxicity. HFC 236fa 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 HFC 236fa does not cause genetic damage in bacterial or mammalian cell cultures. No animal data are available to define carcinogenic effects of HFC 236fa.

ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

AQUATIC TOXICITY:

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

DISPOSAL CONSIDERATIONS

RCRA INFORMATION

Hazardous Waste	Not Hazardous Waste
RCRA ID No	N/A

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

TRANSPORTATION INFORMATION

SHIPPING INFORMATION

US ICC/ DOT

Proper Shipping Name:	Liquefied Gas, N.O.S. (1,1,1,3,3,3-Hexafluoropropane)
Hazard Class:	2.2
Packing Group	Not Applicable
UN No.:	3163
ERG No:	126
Label:	NON-FLAMMABLE GAS

IMO/ IMDG

Proper Shipping Name:	Liquefied Gas, N.O.S. (1,1,1,3,3,3-Hexafluoropropane)
Hazard Class:	2.2
UN No.:	3163
Label:	NON-FLAMMABLE GAS



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ICAO/ IATA

Proper Shipping Name: Liquefied Gas, N.O.S. (1,1,1,3,3,3-Hexafluoropropane)

Hazard Class: 2.2 UN No.: 3163

Label: NON-FLAMMABLE GAS

ICAO/ IATA Maximum Quantity Allowed

Cargo $\leq 150\text{kg}$

Passenger $\leq 75\text{kg}$

REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA Inventory Status: Not Determined.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

HAZARDOUS CHEMICAL LISTS

SARA Extremely Hazardous Substance No

CERCLA Hazardous Substance No

SARA Toxic Chemical No

WARNING: DO NOT vent to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered. Contains 1,1,1,2-Tetrafluoroethane (HFC-134a), a greenhouse gas which may contribute to global warming.

OTHER INFORMATION

NFPA, NPCA-HMIS

NPCA-HMIS Rating

Health	1	
Flammability	0	
Reactivity	1	

ANSI/ ASHRAE 34 Safety Group – A1

DISCLAIMER

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REGULATORY STANDARDS

[OSHA Standards 29 CFR §1910.1200\(g\) HAZARD Communication: Safety Data Sheets](#)

[DOT Title 49 CFR §172.101 List of Hazardous Substances and Reportable Quantities](#)

