

Material Safety Data Sheet



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Section 1: Chemical Product / Company Identification

Trade name **HFC-134a**

Company identification
Manufacturer **DAIKIN INDUSTRIES,LTD.CHEMICAL DIVISION:**
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Section 2: Composition / information on ingredients

Component	mass %	CAS No.	Symbols	R-Phrase
1,1,1,2-Tetrafluoroethane	>99.6	811-97-2	n.ap	n.ap

Section 3: Hazard identification

Potential Health Effects:

Non-flammable liquified gas.
This product may cause asphyxia if released in a confined area.

WARNING: Toxic gases (such as HF, CO) will be produced if this product is decomposed by heat.
The result of the combustion test indicates this product may be flammable under the condition as follows: above 5kgf/cm², at 170 C, 8-12vol% in air.

Section 4: First aid measures

Inhalation Remove to fresh air. Keep warm and at rest.
If breathing has stopped, give artificial respiration.
Use oxygen as required, provided a qualified operator is available.

Skin Contact Wash with lukewarm water (not hot).
Consult a physician if frostbitten by liquid or if irritation occurs.

Eyes Contact Flush with plenty of water for several minutes (remove contact lenses if easily possible). Consult a physician.

Ingestion Ingestion is not considered a potential route of exposure.

SECTION 5: Fire-fighting measures

Extinguishing Media Water Spray, Water Fog, Dry Chemical. Alcohol Foam. Carbon Dioxide (CO₂).

Fire fighting procedures:

Keep personnel removed and upwind of fire.
Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Water may be used to cool and protect exposed containers.
Stop the flow of gas if possible.

WARNING: Hazardous decomposition products including carbon dioxide, carbon monoxide, hydrogen fluoride, toxic gases or particles may be formed during combustion. These products may cause severe eye, nose, throat, and lung irritation or toxic effects.

SECTION 6: Accidental release measures

General Information	Use proper personal protective equipment as indicated in Section 8. Keep personnel not involved with emergency activities removed and upwind.
Spills/Leaks	Protected personnel should shut off leak, if without risk, and provide ventilation. Do NOT let this chemical enter the environment.

SECTION 7: Handling and storage

Handling	Use proper personal protective equipment as indicated in Section 8. Use in well ventilated areas. Wash hands thoroughly after handling. Wash clothing after use. Exposure to toxic gases through inhalation can occur if smoking tobacco becomes contaminated by this material. Therefore, do not smoke in the work areas and wash hands and face after handling in order to avoid transfer of the material onto smoking tobacco. Keep away from heat, sparks and flames.
Storage	Keep containers tightly closed in a cool place away from heat, sparks, and flames. Store in a tightly closed container.

SECTION 8: Exposure controls / personal protection

Exposure Guidelines:	
Exposure limits	AIHA WEEL-TWA: 1000ppm (AIHA: American Industrial Hygiene Association)
Engineering Controls:	Provide local exhaust to prevent accumulation of high concentrations.
Personal Protective Equipment:	
Eyes	Wear safety glasses or coverall chemical splash goggles.
Clothing	Wear impervious gloves, apron, pants, and jacket.
Respirators	Wear NIOSH approved respiratory protection, as appropriate.

SECTION 9: Physical and chemical properties

Appearance	Colorless liquified gas
Odor	Characteristic odor
PH	not applicable
Boiling point/ range	-26.18 C
Triple point	-101 C
Flash point	None
Flammable Limits	None
Vapor pressure	0.666 Mpa (6.79 kgf/cm ² abs) at 25 C
Relative vapour density	3.52 (air = 1)
Solubility	
- water solubility	0.15/100g H ₂ O at 25 C

SECTION 10: Stability and reactivity

Reactivity	Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to avoid	Ignition sources, excess heat.
Incompatibilities	Avoid contact with strong alkali or alkaline earth metals, finely powdered metals such as aluminum, magnesium or zinc and strong oxidizers, since they may react or accelerate decomposition.
Polymerization	Polymerization will not occur.

THERMAL DECOMPOSITION PRODUCTS:

Hazardous decomposition products including carbon dioxide, carbon monoxide, hydrogen fluoride, toxic gases or particles may be formed during combustion. These products may cause severe eye, nose, throat, and lung irritation or toxic effects.

SECTION 11: Toxicological information

Acute toxicity	Inhalation rat 4-hour LC50 >500,000ppm
Chronic toxicity	Inhalation rat NOEL=10,000ppm/2years
Ames assay	Negative
Teratogenicity	Inhalation rabbit: negative (40,000ppm)
Carcinogenicity	Not listed by NTP(1994), IARC(1993), ACGIH(1996)

SECTION 12: Ecological information

Biodegradation No (301D Closed Bottle, EEC C.6. (Directive 84/449/EEC))
 Does not deplete ozone.
 Potential (GWP) of 1300 (relative to a value of 1 for carbon dioxide at 100 years).

G.W.P : Global warming potential

SECTION 13: Disposal considerations

Best to recover and recycle.
 If this is not possible, destruction is to be in an approved facility which is equipped to absorb and neutralise acid gases and other toxic processing products.
 Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

SECTION 14: Transport information

UN No.: 3159
 ICAO/IATA
 -primary: 2.2

IMDG
 -primary: 2.2
 Proper Shipping Name: 1,1,1,2-TETRAFLUOROETHANE

ROAD/RAIL
 ADR/RID Class: 2
 ADR/RID Item No: 2A
 ADR Sin: 3159

SECTION 15: Regulatory information

NFPA-HMIS RATINGS (SCALE 0-4):HEALTH=1, FIRE=0, REACTIVITY=1
 EC Classification: EXTREMELY FLAMMABLE
 Hazard Symbol -
 Risk Phrases -
 Safety Phrases -

SECTION 16: Other information

TSCA Chemical Inventory	Listed
Korea Inventory	Listed
Philippine Inventory PICCS:	Listed
Japan	Listed
EINECS Number	Listed

This product is not designed, manufactured, or intended for medical uses, including implantation to the body or other applications in direct contact with body fluids or tissues.
 Do not use for non-industrial applications.

The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. The information does not relate to use in combination with any other material or in any process.

DAIKIN INDUSTRIES, LTD.CHEMICAL DIVISION:
 homepage: <http://www.daikin.co.jp/chm/intro/index.html>