

Material Safety Data Sheet

MSDS: Arctic Freeze AF-1

SECTION 1: CHEMICAL PRODUCT INFORMATION

HAZARD RATING SCALE

0 = Insignificant
1 = Slight
2 = Moderate
3 = High
4 = Extreme

Health 1
Fire: 0
Reactivity: 0
Special: - -
Toxicity: 1

Product Description: R-134a Refrigerant with Arctic Freeze Additive and Dispensing Hose, 18oz.

Part Number: AF-1

MSDS Date: 10-06-2009

SECTION 2: COMPOSITION AND INFORMATION ON INGREDIENTS

No.	Description	CAS Reg. No.	Units	Amount
1	1,1,1,2-Tetrafluoroethane	811-97-2	% vol	80-85
2	Polyalkylene glycol monobutyl ether	N/A	% vol	5-15
3	Additive Package	N/A	% vol	1-10
4	Leak Sealer	N/A	% vol	0-1

SECTION 3: HAZARDS INFORMATION

Portals of Entry: Inhalation, ingestion, eye contact, skin contact, and dermal absorption.

Inhalation: Inhalation of high vapour concentrations can cause anaesthetic effects including dizziness, weakness, nausea, and unconsciousness. It can act as an asphyxiant by limiting available oxygen. Very high doses can cause abnormal heart rhythm which is potentially fatal. Breathing high concentration vapours or prolonged breathing vapours can cause irritation of the nose, throat, mucous membranes, and lungs as well as headaches, drowsiness, and fatigue. Extreme inhalation can cause loss of coordination and unconsciousness.

Eye Contact: Liquid splashes may cause eye irritation. Vapour spray may cause freeze burns. Vapours can cause eye irritation.

Skin Contact: Vapour spray can cause freeze burns. Product can cause skin irritations, dermatitis, defatting of skin, adsorption of certain components in product.

Ingestion: A large percentage of the product is a gas at Standard Temperature and Pressure (STP) which would not allow much of the product to be ingested. The liquid material at STP, if ingested, could cause nausea, gastrointestinal disturbances, headaches, drowsiness, vertigo, gastrointestinal disturbance, abdominal pain, and dizziness.

Delayed Effects: Prolonged and repeated overexposure can cause irritation of the respiratory tract and mucous membranes, central nervous system (CNS) effects, blood dysfunction, and kidney effects.

HEALTH EFFECTS FROM OVEREXPOSURE:

Primary Routes of Exposure: Skin and inhalation.

SECTION 4: FIRST AID MEASURES

Inhalation: Inhalation under normal exposure should not cause problems; however if inhalation has resulted in

symptoms, move patient to fresh air. If breathing is difficult, give oxygen. Give artificial respiration if breathing has stopped. Get prompt medical attention.

Eye Contact: Immediately flush eyes with a large amount of water for at least 15 minutes. If symptoms exist and/or persist, get prompt medical attention.

Skin Contact: Wash affected skin areas thoroughly with soap and water. Remove contaminated clothing. If skin irritation persists, see a physician.

Ingestion: If swallowed, give large quantities of water to drink. Induce vomiting. Careful gastric lavage may be indicated. Immediately see a physician. Never give anything by mouth nor induce vomiting of an unconscious person.

SECTION 5: FIRE FIGHTING MEASURES

Unusual Hazards: Toxic fumes are generated when material is exposed to fire and fire conditions.

Extinguishing Agents: Use the following extinguishing media when fighting fires involving this material: polar solvent foam, carbon dioxide, dry chemical, and water spray.

Personal Protective Equipment: Wear self-contained breathing apparatus and full protective gear.

Special Precautions: Use water spray to cool large containers exposed to fire. Vapours are denser than air and will have a tendency to accumulate in lower areas which can cause the vapours to concentrate and suffocate. The much reduced part of the product that is liquid at STP can be flammable. If the product's liquid portion is exposed to fire or an ignition source that results in flammability, extinguish with polar solvent foam, carbon dioxide, dry chemical, and water spray. The product is typically packaged in 18 oz cans, which aids in isolating product for flammability but creates problems if the pressurized cans are exposed to fire or excessive heat that could result in sudden can rupture.

FIRE AND EXPLOSIVE PROPERTIES: PROPERTY PACKAGED PRODUCT LIQUID PORTION OF PRODUCT

Flash Point (°C); [°F]: Non-Flammable at STP 204; 399*

Auto-Ignition Temperature (°C): >400 >400

Lower Explosive Limit (ppm): Non-Flammable at STP 11,000

Upper Explosive Limit (ppm): Non-Flammable at STP 94,000

*: Initially the liquid portion of product at STP is Non-Flammable. As the liquid components evaporate they are Non-Flammable, however, the final volatile fraction, which constitutes a very low concentration of the formula, will be slightly flammable with a relatively high flash point being 11° C or 51° F. After this final volatile component has volatilized, the remaining liquid is Non-Flammable being combustible at ~ 204° C; 399° F.

SECTION 6: ACCIDENTAL SPILL OR LEAK RELEASE INFORMATION

Personal Protection: Appropriate protective equipment must be worn when handling a large spill of this material. See the PERSONAL PROTECTION MEASURES Section for recommendations. If exposed to material during clean-up operations, see the FIRST AID PROCEDURES Section for actions to follow.

Procedures: Evacuate the spill area. Floor may be slippery if non-volatile components in product (<20 % volume) have wetted the floor; use care to avoid falling. Ventilate the spill area. Avoid breathing vapour. Contain non-volatile material spills immediately with inert adsorption materials. Transfer liquids and solid adsorption materials and diking material to separate suitable containers for recovery or disposal.

CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

SECTION 7: HANDLING AND STORAGE

Storage Conditions: Store in a cool, well ventilated place. Keep containers dry. Store product away from reactive and corrosive materials. The minimum recommended storage temperature for this material is -29° C/ -20° F. The maximum storage temperature is 49° C/ 120° F.

Handling Procedures: Avoid causing and inhaling high concentrations of vapour. The vapour concentration levels in air need to be kept below occupational exposure limits and kept as low as practicable. Do not mix product with air or oxygen under pressure. Avoid exposure of product to flame or very hot surfaces. Vapours can be evolved when material is being used in processing operations. See FACILITY CONTROL MEASURES Section for types of ventilation required.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Respiratory Protection: A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. If respiratory protection is needed, use, MSHA-NIOSH approved respirator for organic vapours. None required if airborne concentrations are maintained below the TWA/TLV's listed in the COMPONENT EXPOSURE INFORMATION Section.

Up to 10 times the TWA/TLV: Wear a half-mask, air purifying respirator.

Up to 1000 ppm organic vapour: Wear an approved full-face piece, air-purifying respirator.

Above 1000 ppm organic vapour or unknown: Wear an approved positive pressure mode, or an approved full-face piece airline respirator in the positive pressure mode with emergency escape provisions.

Air purifying respirators should be equipped with organic vapour cartridges.

Hand Protection: The gloves listed below may provide protection against permeation. Gloves of other chemically resistant materials may not provide adequate protection: Polyvinyl alcohol and Viton.

Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough.

Other Protection: Use chemically resistant apron or other impervious clothing to avoid prolonged or repeated skin contact.

FACILITY CONTROL MEASURES:

Ventilation: Use normal local exhaust ventilation with a minimum capture velocity of 100 ft/min (30 m/min) at the point of vapour evolution.

Other Protective Equipment: Facilities storing and utilizing this material should be equipped with an eyewash facility and a safety shower.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

TYPICAL PHYSICAL PROPERTIES:

	PROPERTY METRIC UNITS	ENGLISH UNITS
Appearance:	Product in Aerosol Container	Product in Aerosol Container
Colour:	Clear	Clear
State:	Liquid under Gas Pressure	Liquid under Gas Pressure
Odour Characteristics:	Ethereal	Ethereal
Viscosity (CP @ 20° C); [CP @ 68° F]:	N/A	N/A
Specific Gravity (d/do 4°C); [d/do 39°F]	N/A	N/A
Density (gr/cm ³); [lb/gal]	N/A	N/A
Vapour Density (Air = 1.0):	3.5	3.5
Vapour Pressure (mm Hg @ 20° C); [psia]:	4277	85.8
Melting Point (°C); [°F]:	Extremely Low; < -26 °C	Extremely Low; < -15 °F
Boiling Point (°C); [°F]:	-26.5	-15.7
Solubility in Water (gr/100 cm ³); [lb/100 in ³]:	<15%	<15%
Evaporation Rate (n-butyl acetate = 1.0):	> 1	> 1
pH (product or water extract)	< 7	< 7
Percent Volatility (% wt):	90	90

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable under normal conditions.

Hazardous Decomposition Products: Thermal decomposition may yield toxic decomposition products which include alkyl low molecular weight components, organic chlorides, COx, SOx, NOx, POx, hydrochloric acid, hydrofluoric acid, organic pyrolytic components, and phosgene.

Hazardous Polymerization: Product will not undergo polymerization.

Incompatibility: Avoid contact with strong oxidizing and reducing agents, fine particulate metals, magnesium and alloy containing more than 2 percent magnesium. Product can react under certain conditions with alkali or alkali earth

metals such as sodium, potassium or barium and other Group IA and IIA of the Periodic Table of Elements.

SECTION 11: TOXICOLOGICAL INFORMATION

ACCIDENT PREVENTION INFORMATION: COMPONENT EXPOSURE INFORMATION:

No.	Description	CAS Reg. No.	Units	Amount
1	1,1,1,2-Tetrafluoroethane	811-97-2	% vol	80-85
2	Polyalkylene glycol monobutyl ether	N/A	% vol	5-15
3	Additive Package	N/A	% vol	1-10
4	Leak Sealer	N/A	% vol	0-1

Exposure Information for Specific Component: Health Flam. Reactivity Component OSHA ACGIH

No.	Rating	Rating	Rating	Units	TWA	STEL	TWA	STEL	IDLH	HAP
1	1	0	0	ppm	1000	N/A	N/A	N/A	N/A	No
2	1	1	0	ppm	N/A	N/A	N/A	N/A	N/A	No
3	2	2	0	ppm	N/A	N/A	N/A	N/A	N/A	No
4	2	0	1	ppm	75	150	50	75	5,000	Yes

N/A: Not Available/Non Hazardous; ppm: parts per million

Note: 1 ppm equals 3.8 mg/m³; 5 ppm equals 19 mg/m³; 10 ppm equals 38 mg/m³; 100 ppm equals 380 mg/m³.

SECTION 12: ECOLOGICAL INFORMATION

Persistence and Degradation: Decomposes comparatively rapidly in the lower atmosphere (troposphere). Atmospheric lifetime is 15.6 years. Products of decomposition will be highly dispersed and hence will have a very low concentration. It is not a significant contributor to photochemical smog and is not considered to be a VOC. It is not considered as an ozone depleting chemical.

SECTION 13: DISPOSAL INFORMATION

WASTE DISPOSAL: *For disposal, dispose this material at a facility that complies with local, state, and federal regulations.*

SECTION 14: TRANSPORTATION INFORMATION

DOT Hazard Description:

Proper Shipping Name: CONSUMER COMMODITY

Hazard Class: ORM-D

Identification Number: N/A

Packing Group: N/A

Hazardous Substance (RQ): N/A

Placard/Label: N/A

SECTION 15: REGULATORY INFORMATION

EPA Regulation:

SARA SECTION 311/312 HAZARDS: Acute Health, Chronic Health

All components of this product are on the TSCA list.

SARA Title III Section 313 Supplier Notification: This product contains the indicated "*" toxic chemical(s) subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372. This information must be included in all MSDSs that are copied and distributed for this material.

SARA TITLE III INGREDIENTS	CAS NO.	% WT.	REGULATION SECTION	RQ (LBS)
*Methylene Chloride	75-09-2	0.5	311, 312, 313, RCRA	1000

If > 225,000 canisters of this product are in one container the Reportable Quantity "RQ" of Methylene Chloride is exceeded. Based on the composition of SARA Title III ingredients and the RQs of ingredients, listed above, Methylene Chloride is the most restrictive of the product composition. Typically this product is packaged in 18 oz containers.

State Regulations: This product meets requirements of Southern California AQMD Rule 443.1 and Similar Regulations California Proposition 65: This product contains the following chemical known to the State of California to cause cancer: Methylene Chloride < 1%

SECTION 16: OTHER INFORMATION

All information, recommendations, and suggestions made by IDQ, Inc. ("Company") appearing herein concerning our product are based upon tests and data believed to be reliable. However, because of the variable characteristics of analytical procedures and samples, and the inability to control its customers' uses of the information and recommendations, or the related products or materials, Company makes **NO WARRANTY, EXPRESS OR IMPLIED** as to the accuracy of the information or recommendations or that such are fit for any general or specific purpose, whatsoever. Company shall have **NO LIABILITY** arising from the use by its customers or any third parties of the information and recommendations, and it shall be each customer's sole responsibility to determine the suitability for its own use of any information or recommendations provided by Company.