



# BEST INC. LIMITED

ROOMS 1318-20 13/F HOLLYWOOD PLAZA, 610 NATHAN ROAD, MONGKOK, KOWLOON, HONG KONG

## MATERIAL SAFETY DATA SHEET

### R422D

To: DAYAN REFRIGERATION SUPPLIERS LTD.  
HOLON POB 1829-ZIP CODE 5811702- ISRAEL

Invoice No.: 20170712  
Date: AUG. 02, 2017  
PO NO: PO701476

By Vessel: MAERSK ENSHI 731W  
From: NINGBO, CHINA

Sales Contract No.: BEST20170712  
To: ASHDOD, ISRAEL

### SECTION I – CHEMICAL PRODUCT

**Chinese Name :** R422D

**Product Name in English :** R422D

### SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight %
Pentafluoroethane	354-33-6	65.10
1,1,1,2-TETRAFLUOROETHANE	811-97-2	31.50
Isobutane	75-28-5	3.40

### SECTION III – HAZARDS IDENTIFICATION

**Hazards identification :** Gas reduces oxygen available for breathing. Causes asphyxiation in high concentrations. The victim will not realize that he/she is suffocating. Inhalation may cause central nervous system effects. May cause cardiac arrhythmia. Vapours may cause drowsiness and dizziness.

Chronic Exposure : None known.

#### **Carcinogenicity**

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

### SECTION IV – FIRST AID MEASURES

**Inhalation:** Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. Use oxygen as required, provided a qualified operator is present. Call a physician. Do not give drugs from adrenaline-ephedrine group.

**Skin/eye contact:** After contact with skin, wash immediately with plenty of water. 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. If symptoms persist, call a physician.

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In case of frostbite water should be lukewarm, not hot. If symptoms persist, call a physician

**Ingestion:** Unlikely route of exposure. As this product is a gas, refer to the inhalation section. Do not induce vomiting without medical advice. Call a physician immediately.



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## Notes to physician

**Treatment** : 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

**Flash point** : not applicable

**Lower explosion limit** : None

**Upper explosion limit** : None

**Suitable extinguishing media**: The product is not flammable. ASHRAE 34 Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Specific hazards during firefighting**: Contents under pressure.

This product is not flammable at ambient temperatures and atmospheric pressure. However, this material can ignite when mixed with air under pressure and exposed to strong ignition sources. Container may rupture on heating. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

In case of fire hazardous decomposition products may be produced such as:

Hydrogen halides

Hydrogen fluoride

Carbon monoxide

Carbon dioxide (CO<sub>2</sub>)

Carbonyl halides

**Special protective equipment for fire-fighters**: In the event of fire and/or explosion do not breathe fumes. Wear self-contained breathing apparatus and protective suit. No unprotected exposed skin areas.

## SECTION VI – ACCIDENTAL RELEASE MEASURES

**Personal precautions**: Immediately evacuate personnel to safe areas.

Keep people away from and upwind of spill/leak. Wear personal protective equipment. Unprotected persons must be kept away. Remove all sources of ignition.

Avoid skin contact with leaking liquid (danger of frostbite). Ventilate the area.

After release, disperses into the air. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Avoid accumulation of vapours in low areas. Unprotected personnel should not return until air has been tested and determined safe. Ensure that the oxygen content is  $\geq 19.5\%$ .

**Environmental precautions**: Prevent further leakage or spillage if safe to do so. The product evaporates readily.

**Methods for cleaning up** : Ventilate the area.

## SECTION VII – HANDLING AND STORAGE

### Handling

Handling : Handle with care. Avoid inhalation of vapour or mist. Do not get in eyes, on skin, or on clothing. Wear



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personal protective equipment. Use only in well-ventilated areas.

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C. Follow all standard safety precautions for handling and use of compressed gas cylinders. Use authorized cylinders only. Protect cylinders from physical damage. Do not puncture or drop cylinders, expose them to open flame or excessive heat.

Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material. Do not remove screw cap until immediately ready for use. Always replace cap after use. Advice on protection against fire and explosion : The product is not flammable.

Can form a combustible mixture with air at pressures above atmospheric pressure.

## **Storage**

Requirements for storage areas and containers : Pressurized container: Protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even

after use. Keep containers tightly closed in a dry, cool and well-ventilated

Place. Storage rooms must be properly ventilated. Ensure adequate ventilation, especially in confined areas.

Protect cylinders from physical damage.

## **SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Protective measures** : Do not breathe vapour. Avoid contact with skin, eyes and clothing.

Ensure that eyewash stations and safety showers are close to the workstation location.

**Exposure limit value for country:** UK: 1,1,1,2-Tetrafluoroethane (R134a) - LTEL: 1000ppm (EH40/2005)

**Personal protection** : Ensure adequate ventilation. Do not smoke while handling product.

Protect eyes, face and skin from liquid splashes.

**Engineering measures** : General room ventilation is adequate for storage and handling.

Perform filling operations only at stations with exhaust ventilation facilities.

**Eye protection** : Wear as appropriate: Safety glasses with side-shields If splashes are likely to occur, wear: Goggles or face shield, giving complete protection to eyes

**Hand protection** : Leather gloves In case of contact through splashing: Protective gloves  
Gloves Polyvinyl alcohol or nitrile- butyl-rubber gloves

**Skin and body protection** : Avoid skin contact with leaking liquid (danger of frostbite). Wear cold insulating gloves/face shield/eye protection.

**Respiratory protection** : In case of insufficient ventilation wear suitable respiratory equipment. Wear a positive-pressure supplied-air respirator. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. For rescue and maintenance work in storage tanks use self-contained breathing apparatus.

**Hygiene measures** : Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation, especially in confined areas. Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use. Keep working clothes separately

## **SECTION IX – PHYSICAL & CHEMICAL PROPERTIES**

**Form** : Liquefied gas

**Color** : colourless

**Odor** : odourless

**pH** : neutral



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<b>Freezing point :</b>	no data available
<b>Boiling point/boiling range :</b>	-43 °C (-45 °F)
<b>Vapor pressure :</b>	10,152 hPa at 21.1 °C (70.0 °F)
<b>Vapor pressure :</b>	23,091 hPa at 54.4 °C (129.9 °F)
<b>Relative vapour density :</b>	3.0(Air = 1.0)
<b>Density :</b>	1.15 g/cm <sup>3</sup> at 25 °C (77 °F)
<b>Water solubility :</b>	not determined

## SECTION X – STABILITY AND REACTIVITY

**Conditions to avoid :** Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C. Decomposes under high temperature. Some risk may be expected of corrosive and toxic decomposition products. Can form a combustible mixture with air at pressures above atmospheric pressure. Do not mix with oxygen or air above atmospheric pressure.

**Materials to avoid :** Finely divided aluminium

- Potassium
- Powdered metals
- Aluminium
- Magnesium
- Zinc

**Hazardous decomposition products:** In case of fire hazardous decomposition products may be reproduced such as:

- Hydrogen halides
- Hydrogen fluoride
- Carbon monoxide
- Carbon dioxide (CO<sub>2</sub>)
- Carbonyl halides

**Thermal decomposition :** >250 °C To avoid thermal decomposition, do not overheat.

**Hazardous reactions :** Hazardous polymerisation does not occur. Stable under normal conditions.

## SECTION XI – TOXICOLOGICAL INFORMATION

**Acute inhalation toxicity :** LC50 rat

- Dose: > 800000 ppm
- Exposure time: 4 h
- Test substance: Ethane, pentafluoro- (HFC-125)

**Acute inhalation toxicity :** LC50 rat

- Dose: > 500000 ppm
- Exposure time: 4 h
- Test substance: 1,1,1,2-tetrafluoroethane (HFC-134a)

**Additional advice :** Acute Health Hazard

- Ethane, pentafluoro- (HFC-125): Cardiac sensitisation threshold (dog): 75000 ppm.

- 1,1,1,2-tetrafluoroethane (HFC-134a): Cardiac sensitisation threshold (dog): 80000 ppm.

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Irritating to eyes and skin. Rapid evaporation of the liquid may cause frostbite. Avoid skin contact with



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leaking liquid (danger of frostbite).

May cause cardiac arrhythmia.

## SECTION XII – ECOLOGICAL INFORMATION

**Additional ecological information:** Accumulation in aquatic organisms is unlikely. This product contains greenhouse gases which may contribute to global warming. Do NOT vent to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered.

This product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82.

## SECTION XIII – DISPOSAL CONSIDERATIONS

**Waste Information:** Avoid contact of spilled material and runoff with soil and surface waterways. Consult an environmental professional to determine if local, regional or national regulations would classify spilled or contaminated materials as hazardous waste. Use only approved transporters, recyclers, treatment, storage or disposal facilities. Dispose of according to all federal, state and local applicable regulations.

**Other Disposal Considerations:** Observe all Federal, State, and Local Environmental regulations.

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.

**Additional advice :** This product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

## SECTION XIV – TRANSPORT INFORMATION

<b>DOT</b>	Proper shipping name :	LIQUEFIED GAS, N.O.S.
	UN-Number :	3163
	Class :	2.2
<b>IATA</b>	UN Number :	3163
	Description of the goods :	LIQUEFIED GAS, N.O.S. (Pentafluoroethane, 1,1,1,2-Tetrafluoroethane, Iso-butane)
	Class :	2.2
	Hazard Label :	2.2
	Packing instruction (cargo aircraft) :	200
	Packing instruction (passenger aircraft):	200
<b>IMDG</b>	Substance No. :	UN 3163
	Description of the goods :	LIQUEFIED GAS, N.O.S. (Pentafluoroethane, 1,1,1,2-Tetrafluoroethane, Iso-butane)
	Class :	2.2
	Hazard Label :	2.2
	EmS Number :	F-C
	Marine pollutant :	no



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## SECTION XV – REGULATORY INFORMATION

**Number in Annex I of Dir 67/548:** Not applicable for preparations

**EC Classification :**Not classified as dangerous preparation.Labelling of cylinders

**-Symbols:** Label 2.2: non flammable non toxic gas

## SECTION XVI – OTHER INFORMATION

**Issuing Date:** 2007/12/22      **Revision Date:** 2012/1/22

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.

For and on behalf of  
**BEST INC. LIMITED**  
卓越興業有限公司  
  
.....  
Authorized Signature(s)