



SAVE OUR CLIMATE

PURECHEM

NATURAL REFRIGERANTS



CARE



PureChem Co., Ltd



Introduction

We are pleased to inform that Pure Chem, Co., Ltd(former; Elemans Corp) manufacture and ready to supply high purity hydrocarbon refrigerants to the domestic and customers all over the world.

For the sustainable and ideal replacement for C.F.C and H.F.C refrigerants which have been negative effect on the global O.D.P(ozone depletion potential) and G.W.P(global warming potential), the world's leading environmental scientists and researchers came to the conclusion that only the hydrocarbon refrigerants could be fundamental solution for the benefit of environment protection and economical way of stable supply.

World Climatic Convention ratification will be in active, soon through out the developed countries, followed by Montreal Protocol in 1987 and Kyoto Protocol, Rio Protocol for the protection of global environment and ecology.

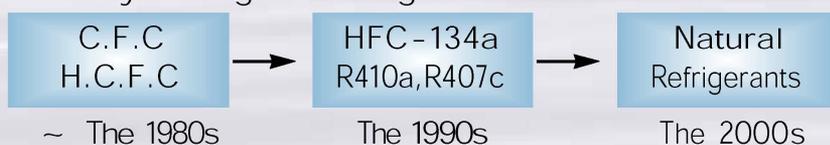
Only the natural substance can save the world from the chemical pollution.

We are very near at you and ready to supply our hi-purity hydrocarbon refrigerants at any time and to any place you want . We can help your company with eco-friendly management, C.F.C/HCFC free product management system will make your company competitive than ever.

Also, our hi-purity hydrocarbon refrigerants series will give you benefit of 5-15% saving of energy , 40-50% reduction in charge weight as well as benefit of using economical mineral oil rather than expensive ester oil, or, P.A.G oil

Thanks & regards,
M. H., Kim / Presedent

Tendency of refrigerants using in E.U countries





Company history

- 1992.2. 1 Established Elemans Corporation (Overseas trading business)
- 1995. 1. Exclusive distributorship for Calor Gas, Ltd(CARE Series)
- 1995.3. Supplied R600a /CARE-10 sample to Samsung Electronics, Inc.
- 1996.12. Samsung developed larger capacity R600a refrigerators.
- 2000. 1. Samsung started mass production of R600a refrigerants.
- 2001. 1. L.G started to produce large size R600a refrigerators.
- 2001. 1. Import and installed A'GRAMKOW R600a charging machines.
- 2002. 4. Meilong Cyclopentane distributorship
- 2004. 7. Started to install manufacturing facilities in Gwang Yang City
- 2004.7.13 Registered hydrocarbon refrigerants factory
- 2004.10. 1 Registered Korea Gas Safety Corporation
- 2004.11. 1 Started commercial operation(R600a, purity 99.99%)
- 2005.9.29 Jingsu Kangtai Fluorine Chemical Co., Ltd(China) R-134a Distributorship



Characteristics

R600a (EP600a /CARE 10/ isobutane), is a single ingredient refrigerant and is used primarily in domestic refrigerators. In Europe millions of domestic fridges already use this type of refrigerant. In the UK, British manufacturer LEC produces fridges for the home market LEC produces fridges for the home market using CARE 10. Also, in Korea LG and Samsung have been used our products.

- Primarily for use in new domestic refrigerators and freezers.
- Operates at significantly lower pressures than R12 or R134a.
- Possesses lower volumetric refrigerating effect than R12 or R134a.
- Requires a specific R600a compressor.
- Not for use as a retrofit refrigerant.
- Compatible with most common refrigeration materials and lubricants.

Application Range : Domestic refrigeration, water purifier, medical aerosols, Cosmetics, Foaming agent, washing agent, G.C standard gas

Packing : 500gr/CAN, 3Kg/10 Kg/20 Kg/50 Kg Cylinder, Bulk Tank, ISO Tank Container

Physical Properties

Product	EP600a	R12	R134a
Chemical Type	HC	CFC	HFC
Molecular Mass (Kg/Kmol)	58.1	120.9	102.0
Density (Kg/m ³) ★	544.4	1310.8	1206.0
Temperature Range	high, medium	-	-
Ozone depletion potential (CFC-11=1)	0	0.9	0
Global warming potential (CO ₂ =1, 100yr ITH) ◇	3	10600	1600
Normalboilingpoint(1.0bar,abs) ★	-11.7℃	-29.8℃	-26.2℃
Latent heat (1.0 bar, abs) ★	367 kJ/kg	145 kJ/kg	189 kJ/kg
Toxicity	N o	N o	N o
Refrigerant mass charge size (R12=100%)	42%	100%	91%
Lubricant	Mineral	Mineral	Ester

· All conditions given at +25℃ (dew point).

★ Boilingpointsatstandardatmosphericpressure(101.325kPa)

◇ CO₂ GWP based on 100 year integration time horizon, defined in the Intergovernmental Panel for Climate Change (IPCC) Scientific Assessment 1994, CO₂ = 1.

EP 12 (CARE-30)

High Purity Drop-in Blended Natural Refrigerant



Characteristics

EP-12 / CARE 30 is the perfect replacement for R12, R134a. It is a blend of hydrocarbons (isobutane and propane). It can be used in typical R12/R134a applications.

- Primarily for use in small commercial refrigeration and air-conditioning systems that have traditionally used R12.
- Operates at similar pressures to R12 or R134a.
- Possesses similar volumetric refrigerating effect to R12 and R134a.
- Can be used in a R12 or R134a compressor or a specific CARE 30 compressor.
- Can be used with R12 or R134a heat exchangers and expansion devices.
- Compatible with most common refrigeration materials and mineral oils.
- Non-toxic to human body, free from CFC / HFC regulation.
- Purity : 99.5%~99.99%

Application Range : Domestic refrigerators, commercial fridges, water purifiers, Vending machines, open top show-cases.

Packing : 500gr/CAN, 3Kg/10 Kg/20 Kg/50 Kg Cylinder, Bulk Tank, ISO Tank Container

Physical Properties

Product	EP12	R12	R134a
Chemical Type	HC	CFC	HFC
Molecular Mass(Kg/Kmol)	51.0	120.9	102.0
Density (Kg/m ³) ★	533.8	1310.8	1206.0
Temperature Range	high, medium	-	-
Ozone depletion potential(CFC-11=1)	0	0.9	0
Global warming potential (CO ₂ =1, 100yr ITH) ◇	3	10600	1600
Normal boiling point (1.0 bar, abs) ★	-31.7°C	-29.8°C	-26.2°C
Latent heat (1.0 bar, abs) ★	367 kJ/kg	145 kJ/kg	189 kJ/kg
Toxicity	No	No	No
Refrigerant mass charge size (R12=100%)	41%	100%	91%
Lubricant	Mineral	Mineral	Ester

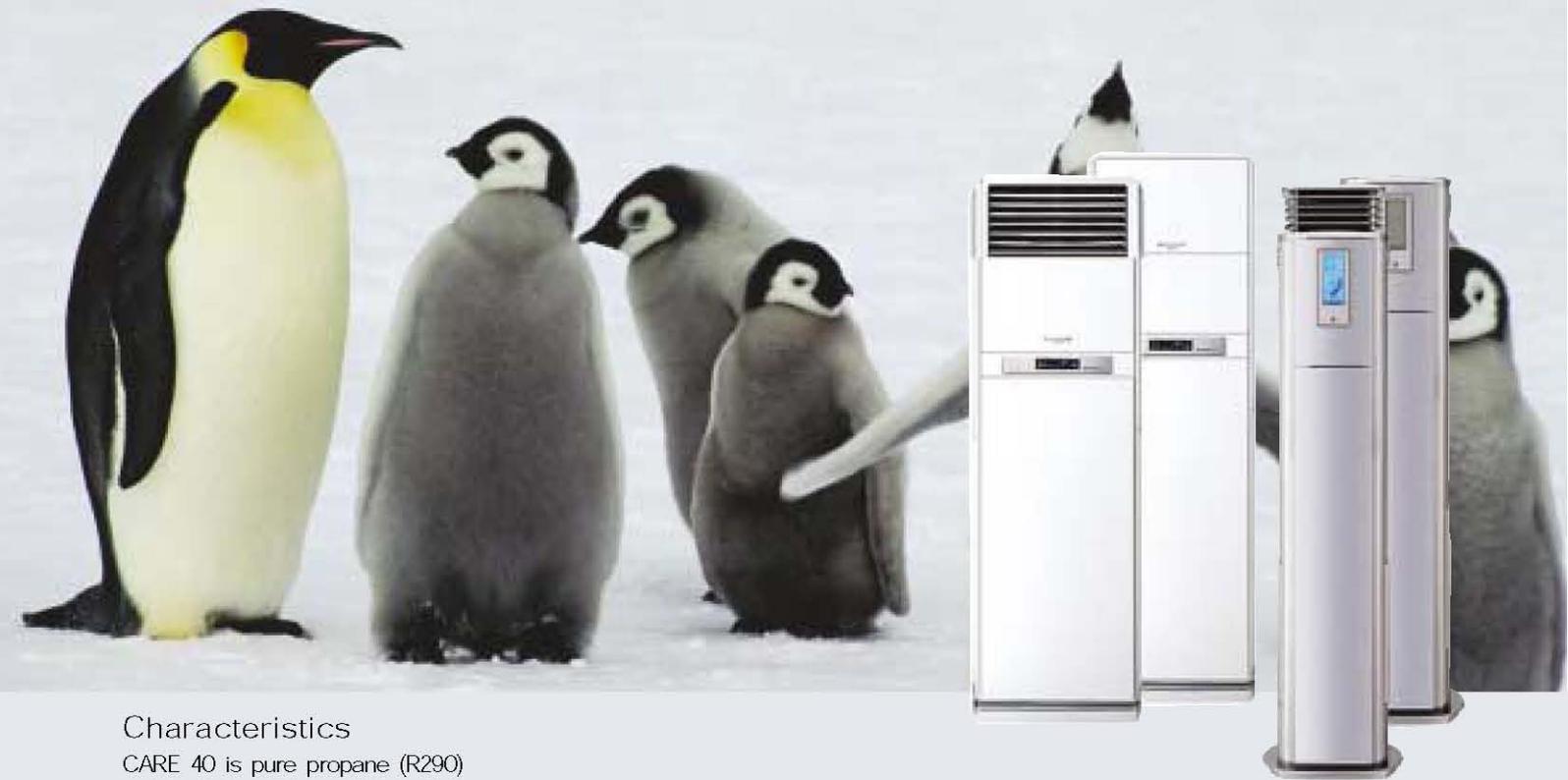
· All conditions given at +25°C (dew point).

★ Boiling at standard atmospheric pressure (101.325kPa)

◇ CO₂ GWP based on 100 year integration time horizon, defined in the Intergovernmental Panel for Climate Change (IPCC) Scientific Assessment 1994, CO₂ = 1.

EP 290 (R290/CARE-40)

High Purity Propane Natural Refrigerant / 99.5 ~ 99.99%



Characteristics

CARE 40 is pure propane (R290)

- Primarily for use in commercial air-conditioning and commercial and industrial refrigeration systems that have traditionally used R502.
- Operates at slightly lower pressures than R502 and R404A.
- Possesses similar volumetric refrigerating effect to R502 and R404A.
- Can be used in a R502, R22 or R404A compressor or a specific CARE 40 compressor.
- Can be used with R502, R22 or R404A heat exchangers and expansion devices.
- Compatible with most common refrigeration materials and lubricants.

Replacement: R-22, R-404a, HFC-407C, HFC-507

Application Range: Domestic air-conditioners, commercial fridges in supermarkets.

All kinds of chillers in hotels, factories, department stores, buildings.

Packing : 500gr/CAN, 3Kg/10 Kg/20 Kg/50 Kg Cylinder, Bulk Tank, ISO Tank Container

Physical properties

Product	EP290	R502	R404A
Chemical Type	HC	CFC/HFC	HFC
Molecular Mass (Kg/Kmol)	44.1	111.6	100.6
Density(Kg/m ³) ★	494.3	1192.0	1042
Temperature Range	low,high,medium	-	-
Ozone depletion potential (CFC-11=1)	0	0.28	0
Global warming potential (CO ₂ =1, 100yr ITH) ◇	3	6200	4540
Normalboilingpoint(1.0bar,abs) ★	-42.1℃	-45.4℃	-46.6℃
Latent heat (1.0 bar, abs) ★	439 kJ/kg	174 kJ/kg	139 kJ/kg
Toxicity	No	No	No
Refrigerant mass charge size (R502=100%)	41%	100%	86%
Lubricant	Mineral	Mineral	Ester

· All conditions given at +25°C (dew point).

★ Boiling points at standard atmospheric pressure (101.325kPa)

◇ CO₂ GWP based on 100 year integration time horizon, defined in the Intergovernmental Panel for Climate Change (IPCC) Scientific Assessment 1994, CO₂ = 1.

EP 22 (R1270/CARE - 45)

High Purity Drop-in Blended Natural Refrigerant



Characteristics

CARE 45 is pure propene (propylene) (R1270)

- Primarily for use in commercial air-conditioning and large refrigeration systems that have traditionally used R22.
- Operates at slightly higher pressures than R22 but similar to R404A and possesses similar volumetric refrigerating effect to R22 and R404A.
- Can be used in R22 or R404A compressor or a specific CARE 45 compressor. Can be used with R502, R22, R404A and R407C heat exchangers and expansion devices.
- Compatible with most common refrigeration materials and lubricants

Replacement : R-22, R-404a, HFC-407C, HFC-507

Application Range : Commercial air-conditioner, large size commercial fridges.
Large size chiller in hotels, department stores, large buildings.

Packing : 500gr/CAN, 3Kg/10 Kg/20 Kg/50 Kg Cylinder, Bulk Tank, ISO Tank Container

Physical properties

Product	EP22	R22	R404A
ChemicalType	HC	HCFC	HFC
MolecularMass(Kg/Kmol)	42.1	86.5	100.6
Density (Kg/m ³) ★	507.0	1191	1042
TemperatureRange	low,high,medium	-	-
Ozone depletion potential (CFC-11=1)	0	0.034	0
Global warming potential (CO ₂ =1, 100yr ITH) ◇	3	1900	4540
Normalboilingpoint(1.0bar,abs) ★	-47.7°C	-40.8°C	-46.6°C
Latent heat (1.0 bar, abs) ★	338 kJ/kg	180 kJ/kg	139 kJ/kg
Toxicity	No	No	No
Refrigerant mass charge size (R22=100%)	43%	100%	88%
Lubricant	Mineral	Mineral	Ester

· All conditions given at +25°C (dew point).

★ Boiling points at standard atmospheric pressure (101.325kPa)

◇ CO₂ GWP based on 100 year integration time horizon, defined in the Intergovernmental Panel for Climate Change (IPCC) Scientific Assessment 1994, CO₂ = 1.

EP 502 (CARE-50)

High Purity Drop-in Blended Natural Refrigerant



Characteristics

CARE 50 is a blend of propane (R290) and ethane (R170) developed to replace R22 and R407C

- Primarily for use in commercial and industrial refrigeration and air-conditioning systems that have traditionally used R22.
- Operates at similar pressures to R22 and R407C.
- Possesses similar volumetric refrigerating effect to R22 and R407C.
- Can be used in a R22 or R407C compressors or a specific CARE 50 compressor.
- Can be used with R22 or R407C heat exchangers and expansion devices.
- Compatible with most common refrigeration materials and lubricants.

Replacement: R-22, R-404a, HFC-407C, HFC-507

Application Range : All kinds of heat pumps, low/ medium temperature commercial refrigeration.

Large size chillers in hotels, factories, department stores, large buildings.

Packing : 500gr/CAN, 3Kg/10 Kg/20 Kg/50 Kg Cylinder, Bulk Tank, ISO Tank Container

Physical properties

Product	EP502	R502	R407C
ChemicalType	HC	CFC/HFC	HFC
MolecularMass(Kg/Kmol)	46.8	111.6	95.0
Density (Kg/m ³) ★	493.5	1192.0	1140
TemperatureRange	low,high,medium	-	-
Ozone depletion potential (CFC-11=1)	0	0.28	0
Global warming potential (CO ₂ =1, 100yr ITH) ◇	3	6200	1610
Normalboilingpoint(1.0bar,abs) ★	-49.1°C	-45.4°C	-43.8°C
Latent heat (1.0 bar, abs) ★	443 kJ/kg	174 kJ/kg	186 kJ/kg
Toxicity	No	No	No
Refrigerant mass charge size (R502=100%)	41%	100%	97%
Lubricant	Mineral	Mineral	Ester

· All conditions given at +25°C (dew point).

★ Boiling points at standard atmospheric pressure (101.325kPa)

◇ CO₂ GWP based on 100 year integration time horizon, defined in the Intergovernmental Panel for Climate Change (IPCC) Scientific Assessment 1994, CO₂ = 1.

EP 170 (R170)

High Purity Ethane Natural Refrigerant / 99.5 ~ 99.99%



Characteristics

Expected improve of C.O.P by 10~15% compared with existing C.F.C & HFC.

Charging amount can be reduced by 43~50% compared with C.F.C & HFC. Energy efficiency can be improved by maximum 25% compared with HCFC13& HFC23. Noise level can be reduced compared with HCFC13 & HFC23 due to lower vapor pressure.

Economical mineral oil can be used rather than expensive ester oil, or PAG oil.
Free from C.F.C / HFC regulation for export refrigeration equipments.

Replacement : R-13, R-23, R-503

Application Range : Low temperature cooling system

Packing : 10 Kg/20 Kg/50 Kg Cylinder, Bulk Tank, ISO Tank Container

Physical properties

Product	EP170
Chemical Type	HC
Molecular Mass(Kg/Kmol)	30.1
Density (Kg/m ³) ★	446.0
Temperature Range	Ultra low temp
Ozone depletion potential (CFC-11=1)	0
Global warming potential (CO ₂ =1, 100yr ITH) ◇	3
Normal boiling point (1.0 bar, abs) ★	-88.8℃
Latent heat (1.0 bar, abs) ★	299 kJ/kg
Toxicity	None
Lubricant	Mineral oil

· All conditions given at +25℃ (dew point).

★ Boiling points at standard atmospheric pressure (101.325kPa)

◇ CO₂ GWP based on 100 year integration time horizon, defined in the Intergovernmental Panel for Climate Change (IPCC) Scientific Assessment 1994, CO₂ = 1.



BOC
Refrigerants

Refrigerants CARE Series

BOC
Refrigerants



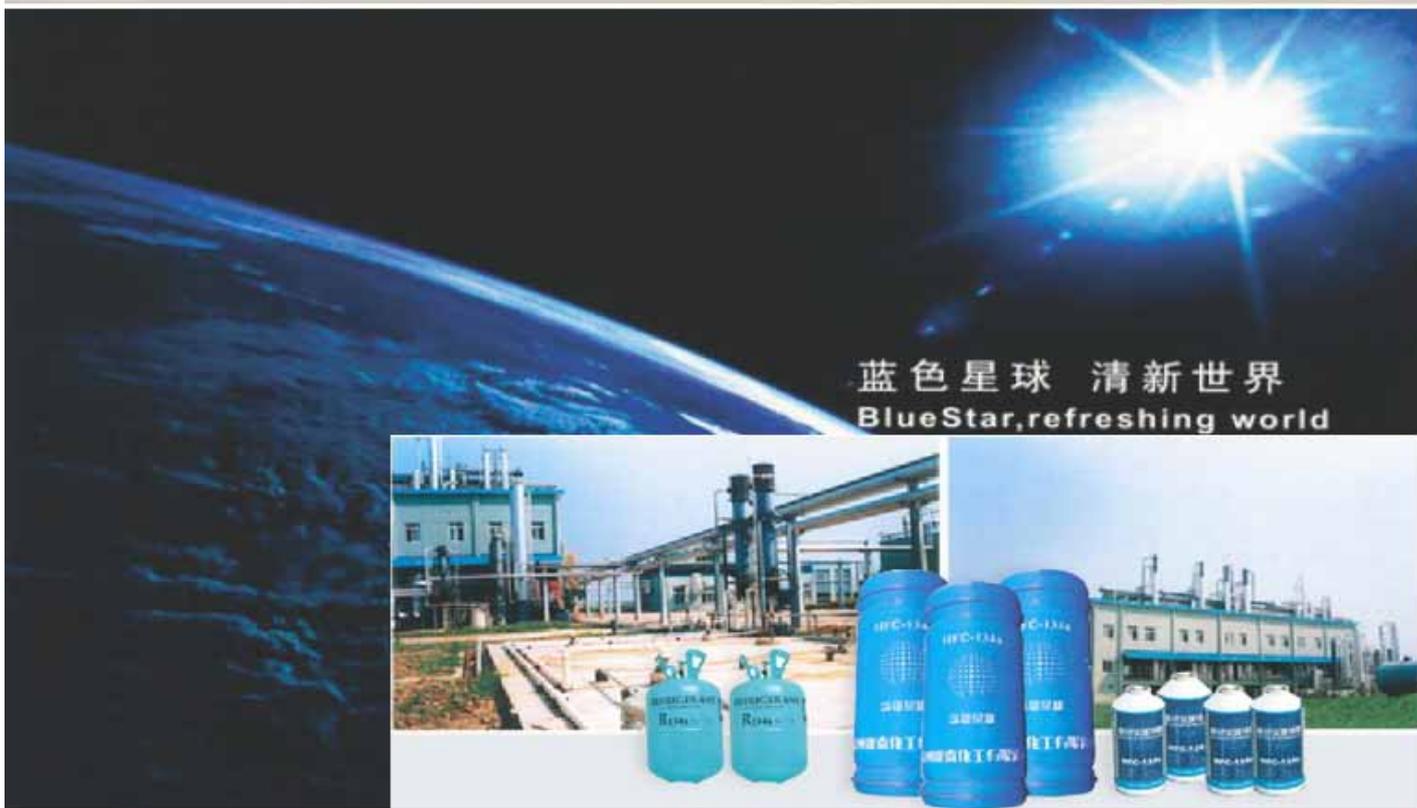
BOC Refrigerants is part of Calor Gas - the acknowledged experts and industry leaders in LPG (hydrocarbons). CARE was formed in 1993 as a natural diversification of Calor's core business. Calor had already used its expertise helping the aerosol industry move away from CFCs in the mid-80s. Our expertise in hydrocarbons gives CARE the leading position in the refrigeration industry. CARE is the trade name for Calor Gas refrigerants. CARE refrigerants are a range of natural hydrocarbon refrigerants selected and formulated as replacements for CFC, HCFC and HFC refrigerants for use in air conditioning and refrigeration systems.

· Packing : 420gr/CAN, 3.5Kg/ 12Kg/ 46 Kg Cylinder

Application ranges for CARE refrigerants

Refrigerant	Normal b.p (1,0 bar, abs)	Latent heat (1,0 bar, abs)	Application Range	Replacement
CARE 10	-11,7°C	367 KJ/Kg	high/medium temperature; domestic appliances,	CFC-12, HFC-134a
CARE 30	-31,7°C	367 KJ/Kg	high/medium temperature; commercial, automotive, domestic,	CFC-12, HFC-134a
CARE 40	-42,1°C	439 KJ/Kg	high/medium/low temperature ; commercial & industrial refrigeration & A/C, heat pumps, chillers,	R-502, HCFC-22, HFC-404A, HFC-407C, HFC-507
CARE 45	-47,7°C	338 KJ/Kg	high/medium/low temperature ; commercial & industrial refrigeration & A/C, heat pumps, chillers,	R-502, HCFC-22, HFC-404A, HFC-407C, HFC-507
CARE 50	-49,1°C	443 KJ/Kg	high/medium/low temperature ; commercial, industrial & process refrigeration & A/C, heat pumps, chillers,	R-502, HCFC-22, HFC-404A, HFC-407C, HFC-507

· All conditions given at +25°C (dew point).
Boiling points at standard atmospheric pressure (101,325kPa)



We distribute Blustar Refrigerant R134a

Refrigerants Manufacturing is the newest important action of Changzhou Kangmei Chemical.

We (Pure Chem Co., Ltd) are distributor in Korea for domestic & overseas. Now, our main product is HFC-134a and other kinds of green refrigerants, such as HFC-125 and HFC-32, R410a are coming soon. As plan, our total capacity of all kinds of refrigerants will meet 30,000MT a year in the future.

Application

HFC134a is a refrigerant to replace CFC-12 in mobile air conditioning and in residential, commercial and industrial refrigeration systems. It is also used as a blowing agent in rigid foam insulation, and an important component of blends such as R404a, R407c, etc.

Available Packing: 13.6kg(30LB/ Disposable Cylinder) / 1000kg Returnable Cylinder / ISO TANK

Main Customer: LG Electronics, Carrier Corporation, Interdynamics Co.(USA),
Coolgas Ltd. (USA), CCM Chemicals Sdn Bhd(Malaysia),
Alcan International Network(France)

Product	R-134a
Chemical Type	HFC
Chemical Name	1,1,1,2- Tetrafluoroethane
Molecular Formula	CH ₂ FCF ₃
Molecular Weight	102.0
Normal boiling point (1.0 bar, abs)	-26.2
Critical Temperature()	101.1
Critical Pressure (kpa)	4066.6
Latent heat (1.0 bar, abs)	189KJ/Kg
Toxic	no
Lubricant	Polyol Ester



1) Cyclopentane

Cyclopentane is widely used in the production of no-fluorine refrigerator, freezer, cold storage and pipe insulation materials since it can be used as a new kind of foaming agent for rigid polyurethane to replace CFCs, which destroy the Ozonosphere. With the coming of the deadline to use ODS stipulated in the Montreal Protocol, CFCs and HCFC will be prohibited in the near future. Therefore, cyclopentane will play a key role in the production of polyurethane foaming agent.

2) Iso-pentane

Iso-pentane can be mixed with n-pentane to make EPS (expandable polystyrene) foaming agent, and can be mixed with cyclopentane to make foaming agent for rigid urethane foam.

3) N-pentane

n-pentane can be used as EPS (expandable polystyrene) forming agent, and as deadsorption agent for dewax of molecular sieve.

4) Packing : 200 liters Drum, Bulk Tank, ISO Tank container

Main customer : ELECTROLUX, BOSCH-SIEMENS, HAIER, NATIONAL, SHARP, KELON, XINFEI, MEILING, HARTMANN(OEM)

Physical properties

Product	Cyclopentane	Isopentane	N-pentane
Molecular formula	C ₅ H ₁₀	C ₅ H ₁₂	C ₅ H ₁₂
Appearance	Colorless, transparent liquid, like gasoline odor		
Boiling point (101.3 Kpa)	49.25°C	27.85°C	36.1°C
Relative density (20°C)	0.745	0.62	0.63
Flashpoint	-42°C	-56°C	-40°C
Explosion limit (VOL)	1.4 - 8.7 %	1.4-8.3%	1.4 -7.8

Specification

Product	Cyclopentane		Isopentane		N-pentane	
Density (g/cm ³)	0.73-0.75	0.70-0.74	0.58-0.63	0.59-0.63	0.60-0.65	0.60-0.64
Cyclopentane (wt%)	≥95	70 -80			≤0.5	≤0.5
n-pentane (wt%)	≤3.5		≤4.0	≤1.5	≥95	≥98.5
Isopentane(wt%)		20-30	≥95	≥98.5		

Remarks:

We can design , manufacture, supply and installation of cyclopentane supply system to P.U foaming facility at customer factory. Please feel free to contact us for your requirement.



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