Revised date 01.08.2024

MATERIAL SAFETY DATA SHEET
HFC 134a

CHEMICAL PRODUCT

Corporate MSDS Number	: TAB-003004
Composition	: HFC 134a (100%)
Chemical Formula	: CH_2FCF_3
Chemical Name	: 1,1,1,2-tetrafluoroethane
CAS#	: 811-97-2
UN#	: 3159
HS Code	: 290345
Hazard	: 2.2

COMPANY IDENTIFICATION

TABRIGAS Egypt
Port Said Free Zone area – Egypt
Sunday – Thursday (9:00 – 17:00)
00 202 2734 22 77 / 78 / 79
info@tabrigas.com
www.tabrigas.com

PRODUCT USE

Refrigerant

TRADE NAMES & SYNONYMS

TETRAFLUOROETHANE
1, 1, 1, 2-TETRAFLUOROETHANE
R-134a

HAZARDS IDENTIFICATION

Potential Health Effects

Inhalation

ETHANE, 1, 1, 1, 2-TETRAFLUORO
Gross overexposure may cause Central nervous system depression with dizziness, confusion, coordination, drowsiness, or unconsciousness. Irregular heartbeat with a strange sensation in the chest,

"heart is thumping", apprehension, lightheadedness, feeling of fainting, dizziness, weakness, sometimes progressing to loss of consciousness and death. Suffocation, if air is displaced by vapors.

Skin Contact

ETHANE, 1, 1, 1, 2-TETRAFLUORO

Immediate effects of overexposure may include Frostbite if liquid or escaping vapor contacts the skin.

Eye Contact

ETHANE, 1, 1, 1, 2-TETRAFLUORO-

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

Additional Health Effects

ETHANE, 1, 1, 1, 2-TETRAFLUORO

Increased susceptibility to the effects of this material may be observed in persons with pre-existing diseases of the: central nervous system, and cardiovascular systems.

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

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 contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse. Treat for frostbite if necessary by gently warming the affected area.

Eye Contact

In case of contact, immediately flush your 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
UEL	: None per ASTM E681
Auto ignition	: >743 C (>1369 F)

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.

HFC-134a is not flammable in air at temperatures up to 100 deg. C (212 deg. F) at atmospheric pressure. However, mixtures of HFC-134a with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. HFC-134a can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing HFC-134a and air, or HFC-134a in an oxygen enriched atmosphere become combustible depends on the inter-relationship of 1) the temperature 2) the pressure, and 3) the proportion of oxygen in the mixture. In general, HFC-134a should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an oxygen enriched environment. For example, HFC-134a 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 in the presence of certain concentrations of chlorine.

Extinguishing Media

Use media appropriate for surrounding material.

Fire Fighting Instructions

Cool tank/container with water spray. Self-contained breathing apparatus (SCBA) may be required if cylinders rupture or release under fire conditions. Water runoff should be contained and neutralized before 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.

Ventilate areas, especially low or enclosed places where heavy vapors might collect. Remove open flames. Use a self-contained breathing apparatus (SCBA) if a large spill or leak occurs.

HANDLING AND STORAGE

Handling (Personnel)

Use sufficient ventilation to keep employee exposure below recommended limits.

Handling (Physical Aspects)

HFC-134a should not be mixed with air for leak testing or used for any other purpose above atmospheric pressure. See the Flammable Properties section. Contact with chlorine or other strong oxidizing agents should also be avoided.

Storage

Store in a clean, dry place. Do not heat above 52 ^{0}C (126 ^{0}F). Valve protection caps and valve outlet threaded plugs must remain in place unless the container is secured with a valve outlet piped to the use point. Do NOT drag, slide, or roll cylinders. Use a suitable hand truck for cylinder movement. Never attempt to lift the cylinder by its cap. Use a pressure-reducing regulator when connecting the cylinder to lower-pressure (>3000 PSIG) piping or systems. Do NOT heat the cylinder. Use a check valve or trap in the discharge line to prevent hazardous backflow into the cylinder.

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 ^{0}F (52 ^{0}C) and should be free of combustible materials. Avoid areas 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.

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

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. A self-contained breathing apparatus (SCBA) is required if a large release occurs.

Exposure Guidelines

Exposure Limits

"SUVA"-134a

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

PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point	: -26.5 ^{0}C (-15.7 ^{0}F) @ 736 mm Hg
Vapor Pressure	: 96 PSIG @ 25 ^{0}C (77 ^{0}F)
Vapor Density	: 3.6 (Air=1.0) @ 25 ^{0}C (77 ^{0}F)
% Volatiles	: 100 WT%
Solubility in Water	: 0.15 WT% @ 25 ^{0}C (77 ^{0}F) @ 14.7 PSIG
Odor	: Ether (slight).
Form	: Liquefied Gas.
Color	: Colorless.
Liquid Density	: 1.21 g/cm3 @ 25 ^{0}C (77 ^{0}F)
Specific Gravity	: 1.208 @ 77 ^{0}F (25 ^{0}C)
Evaporation Rate	: (CCL4 = 1); greater than 1

STABILITY AND REACTIVITY

Chemical Stability

Stable.

Conditions to Avoid

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. This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming 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

ETHANE, 1, 1, 1, 2-TETRAFLUORO

EYE:

A short-duration spray of vapor produced very slight eye irritation.

SKIN:

Animal testing indicates this material is a slight skin irritant, but not a skin sensitizer.

INHALATION:

4 hours, ALC, rat: 567,000 ppm. Single exposure caused: Cardiac sensitization, a potentially fatal disturbance of heart rhythm associated with a heightened sensitivity to the action of epinephrine. Lowest-Observed-Adverse-Effect-Level for cardiac sensitization: 75,000 ppm. Single exposure caused: Lethargy. Narcosis. Increased respiratory rates. These effects were temporary. Single exposure to near-lethal doses caused: Pulmonary edema.

Repeated exposure caused: Increased adrenals, liver, and spleen weight. Decreased uterine, and prostate weight. Repeated dosing of higher concentrations caused: the following temporary effects - Tremors. In coordination.

CARCINOGENIC, DEVELOPMENTAL, REPRODUCTIVE, MUTAGENIC EFFECTS:

In a two-year inhalation study, HFC-134a, at a concentration of 50,000 ppm, produced an increase in late-occurring benign testicular tumors, testicular hyperplasia, and testicular weight. The no-effect level for this study was 10,000 ppm. Animal data show slight fetotoxicity but only at exposure levels producing other toxic effects in the adult animal. Reproductive data on male mice show No change in reproductive performance. Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures, or in animals. In animal testing, this material has not caused permanent genetic damage in the reproductive cells of mammals (has not produced heritable genetic damage).

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

48-hour EC50 - Daphnia magna	: 980 mg/L.
96-hour LC50 - Rainbow trout	: 450 mg/L

DISPOSAL CONSIDERATIONS

Waste Disposal

Contaminated HFC-134a can be recovered by distillation or removed to a permitted waste disposal facility. Comply with Federal, State, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO

Proper Shipping Name	: 1, 1, 1, 2-TETRAFLUOROETHANE
Hazard Class	: 2.2
UN No.	: 3159
DOT/IMO Label	: NON-FLAMMABLE GAS

Shipping Containers

Tank Cars.
Tank Trucks.
Ton Tanks.
Cylinders.

Shipping Information – Canada

TDG

Proper Shipping Name	: 1, 1, 1, 2-TETRAFLUOROETHANE
TDG Class	: 2.2
UN #	: 3159

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status: Reported/Included.

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

HAZARDOUS CHEMICAL LISTS

SARA Extremely Hazardous Substance	: No
CERCLA Hazardous Substance	: No
SARA Toxic Chemical	: No

Canadian Regulations

CEPA Status	: DSL: REPORTED/INCLUDED.
WHMIS Classification	: CLASS A Compressed Gas

This product has been classified under the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

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

MEDICAL USE: CAUTION: Do not use it in medical applications involving permanent implantation in the human body.

End of MSDS
(Version August 2024)


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