



MATERIAL SAFETY DATA SHEET

R-410A

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION	Product Name	R410A
	Chemical Formula	C ₂ HF ₅ CH ₂ F ₂
	Trade Name	R410A

COMPANY IDENTIFICATION	DIKKO COOL REFRIGERANT INC.
	DALLAS, USA
	Te1 No. : +12055234666

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	DIFLUROMETHANE AND PENTAFLUROETHANE
CAS NO.	75-10-5 354-33-6
HAZCHEM WARNING	non-flammable gas

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Colorless, volatile liquid with ethereal and faint sweetish odor. Non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrochloric Acid (HCl), Hydrofluoric Acid (HF) and carbonyl halides.

SKIN: Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

EYES: Liquid contact can cause severe irritation and frostbite. Mist may irritate.

INHALATION: R-410A is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

INGESTION: Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

4. FIRST AID MEASURES



SKIN: Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

EYES: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

INHALATION: Immediately remove to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention. Do not give epinephrine (adrenaline).

INGESTION: Ingestion is unlikely because of the physical properties and is not expected to be hazardous. Do not induce vomiting unless instructed to do so by a physician.

ADVICE TO PHYSICIAN: Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: As R410A is non-flammable, it will not.

EXTINGUISHING MEDIA: Use any standard agent – choose the one most appropriate for type of surrounding fire (material itself is not flammable)

UNUSUAL FIRE AND EXPLOSION HAZARDS: R-410A is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS: Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.) Evacuate unprotected personnel. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return until air has been tested and determined safe, including low-lying areas.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)

Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders.

R-410A should not be mixed with air above atmospheric pressure for leak testing or any other purpose. See Section 5: Unusual Fire and Explosion Hazards.



STORAGE RECOMMENDATIONS:

Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

RESPIRATORY PROTECTION: None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space, where the concentration may be above the PEL of 1,000 ppm, use a self-contained, NIOSH approved breathing apparatus or supplied air respirator. For escape: use the former or a NIOSH-approved gas mask with organic vapor canister.

ENGINEERING CONTROL MEASURES: Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

PERSONAL PROTECTION: Self-contained breathing apparatus should always be worn when entering area where oxygen depletion may have occurred. Safety goggles, gloves and shoes or boots should be worn when handling cylinders.

SKIN: Skin contact with refrigerant may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with the liquid or gas is anticipated, insulated gloves constructed of PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.

EYE PROTECTION: For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, colorless liquid and vapor
PHYSICAL STATE:	Gas at ambient temperatures
MOLECULAR WEIGHT	72.6
CHEMICAL FORMULA	CH ₂ F ₂ , CHF ₂ CF ₃
SPECIFIC GRAVITY (water = 1.0)	1.08 @ 21.1°C (70°F)
ODOR	Faint ethereal odor
SOLUBILITY IN WATER (weight %)	Unknown
PH	Neutral
BOILING POINT	-48.5°C (-55.4°F)
FREEZING POINT	Not determined
VAPOR PRESSURE	215.3 psia @ 70°F ; 490.2 psia @ 130°F

10. STABILITY AND REACTIVITY

NORMALLY STABLE (CONDITIONS TO AVOID): The product is stable. Do not mix with oxygen or air above atmospheric pressure. And any source of high temperature, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive



decomposition products.

INCOMPATIBILITIES: (Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically active metals: potassium, calcium, powdered aluminum, magnesium and zinc.

HAZARDOUS DECOMPOSITION PRODUCTS: Halogens, halogen acids and possibly v v carbonyl halides.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

Difluoromethane:LC50 : 4 hr. (rat) - > 520,000 ppm

Pentafluoroethane: Cardiac Sensitization threshold (dog) > 100,000 ppm

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Teratology – negative

Subchronic inhalation (rat) NOEL – 50,000 ppm

OTHER DATA: Not active in four genetic studies

12. ECOLOGICAL INFORMATION

Degradability (BOD):R-410A is a gas at room temperature; therefore, it is unlikely to remain in water.

Octanol Water Partition Coefficient: Log Pow = 1.48 (pentafluoroethane), 0.21 (difluoromethane)

13. DISPOSAL CONSIDERATIONS

Is the unused product a RCRA hazardous waste if discarded? Not a hazardous waste.

If yes, the RCRA ID number is: Not applicable.

OTHER DISPOSAL CONSIDERATIONS: Disposal must comply with federal, state, and local disposal or discharge laws. R-410A is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT PROPER SHIPPING NAME	Pentafluoroethane, Difluoromethane
US DOT HAZARD CLASS	2.2
US DOT PACKING GROUP	Not applicable
US DOT ID NUMBER:	UN3163



15. REGULATORY INFORMATION

EEC	Hazard class Non flammable gas
RISK	phrases
R20	Harmful by inhalation
R34	Causes burns.
R44	Risk of explosion if heated under confinement.
R59	Dangerous for the ozone layer
SS2	Keep out of reach of children
S9	Keep container in a well ventilated place
S15	Keep away from heat.
S37	Wear suitable gloves
S38	In case of insufficient ventilation, wear suitable respiratory equipment.
S51	Use only in well-ventilated areas

16. OTHER INFORMATION

HMIS Classification: Health – 1, Flammability – 1, Reactivity – 0

NFPA Classification: Health – 2, Flammability – 1, Reactivity – 0

ANSI / ASHRAE 34 Safety Group – A1

Regulatory Standards:

1. OSHA regulations for compressed gases: 29 CFR 1910.101
2. DOT classification per 49 CFR 172.101

Toxicity information per PAFT Testing

17. DISCLAIMER

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