Safety Data Sheet

According to Regulation(EU)No.1907/2006(REACH),Annex II

Version:1.0/EN **Revision date:30/04/2014**

Product name: PACIFICO HFC-134a **Printing date: 30.04.2014**

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Substance name:	Norflurane
Trade name:	PACIFICO HFC-134a
REACH registration No.:	Not available.
CAS No.:	811-97-2
EC No.:	212-377-0

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses:	Refrigerant, Foam blowing agent, Aerosol
Uses advised against:	No data available.

1.3 Details of the supplier of the SDS

Company name:	IDEAL SOGUTMA EKIP. IC VE DIS TICARET SANAYI AS
Address:	MIMAR SINAN MAH MIMAR SINAN CD NO:8/5 CEKMEKOY ISTANBUL
Contact person:	GOKHAN CINGOZ
E-mail:	gokhan@i-cold.com
Telephone:	+902166428090
Fax:	+902166404812

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008[CLP]

The substance is not classified as hazardous under Regulation (EC) No 1272/2008[CLP].

Classification according to Council Directive 67/548/EEC

The substance is not classified as hazardous under Council Directive 1999/45/EC.

Additional information

No data available.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]

No label information available. The substance is not classified as hazardous under Regulation (EC) No 1272/2008[CLP].

2.3 Other hazards

No data available.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance information

REACH registration No.: Not available.

Molecular Formula: C2H2F4

CAS No.: 811-97-2

EC No.: 212-377-0

Synonyms: 1,1,1,2-Tetrafluoroethane; Tetrafluoroethane

Purity: ⩾99.5%

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General notes:

If unconscious, place in recovery position and seek medical advice.

Never give anything by mouth to an unconscious person.

If breathing is irregular or stopped, administer artificial respiration. If symptoms persist, call a physician.

Following inhalation:

Move to fresh air. Keep the patient warm and at rest. Artificial respiration and/or oxygen may be necessary.

If high concentrations are inhaled, immediately remove to fresh air. Keep the person calm.

If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Following skin contact:

Immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes.

Call a physician. Wash the contaminated clothing before reuse. Treat for frostbite if necessary by gently warming the affected area.

Following eye contact:

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

Following ingestion:

Ingestion is not considered a potential route of exposure.

Notes for the doctor:

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.

4.2 Most important symptoms and effects, both acute and delayed

Gross overexposure may cause: Central nervous system depression with dizziness, confusion, incoordination, drowsiness or unconsciousness. Irregular heart beat with a strange sensation in the chest, "heart thumping", apprehension, lightheadedness, feeling of fainting, dizziness, weakness, sometimes progressing to loss of consciousness and death. Suffocation, if air is displaced by vapors. Immediate effects of overexposure may include: Frostbite, if liquid or escaping vapor contacts the skin. Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes. Increased susceptibility to the effects of this material may be observed in persons with pre-existing disease of the: central nervous system, cardiovascular system.

4.3 Indication of the immediate medical attention and special treatment needed

Treat symptomatically and supportively. Treatment may vary with condition of victim and specifics of incident.

Do not give adrenaline or similar drugs.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media:

In case of fire in the surroundings: Use media appropriate for surrounding material.

Unsuitable extinguishing media:

No data available.

5.2 Special hazards arising from the substance or mixture

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.

Jincool® HFC-134a is not flammable in air at temperatures up to 100°C (212°F) at atmospheric pressure. However, mixtures of Jincool® HFC-134a with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. Jincool® HFC-134a can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air).

Whether a mixture containing Jincool® HFC-134a and air, or Jincool® 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, Jincool® 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 Jincool® 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 Jincool® HFC-134a in the presence of certain concentrations of chlorine.

5.3 Advice for fire-fighters

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Cool containers / tanks 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 prior to release.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate the spill area of unnecessary personnel. As a precautionary measure, eliminate all ignition sources.
Wear personal protective equipment. Avoid contact with skin and eyes and inhalation of vapours.
In enclosed areas, ventilate the place or wear a self-contained breathing apparatus (risk of anoxia).
Do not smoke.
Allow gas to escape to the external atmosphere, or preferably in a fume cupboard or well ventilated, remote area.
Do not touch any spilled material. Prevent the mixture from entering confined spaces.
Leak checking may be done by pressure drop test or by using soapy water on joints and outlets.
Shut cylinder valve to stop gas leaks from equipment if possible and safe to do so.

6.2 Environmental precautions

Should not be released into the environment.
Prevent from entering sewers, basements and work pits, or any place where its accumulation can be dangerous.

6.3 Methods and material for containment and cleaning up

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

6.4 Reference to other sections

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid breathing vapor. Avoid liquid contact with eyes and skin.
Use with sufficient ventilation to keep employee exposure below recommended limits.
Jincool® HFC-134a should not be mixed with air for leak testing or used for any other purpose above atmospheric pressure.
See Flammable Properties section. Contact with chlorine or other strong oxidizing agents should also be avoided.

7.2 Conditions for safe storage, including any incompatibilities

Keep the container tightly closed in a dry and well-ventilated place. Store in original container.
Store in a clean, dry place. Do not heat above 52°C (126°F). No materials to be especially mentioned.

7.3 Specific end use(s)

Not available.

SECTION 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limit values:

CAS # 811-97-2	Long term/Eight hours		Short term	
	ppm	mg/m3	ppm	mg/m3
Austria	1000	4200	4000	16800
Germany (AGS)	1000	4200	8000	33600
Germany (DFG)	1000	4200	8000	33600
Sweden	500	2000	750	3000
Switzerland	1000	4240	-	-
United Kingdom	1000	4240	-	-
US- WEEL(AIHA)	1000	-	-	-

8.2 Exposure controls

Appropriate 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 prior to use of torches or other open flames, or if employees are entering enclosed areas.

Personal protective equipment:

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

Thermal hazards: Not available.

Environmental exposure controls:

Should not be released into the environment.

Prevent from entering sewers, basements and workpants, or any place where its accumulation can be dangerous.

Consumer exposure controls:

Avoid breathing vapors. Avoid contact with skin or eyes.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	Liquefied gas.
Colour:	Colorless.
Odour:	Week
pH:	Neutral.
Melting point/freezing point:	-101 - 103 °C at 1013 hPa
Boiling Point:	-26.1°C at 1013 hPa
Flash point:	Does not flash.
Evaporation rate :	CL4 = 1 (Greater than 1)
Vapour pressure:	6620.7 hPa 25 °C(as liquid)
Density:	1.206 g/cm^3 at 25 °C, (as liquid)
Vapor Density:	3.6 (Air=1.0) at 25°C
Solubility(ies):	1,5 g/l at 25 °C at 1013 hPa
Partition coefficient (n -octanol/water):	Log Pow = 1.06
Auto-ignition temperature:	> 743 °C
Explosive properties:	No data available.
Oxidising properties:	No data available.

9.2 Other information

No data available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Polymerization: Polymerization will not occur.

10.2 Chemical stability

Material is stable. However, avoid open flames and high temperatures.

10.3 Possibility of hazardous reactions

Stable under recommended storage conditions. May react with aluminium.

10.4 Conditions to avoid

Avoid open flames and high temperatures.

The product is not flammable in air under ambient conditions of temperature and pressure.

When the mixture pressurised with air or oxygen,the mixture may become flammable.

Certain mixtures of HCFCs or HFCs with chlorine may become flammable or reactive under certain conditions.

10.5 Incompatible materials

Incompatible with active metals, alkali or alkaline earth metals--powdered Al, Zn, Be, etc.

10.6 Hazardous decomposition products

Decomposition products are hazardous: Hydrogen halides, Carbon dioxide (CO_2), carbon monoxide, fluorocarbons, and carbonyl halides. This material can be decomposed by high temperatures (open flames, glowing metal Surfaces, etc.).

These materials are toxic and irritating. Contact should be avoided.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Toxicokinetics, metabolism and distribution

No data available.

11.2 Information on toxicological effects

Acute toxicity:

Acute Oral toxicity: No data available.

Acute Inhalation toxicity: LC50 > 500,000 ppm/4h (rat);

Acute Dermal toxicity: No data available.

Skin corrosion/irritation:

Repeated or prolonged contact with the product may cause removal of natural fat from the skin resulting in non-allergic contact dermatitis and skin absorption. Animal testing indicates this material is a slight skin irritant.

Serious eye damage/irritation:

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

Respiratory or skin sensitization:

Not a skin sensitizer.

Germ cell mutagenicity:

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 reproductive cells of mammals (has not produced heritable genetic damage).

CMR effects (Carcinogenicity, Mutagenicity and Toxicity for Reproduction):

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.

In a two-year inhalation study, 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.

STOT-single exposure and repeated exposure:

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, spleen weight. Decreased uterine, prostate weight. Repeated dosing of higher concentrations caused: the following temporary effects - Tremors.

Aspiration hazard:

No data available.

Delayed And Immediate Effects And Chronic Effects from short and long term exposure:

Long-term exposure caused significantly decreased body weights in male rats fed 300 mg/kg for 52 weeks, but there was no effect on mortality.

Additional Information:

RTECS #: KI8842500

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Acute toxicity	Effect dose	Exposure time	Species	Method
Acute fish toxicity:	LC50 = 450 mg/l	96h	Rainbow trout	Other
Acute daphnia toxicity:	EC50 = 980 mg/l	48h	Daphnia magna	Other
Acute bacteria toxicity:	No data available.			

12.2 Persistence and degradability

No data available.

12.3 Bioaccumulative potential

No appreciable bioaccumulation potential is to be expected (Log Pow < 3).

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

No data available.

12.6 Other adverse effects

Ozone Depletion Potential(ODP): 0

Global warming potential(GWP): 1.300

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Avoid discharging to atmosphere. Do not discharge into any place where its accumulation could be dangerous.

Refer to supplier's waste gas recovery programme. Contact the supplier if guidance is required.

Reclaim by distillation or remove to a permitted waste disposal facility. Comply with Federal, State, and local regulations.

SECTION 14: TRANSPORT INFORMATION

14.1 Land transport (ADR/RID/GGVSE)

UN-No.:	3159
Official transport designation:	1,1,1,2-TETRAFLUOROETHANE(REFRIGERANT GASR 134a)
Class:	2
Classification Code:	2A
Packing group:	III
Hazard label:	2.2
Tunnel restriction code:	3(C/E)
ADR tank Special provisions:	TA4 TT9

14.2 Sea transport (IMDG-Code/GGVSee)

Proper Shipping Name:	1,1,1,2-TETRAFLUOROETHANE(REFRIGERANT GASR 134a)
Class:	2
UN-No.:	3159
Packing group:	III

14.3 Air transport (ICAO-TI/IATA-DGR)

Proper Shipping Name:	1,1,1,2-TETRAFLUOROETHANE(REFRIGERANT GASR 134a)
Class:	2
UN-No.:	3159
Packing group:	III

14.4 Additional information

Shipping containers: tank cars, cylinders, and ton tanks.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulation:

Authorisations: No information available.

Restrictions on use: No information available.

EINECS: This substance is listed in the inventory.

DSD (67/548/EEC): This substance is not classified in the Annex I of Directive 67/548/EEC.

Other chemical regulation:

USA - TSCA: This substance is listed in the inventory.

USA - SARA Title III Hazard classifications sections 311, 312

USA - HMIS Health: 1

Flammability: 0

Reactivity: 1

Canada - DSL: This substance is listed in the inventory.

Australia - AICS: This substance is listed in the inventory.

Korea - ECL: This substance is listed in the inventory.

Japan - ENCS: This substance is listed in the inventory.

China - IECSC: This substance is listed in the inventory.

15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: OTHER INFORMATION

16.1 Revision Information

Date of the previous revision: Not applicable.
Date of this revision: 05/19/2010
Revision summary: New SDS

16.2 Relevant R-phrase(s) and H-statement(s)

No information available.

16.3 Abbreviations and acronyms

CLP	EU regulation (EC) No 1272/2008 on classification, labelling and packaging of chemical substances and mixtures
CAS:	Chemical Abstracts Service (division of the American Chemical Society).
EINECS:	European Inventory of Existing Commercial Chemical Substances.
RID:	European Rail Transport.
IMDG:	International Maritime Code for Dangerous Goods.
IATA:	International Air Transport Association.
TSCA:	Toxic Substances Control Act, The American chemical inventory.
HMIS:	Hazardous Materials Identification System set by OSHA
DSD:	Dangerous Substance Directive (67/548/EEC)
AICS:	The Australian Inventory of Chemical Substances.
ECL:	Existing Chemicals List, the Korean chemical inventory.
ENCS:	Existing and New Chemical Substances, the Japanese chemical inventory.
IECSC:	Inventory of existing chemical substances in China.

16.4 Declare to reader

The information in this Safety Data Sheet (SDS) was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable. According to REACH Article 31(5), the SDS shall be supplied in an official language of the Member State(s) where the substance or mixture is placed on the market, unless the recipient Member State(s) concerned provide otherwise. It should also be noted that this SDS is applicable to the countries with English as an official language.

---------- End of the SDS ----------

Material Safety Data Sheet

This MSDS adheres to the standards and regulatory requirements of China and may not meet the regulatory requirements in other countries.
MADE IN CHINA

SECTION I – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name in English : R-410A
Formula: CH_2F_2, CF_3CHF_2 .
Supplier: İDEAL SOĞUTMA EKİPMANLARI İÇ VE DIŞ TİCARET SANAYİ AŞ.
Address: Mimar Sinan Mah. Mimar Sinan Cad. No:8/5 Cekmekoy, ISTANBUL-TURKEY
Postcode: 34782
Website: www.i-cold.com
E-mail: info@i-cold.com
Telephone: +90 216 6428090
Telefax: +90 216 6404812
Emergency Telephone Number: +90 216 6428090

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
Difluoromethane (HFC-32)	75-10-5	50
Pentafluoroethane (HFC-125)	354-33-6	50

SECTION III – HAZARDS IDENTIFICATION

Hazardous Classification: Class 2.2 Compressed Gas and Non-combustible Gas
Primary Routes of Entry: Inhalation, Dermal, Eyes
Emergency Overview: Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact can cause frostbite.

Potential Health Hazards:

Skin: Skin contact may cause frostbite from exposure to the liquid.
Eyes: Irritant. Liquid contact will irritate and may cause conjunctivitis.
Inhalation: Inhalation may include nonspecific discomfort, such as nausea, headache, or weakness; or temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness.
Ingestion : Discomfort due to volatility would be expected.

SECTION IV – FIRST AID MEASURES

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

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 attentionif symptoms persist.

Inhalation: Immediately remove patient to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. 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.

SECTION V – FIRE FIGHTING MEASURES

Fire and Explosion Hazards: R-410A is not flammable in air at temperatures up to 100 □ at atmospheric pressure. However, mixtures of these products with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. These products can also become combustible in an oxygen enriched environment. 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.

Fire Fighting Instructions: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers / tanks with water spray. In the event of fire, wear self-contained breathing apparatus.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions: Immediately contact emergency personnel. Use suitable protective equipment. Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for Cleaning-up: Evaporates.

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 lowlying areas.

SECTION VII – HANDLING AND STORAGE

Handling: 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. 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.
Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52□.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Authorized Limit Values:

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
Difluoromethane	None	None	*1000 ppm TWA (8hr)
Pentafluoroethane	None	None	*1000 ppm TWA (8hr)

* = Workplace Environmental Exposure Level (AIHA)
CHINA MAC: No information available.

Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.
Respiratory Protection: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Hand Protection: Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye Protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
Skin Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling.

SECTION IX – PHYSICAL & CHEMICAL PROPERTIES

Appearance: Gas at ambient temperatures
Odor/Odour: Slight,ether-like.
Boiling Point(1013 mbars): - 48.5°C
Vapor Pressure: 239.7 psia (25°C)
Specific Gravity(water = 1.0): 1.066 (25°C)
Application: Refrigerant.
Color/Colour: Colorless/colourless
Molecular Weight: 72.6
pH: Neutral
Vapor Density (air=1):3.0 (25□)
Solubility: Not determined

SECTION X – STABILITY AND REACTIVITY

Stability: The product is stable. Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes,flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

Incompatibility With Other Materials: 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 with or accelerate decomposition of this material.

Hazardous Decomposition Products: Thermal decomposition products include hydrogen fluoride,hydrogen chloride, carbon monoxide, carbon dioxide and chlorine and possibly carbonyl halides. These materials are toxic and irritating. Contact should be avoided.

Hazardous Polymerization: Will not occur.

SECTION XI – TOXICOLOGICAL INFORMATION

Immediate (Acute) Effects:

HFC-32: LC_{50} : 4 hr. (rat):>520,000 ppm / Cardiac Sensitization threshold (dog): 350,000 ppm

HFC-125: LC_{50} : 4 hr. (rat):> 800,000 ppm / Cardiac Sensitization threshold (dog): 75,000 ppm

Delayed (Subchronic and Chronic) Effects:

HFC-32: Teratogenic NOEL (rat and rabbit) – 50,000 ppm

Subchronic inhalation (rat) NOEL – 50,000 ppm

HFC-125: Teratogenic NOEL (rat and rabbit) – 50,000 ppm

Subchronic inhalation (rat) NOEL - > 50,000 ppm

Chronic NOEL – 10,000 ppm

Other Data:

HFC-32, HFC-125: Not active in four genetic studies

Toxicity to reproduction: Did not show mutagenic or teratogenic effects in animal experiments.

SECTION XII – 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 (HFC-125)

Log Pow = 0.21 (HFC-32).

SECTION XIII – DISPOSAL CONSIDERATIONS

Nature of the Waste: Not a RCRA hazardous waste.

Waste Treatment: Waste from residues / unused products: Can be used after re-conditioning. Product removed from the cylinder must be disposed of in accordance with appropriate National and local regulation. Return cylinders with residual product to the supplier.(FLTCO)

SECTION XIV – TRANSPORT INFORMATION

Proper Shipping Name: Liquefied Gas, N.O.S. (Pentafluoroethane and Difluoromethane)

Hazard Class : 2.2.

UN-No. : 3163.

Marking : 5.

Primary label: Nonflammable Gas

Packing group : III.

Packing Method: Tank Cars. Cylinders. Ton Tanks

SECTION XV – REGULATORY INFORMATION

* Common dangerous chemical classification and labelling (GB13690-92).
* Regulations on the Control over Safety of Dangerous Chemicals (State Council Decree 344 [2002])
* Regulations on the Safety Use of Chemicals in Workplaces (Department of Labor, Reg 423 [1996]), are enacted to control the safe use, production, storage, transport, operation, trade and disposal of dangerous chemicals.

SECTION XVI – OTHER INFORMATION

Sources of key data used to compile the datasheet:

* Material Safety Data Sheet/ Genetron AZ-20 (R-410A) Honeywell.
* Material Safety Data Sheet/"SUVA" R-410A Du-pont.

Department: FOREIGN TRADE DEPT. "İDEAL SOĞUTMA EKİPMANLARI İÇ VE DIŞ TİCARET SANAYİ AŞ."

Issuing Date: 2013/06/13

Other Information:

HMIS Classification: Health – 1, Flammability – 1, Reactivity – 0
NFPA Classification: Health – 2, Flammability – 1, Reactivity – 0
ANSI/ASHRAE 34 Safety Group – A1

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. It is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

End of Document

Material Safety Data Sheet

This MSDS adheres to the standards and regulatory requirements of China and may not meet the regulatory requirements in other countries.
MADE IN CHINA

SECTION I – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name in English : R-407C

Synonyms: Blend-07

Formula: CH_2F_2, CF_3CHF_2, CH_2FCF_3

Supplier: İDEAL SOĞUTMA EKİPMANLARI İÇ VE DIŞ TİCARET SANAYİ AŞ.

Address: Mimar Sinan Mah. Mimar Sinan Cad. No:8/5 Cekmekoy ISTANBUL- TURKEY

Postcode: 34782

Website: www.i-cold.com

E-mail: info@i-cold.com

Telephone: +90 216 6428090

Telefax: +90 216 6404812

Emergency Telephone Number: +90 216 6428090

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
Difluoromethane (HFC-32)	75-10-5	23
Pentafluoroethane (HFC-125)	354-33-6	25
1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2	52

SECTION III – HAZARDS IDENTIFICATION

Hazardous Classification: Class 2.2 Compressed Gas and Non-combustible Gas

Primary Routes of Entry: Inhalation, Dermal, Eyes

Emergency Overview: Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact can cause frostbite.

Potential Health Hazards:

Skin: Skin contact may cause frostbite from exposure to the liquid.

Eyes: Irritant. Liquid contact will irritate and may cause conjunctivitis.

Inhalation: Inhalation may include nonspecific discomfort, such as nausea, headache, or weakness; or temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness.

Ingestion : Discomfort due to volatility would be expected.

SECTION IV – FIRST AID MEASURES

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

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 attentionif symptoms persist.

Inhalation: Immediately remove patient to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. 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.

SECTION V – FIRE FIGHTING MEASURES

Fire and Explosion Hazards: R-407C is not flammable in air at temperatures up to 100 □ at atmospheric pressure. However, mixtures of these products with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. These products can also become combustible in an oxygen enriched environment. 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.

Fire Fighting Instructions: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers / tanks with water spray. In the event of fire, wear self-contained breathing apparatus.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions: Immediately contact emergency personnel. Use suitable protective equipment. Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for Cleaning-up: Evaporates.

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 lowlying areas.

SECTION VII – HANDLING AND STORAGE

Handling: 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. Follow standard safety precautions for handling and use of compressed gas cylinders. R-407C should not be mixed with air above atmospheric pressure for leak testing or any other purpose.
Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52□.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Authorized Limit Values:

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
Difluoromethane	None	None	*1000 ppm TWA (8hr)
Pentafluoroethane	None	None	*1000 ppm TWA (8hr)
1,1,1,2-Tetrafluoroethane	None	None	*1000 ppm TWA (8hr)

* = Workplace Environmental Exposure Level (AIHA)
CHINA MAC: No information available.
Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.
Respiratory Protection: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Hand Protection: Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye Protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
Skin Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling.

SECTION IX – PHYSICAL & CHEMICAL PROPERTIES

Appearance: Gas at ambient temperatures
Odor/Odour: Slight,ether-like.
Boiling Point(1013 mbars): - 43.9°C
Vapor Pressure: 171.8 psia (25°C)
Specific Gravity(water = 1.0): 1.136 (25°C)
Application: Refrigerant.
Color/Colour: Colorless/colourless
Molecular Weight: 86.2
pH: Neutral
Vapor Density (air=1):3.0 (25□)
Solubility: Not determined

SECTION X – STABILITY AND REACTIVITY

Stability: The product is stable. Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes,flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

Incompatibility With Other Materials: 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 with or accelerate decomposition of this material.

Hazardous Decomposition Products: Thermal decomposition products include hydrogen fluoride,hydrogen chloride, carbon monoxide, carbon dioxide and chlorine and possibly carbonyl halides. These materials are toxic and irritating. Contact should be avoided.

Hazardous Polymerization: Will not occur.

SECTION XI – TOXICOLOGICAL INFORMATION

Immediate (Acute) Effects:

HFC-32: LC_{50} : 4 hr. (rat): 520,000 ppm / Cardiac Sensitization threshold (dog): 350,000 ppm

HFC-125: LC_{50} : 4 hr. (rat):> 800,000 ppm / Cardiac Sensitization threshold (dog): 75,000 ppm

HFC-134a: LC_{50}: 4 hr. (rat):> 500,000 ppm / Cardiac Sensitization threshold (dog): > 80,000 ppm

Delayed (Subchronic and Chronic) Effects:

HFC-32: Teratogenic NOEL (rat and rabbit) – 50,000 ppm

Subchronic inhalation (rat) NOEL – 50,000 ppm

HFC-125: Teratogenic NOEL (rat and rabbit) – 50,000 ppm

Subchronic inhalation (rat) NOEL - > 50,000 ppm

Chronic NOEL – 10,000 ppm

HFC-134a: Teratogenic NOEL (rat and rabbit) – 40,000 ppm

Subchronic inhalation (rat) NOEL – 50,000 ppm

Chronic NOEL – 10,000 ppm

Other Data:

HFC-32, HFC-125, HFC-134a: Not active in four genetic studies

Toxicity to reproduction: Did not show mutagenic or teratogenic effects in animal experiments.

SECTION XII – ECOLOGICAL INFORMATION

Aquatic Toxicity:

HFC-134a

48-hour EC_{50}, Daphnia magna: 980 mg/L

96-hour LC_{50}, Rainbow trout: 450 mg/L

Degradability (BOD):

R-407C is a gas at room temperature; therefore, it is unlikely to remain in water.

Octanol Water Partition Coefficient: Unknown for mixture

SECTION XIII – DISPOSAL CONSIDERATIONS

Nature of the Waste: Not a RCRA hazardous waste.

Waste Treatment: Waste from residues / unused products: Can be used after re-conditioning. Product removed from the cylinder must be disposed of in accordance with appropriate National and local regulation. Return cylinders with residual product to the supplier.(FLTCO)

SECTION XIV – TRANSPORT INFORMATION

Proper Shipping Name: Refrigerant Gas R-407C

Hazard Class : 2.2.

UN-No. : 3340.

Marking : 5.

Primary label: Nonflammable Gas

Packing group : III.

Packing Method: Tank Cars. Cylinders. Ton Tanks

SECTION XV – REGULATORY INFORMATION

* Common dangerous chemical classification and labelling (GB13690-92).

* Regulations on the Control over Safety of Dangerous Chemicals (State Council Decree 344 [2002])

* Regulations on the Safety Use of Chemicals in Workplaces (Department of Labor, Reg 423 [1996]), are enacted to control the safe use, production, storage, transport, operation, trade and disposal of dangerous chemicals.

SECTION XVI – OTHER INFORMATION

Sources of key data used to compile the datasheet:

* Material Safety Data Sheet/ R-407C, National Refrigerants, Inc.

* Material Safety Data Sheet/"SUVA" R-407C-Du-pont

Department: FOREIGN TRADE DEPT. "İDEAL SOĞUTMA EKİPMANLARI İÇ VE DIŞ TİCARET SANAYİ AŞ."

Issuing Date: 2013/06/13

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. It is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

End of Document

Material Safety Data Sheet

This MSDS adheres to the standards and regulatory requirements of China and may not meet the regulatory requirements in other countries.
MADE IN CHINA

SECTION I – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name in English : R-404A

Synonyms: Blend-04A

Formula: CHF_2CF_3, CH_3CF_3, CH_2FCF_3

Supplier: İDEAL SOĞUTMA EKİPMANLARI İÇ VE DIŞ TİCARET SANAYİ AŞ.

Address: Mimar Sinan Mah. Mimar Sinan Cad. NO:8/5 Cekmekoy ISTANBUL TURKEY

Postcode: 34782

Website: www.i-cold.com

E-mail: info@i-cold.com

Telephone: +90 216 6428090

Telefax: +90 216 6404812

Emergency Telephone Number: +90 216 6428090

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
Pentafluoroethane (HFC-125)	354-33-6	44
1,1,1-Trifluoroethane (HFC-143a)	420-46-2	52
1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2	4

SECTION III – HAZARDS IDENTIFICATION

Hazardous Classification: Class 2.2 Compressed Gas and Non-combustible Gas

Primary Routes of Entry: Inhalation, Dermal, Eyes

Emergency Overview: Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact can cause frostbite.

Potential Health Hazards:

Skin: Skin contact may cause frostbite from exposure to the liquid.

Eyes: Irritant. Liquid contact will irritate and may cause conjunctivitis.

Inhalation: Inhalation may include nonspecific discomfort, such as nausea, headache, or weakness; or temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness.

Ingestion : Discomfort due to volatility would be expected.

SECTION IV – FIRST AID MEASURES

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

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 attentionif symptoms persist.

Inhalation: Immediately remove patient to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. 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.

SECTION V – FIRE FIGHTING MEASURES

Fire and Explosion Hazards: R-404A is not flammable in air at temperatures up to 100 □ at atmospheric pressure. However, mixtures of these products with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. These products can also become combustible in an oxygen enriched environment. 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.

Fire Fighting Instructions: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers / tanks with water spray. In the event of fire, wear self-contained breathing apparatus.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions: Immediately contact emergency personnel. Use suitable protective equipment. Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for Cleaning-up: Evaporates.

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 lowlying areas.

SECTION VII – HANDLING AND STORAGE

Handling: 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. Follow standard safety precautions for handling and use of compressed gas cylinders. R-404A should not be mixed with air above atmospheric pressure for leak testing or any other purpose.
Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52□.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Authorized Limit Values:

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
Pentafluoroethane	None	None	*1000 ppm TWA (8hr)
1,1,1-Trifluoroethane	None	None	*1000 ppm TWA (8hr)
1,1,1,2-Tetrafluoroethane	None	None	*1000 ppm TWA (8hr)

* = Workplace Environmental Exposure Level (AIHA)
CHINA MAC: No information available.
Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.
Respiratory Protection: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Hand Protection: Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye Protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
Skin Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling.

SECTION IX – PHYSICAL & CHEMICAL PROPERTIES

Appearance: Gas at ambient temperatures
Odor/Odour: Slight,ether-like.
Boiling Point(1013 mbars): - 46.7 °C
Vapor Pressure: 182.1 psia (25°C)
Specific Gravity(water = 1.0): 1.05(25°C)
Application: Refrigerant.
Color/Colour: Colorless/colourless
Molecular Weight: 120
pH: Neutral
Vapor Density (air=1):3.43 (25□)
Solubility: Not determined

SECTION X – STABILITY AND REACTIVITY

Stability: The product is stable. Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes,flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

Incompatibility With Other Materials: 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 with or accelerate decomposition of this material.

Hazardous Decomposition Products: Thermal decomposition products include hydrogen fluoride,hydrogen chloride, carbon monoxide, carbon dioxide and chlorine and possibly carbonyl halides. These materials are toxic and irritating. Contact should be avoided.

Hazardous Polymerization: Will not occur.

SECTION XI – TOXICOLOGICAL INFORMATION

Immediate (Acute) Effects:

HFC-125: LC_{50} : 4 hr. (rat) > 800,000 ppm / Cardiac Sensitization threshold (dog) 75,000 ppm

HFC-143a: LC_{50} : 4hr. (rat) > 540,000 ppm / Cardiac Sensitization threshold (dog)> 250,000 ppm

HFC-134a: LC_{50} : 4hr. (rat) > 500,000 ppm/ Cardiac Sensitization threshold (dog)> 80,000 ppm

Delayed (Subchronic and Chronic) Effects:

HFC-125: Teratogenic NOEL (rat and rabbit) – 50,000 ppm

Subchronic inhalation (rat) NOEL - > 50,000 ppm / Chronic NOEL – 10,000 ppm

HFC-143a: Teratogenic NOEL (rat and rabbit) – 50,000 ppm

Subchronic inhalation (rat) NOEL - > 50,000 ppm

HFC-134a: Teratogenic NOEL (rat and rabbit) – 40,000 ppm

Subchronic inhalation (rat) NOEL – 50,000 ppm / Chronic NOEL – 10,000 ppm

Other Data:

HFC-125, HFC-134a: Not active in four genetic studies

HFC-143a: Not active in two genetic studies

Toxicity to reproduction: Did not show mutagenic or teratogenic effects in animal experiments.

SECTION XII – ECOLOGICAL INFORMATION

Aquatic Toxicity:

HFC 143a

96-hour LC_{50}, Rainbow trout: >40 mg/L

HFC-134a

48-hour EC_{50}, Daphnia magna: 980 mg/L

96-hour LC_{50}, Rainbow trout: 450 mg/L

Degradability (BOD):

R-404A is a gas at room temperature; therefore, it is unlikely to remain in water.

Octanol Water Partition Coefficient: Unknown for mixture

SECTION XIII – DISPOSAL CONSIDERATIONS

Nature of the Waste: Not a RCRA hazardous waste.

Waste Treatment: Waste from residues / unused products: Can be used after re-conditioning. Product removed from the cylinder must be disposed of in accordance with appropriate National and local regulation. Return cylinders with residual product to the supplier.

SECTION XIV – TRANSPORT INFORMATION

Proper Shipping Name: Refrigerant Gas R-404A

Hazard Class : 2.2.

UN-No. : 3337.

Marking : 5.

Primary label: Nonflammable Gas

Packing group : III.

Packing Method: Tank Cars.Cylinders.Ton Tanks

SECTION XV – REGULATORY INFORMATION

* Common dangerous chemical classification and labelling (GB13690-92).
* Regulations on the Control over Safety of Dangerous Chemicals (State Council Decree 344 [2002])
* Regulations on the Safety Use of Chemicals in Workplaces (Department of Labor, Reg 423 [1996]), are enacted to control the safe use, production, storage, transport, operation, trade and disposal of dangerous chemicals.

SECTION XVI – OTHER INFORMATION

Sources of key data used to compile the datasheet:

* Material Safety Data Sheet/ R-404A, National Refrigerants, Inc.
* Material Safety Data Sheet/"SUVA" R-404A-Du-pont

Department: FOREIGN TRADE DEPT. "İDEAL SOĞUTMA EKİPMANLARI İÇ VE DIŞ TİCARET SANAYİ AŞ."

Issuing Date: 2013/11/15

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. It is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

End of Document