

MATERIAL SAFETY DATA SHEET

PRODUCT AND COMPANY IDENTIFICATION

Product Name: Refrigerant Gas (R410A)
Synonyms: HFC-410A

<u>Material Name</u>	<u>CAS No.</u>	<u>Typical Wt %</u>
Pentafluoroethane	354-33-6	50
Difluoromethane	75-10-5	50

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Appearance	Clear, Colourless liquid and vapour
Odor	Slightly ethereal
pH	N/A
Boiling Point	-51.59°C ~ -51.54°C @ 760mmHg
Vapour Pressure	239.2psia @ 25°C (77°F), Saturated
Vapour Density	2.45 @ 25°C (77°F) (Air=1)
Specific Gravity	1.061 @ 25°C (77°F) (H ₂ O=1)
Solubility in Water	Unknown
Molecular Weight	72.59

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO
Proper Shipping Name : Refrigerant Gas R410A
DOT Name : Refrigerant Gas R410A
IMO Class (Hazard Class) : 2.2
UN no. : 3163
DOT/IMO Label : Non-Flammable Gas

HAZARDS IDENTIFICATION / FIRST AID MEASURES

Potential Health Effects

Eyes:

Eye contact with liquid may include eye irritation with discomfort, tearing, or blurring of vision.

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin:

Skin contact with liquid can cause frostbite. Prolonged overexposure may cause defatting or dryness of the skin.

In case of contact, flush area with lukewarm water. Do not use hot water. Call a physician.

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Inhalation:

Inhalation of high concentration of vapour is harmful and may cause heart irregularities, unconsciousness or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapour reduces oxygen available for breathing and is heavier than air. Higher exposures may lead to temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation. Gross exposure may be fatal.

Individuals with pre-existing diseases of the central nervous or cardiovascular system may have increased susceptibility to the toxicity of excessive exposures.

Inhalation may include temporary nervous system depression, with anesthetic effects such as dizziness, headache, confusion, loss of co-ordination and consciousness.

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.

Ingestion:

Not a probable route, however in case of accidental ingestion, call a physician.

FIRE-FIGHTING MEASURES

Flammable Properties:

Upper, Flammable Limits in Air (% by volume): Not applicable

Lower, Flammable Limits in Air (% by volume): Not applicable

Flash point: Will not burn

Auto-ignition Temperature: Not Determined

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 vapour from work area before using any open flame.

R-410A is not flammable at temperatures up to 100°C (212°F) at atmospheric pressure. However, mixtures of R-410A with high concentrations of air at elevated pressure can become combustible at ambient temperature. As the temperature of the mixture is increased, lower pressure (but still greater than atmospheric pressure) can create the same effect. Therefore, R410A should not be mixed with air under pressure for leak testing or other purposes. In general, R-410A should not be used or allowed to exist with high concentrations of air above atmospheric pressure.

Unusual Fire and Explosion Hazards:

Containers may rupture under fire conditions. Decomposition may occur.

Extinguishing Media:

Use extinguishing media appropriate to surrounding fire conditions.

Fire Fighting Instructions:

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Use water spray or fog to cool containers. Self-contained breathing apparatus (SCBA) is required if cylinders rupture or contents are released under fire conditions. Water runoff should be contained and neutralized prior to release.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel):

Review fire fighting measures and handling (personnel) sections before proceeding with clean up. Use appropriate personal protective equipment during clean up.

Accidental Release Measures:

Ventilate area, especially low or enclosed places where heavy vapors might collect. Remove open flames. Use self-contained breathing apparatus (SCBA) for large spills or releases.

HANDLING AND STORAGE

Handling (Personnel):

Avoid breathing vapors. Avoid liquid contact with eyes and skin. Use sufficient ventilation to keep employee exposure below recommended limits. R410A should not be mixed with air for leak testing. In general it should not be allowed to for material to be present with high concentrations of air above atmospheric pressure. Contact with chlorine or other strong oxidizing agents should also be avoided.

Storage:

Keep in a clean, dry area. Do not heat above 52°C (125°F).

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Avoid breathing vapours. Avoid contact with skin or eyes. Use with sufficient ventilation to keep employee exposure below recommended exposure limit. Local exhaust should be used if large amounts are released. Mechanical ventilation should be used in low or enclosed places.

Personal Protective Equipment:

Impervious gloves should be used to avoid prolonged or repeated exposure. Chemical splash goggles should be available for use as needed to prevent eye contact. Under normal manufacturing conditions, no respiratory protection is required when using this product. Self-contained breathing apparatus (SCBA) is required if large release occurs.

Exposures Guidelines:

Pentafluoroethane	AIHA (WEEL)	1000 ppm, 4900mg/m ³ , 8 hour TWA
Difluoromethane	AIHA (WEEL)	1000 ppm, 8 hour TWA

STABILITY AND REACTIVITY

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Chemical Stability:

This material is chemically stable under specific conditions, storage shipment and/or use. However avoid open flames and high temperatures.

Incompatibility with other materials:

In compatible with alkali or alkaline earth metals – powdered Al, Zn, Be, etc

Decomposition:

This material can be decomposed in high temperatures (open flames, glowing metal surfaces, etc) thus, forming hydrochloric and hydrofluoric acids, and possibly carbonyl halides. These materials are toxic and irritating. Contact should be avoided.

Polymerization: Will not occur

TOXICOLOGICAL INFORMATION

Difluoromethane:

Inhalation – Practically non-toxic to rats (4-hr LC50 > 520,000ppm)

Pentafluoroethane:

Inhalation – Practically non-toxic to rats (4-hr LC50 > 800,000ppm)

ECOLOGICAL INFORMATION

Eco toxicological Information

No data are available

OTHER INFORMATION

The information in this Material Safety Data Sheet only concerns the above-mentioned product and does not relate to use with other product(s) or in any process. This information is to our best present knowledge correct and complete and is given in good faith but without warranty. It remains the user's own responsibility to ensure that the information is appropriate and correct for his special use of this product.