ZHEJIANG FOTECH INTERNATIONAL CO., LTD.

Company Profile

Zhejiang Fotech International Co., Ltd is a leading manufacturer and supplier of Refrigerant Gases, Fluor Polymer and Fluor Rubber. Products that are inventoried include:R22, R32, R134A, R407C, R404A, R410A, R152a, R142B, FEP, PTFE and FKM.

The Management and Staff in FOTECH are committed to providing quality products and services of the highest optimum level to their many valued customers. Through teamwork co-operation with manufacturers, customers and between departments, FOTECH aims to satisfy current and future clients with the promise of excellence and with continuous improvement of the quality management system.

Mission Statement

The mission of FOTECH is to provide a customer driven approach in delivering highest quality products, and application solutions to satisfy our customer's needs. We will constantly strive to cultivate close working relationships with an emphasis on planning, communication feedback, within our company, with our customers and with our strategic manufacturer partners.

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ZHEJIANG FOTECH INTERNATIONAL CO., LTD.

PRODUCT SPECIFICATION

Chlorodifluoromethane (HCFC-22)

HCFC-22 is a colorless gas under ordinary temperature and a colorless & transparent liquid under the pressure of itself, non-toxic & inflammable with the excellent thermo-stability and chemical stability, unable to erode metals and it is a refrigerant for low temperature to －80℃ below. Used in reciprocating compressor, as refrigerant in industrial, commercial and household air-condition system; Also used to produce insecticide and aerosol for spraying paint; To produce extinguishing agent 1211; As the basic material to produce a wide variety of fluorinated macromolecular compounds.

Properties：

	Unit	HCFC-22
Chemical formula		$CHClF_2$
Molecular weight	g/mol	86.5
Melting point	℃	-146
Boiling point	℃	-40.8
Specific gravity（25℃ liquid）	g/cm^3	1.194
Vapor pressure（25℃）	MPa	1.04
Critical temperature	℃	96
Critical pressure	MPa	4.98
Critical density	g/cm^3	1.221
Vapor heat at boiling point	KJ/kg	233.5
Water solubility（25℃）	W%	0.30
Specific heat（25℃ liquid）	KJ/kg·k	1.400
ODP		0.05
GWP		0.03

Quality Specification：

Index	Quality Performance
Appearance	Colorless, not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.001
Acidity (as HCl) %≤	0.00001
Evaporation residue %≤	0.01
Chlorides (Cl^-) test %≤	0.0003
No condensable gas (V/V) %≤	1.5

Package: 13.6kg/30lb; 22.7kg/50lb; 950kg/926L; ISO Tank.

PS：UN NO.1018, HS Code 29034910.12, CAS 75-45-6, IMDG Page 2118, Class 2.2.

1,1,1,2 -Tetrafluoroethane (HFC-134a)

HFC-134a is internationally recognized as one of the main refrigerant working substances to substitute CFC-12. It does not contain chlorine atom, gives no bad effects against ozonosphere and has excellent safety performances, such as non-inflammability, non-explosive ability, non-toxicity, non-pungency, and non-corrosive ability. It is a colorless gas under ordinary temperature and a colorless & transparent liquid under the pressure of itself. As the substitute for CFC-12, it is often used in the refrigerating systems of auto air conditioners, commercial and industrial purposes, and as the vesicant, it is used to produce the heat-protective material made of rigid plastics, and also to prepare other blend refrigerants, such as R404A & R407C.

Properties：

Index	Unit	HFC-134a
Chemical formula		CH_2FCF_3
Molecular weight	g/mol	102.0
Boiling point 101.3kpa (℃)	℃	-26.2
Freezing point 101.3kpa (℃)	℃	-96.6
Critical temperature	℃	101.1
Critical pressure	KPa	4066.6
Saturated liquid density (25℃)	Kg/m^3	1188.1
Specific heat (25℃liquid)	KJ/kg·k	1.42
Critical density	g/cm^3	0.512
Vaporization heat at boiling point	KJ/kg	215.0
Water solubility (25℃)	W%	0.15
ODP		0
GWP		0.29

Quality Specification：

Index	Quality Performance
Appearance	Colorless & transparent liquid
Purity %≥	99.9%
Moisture %≤	0.001
Acidity (as HCl)%≤	0.0001
Evaporation residue %≤	0.01
Chlorides(Cl^-) test %≤	0.0003
No condensable gas (V/V) %≤	1.0

Packing：13.6kg/30lb; 22.7kg/50lb; 940kg/926L; ISO TANK

PS：HS Code 29033090.90. DG class 2.2; UN No.3159

Trifluoromethane (HFC-23)

HFC-23 is a high pressure liquefied gas, which was usually used as a refrigerant to substitute CFC-13. And it is also the ideal substitute for Halon with the quality of cleanness, low toxicity, and the excellent effect to fight fire.

Properties：

Index	Unit	HFC-23
Chemical formula		CHF_3
Molecular weight	g/mol	70.0
Melting point	℃	－152.15
Boiling point	℃	－82.2
Specific gravity（25℃ liquid）	g/cm^3	0.669
Vapor pressure（25℃）	MPa	4.732
Critical temperature	℃	25.95
Critical pressure	MPa	4.832
Critical density	g/cm^3	0.524
Vaporization heat at boiling point	KJ/kg	240
Water solubility（25℃）	W%	0.10
Specific heat（25℃ liquid）	KJ/kg·k	1.55
ODP		0
GWP		6

Quality Specification：

Index	Quality Performance
Appearance	Colorless, not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.001
Acidity (as HCl) %≤	0.00001
Evaporation residue %≤	0.01

Packing：8kg/10L; 9kg/12L & 380kg/500L high pressure steel cylinders.

PS：UN NO.1984, HS Code 29034510.00, CAS 75-46-7, IMDG Page 2184, Class 2.2.

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Difluoromethane (HFC-32)

HFC-32 is a colorless gas under ordinary temperature and a colorless & transparent liquid under the pressure of itself. It is mainly used as refrigerant which is the vital part to substitute HCFC-22. HFC-32 is also an important component of blend refrigerant R407C and R410a.

Properties：

Index	Unit	HFC-32
Chemical formula		CH_2F_2
Molecular weight	g/mol	52.02
Freezing point	℃	－136
Boiling point	℃	－51.7
Specific gravity（25℃ liquid）	g/cm^3	0.958
Vapor pressure（25℃）	MPa	1.689
Critical temperature	℃	78.10
Critical pressure	MPa	5.808
Critical density	g/cm^3	0.424
Water solubility（25℃）	W%	0.44
ODP		0
GWP		0.11

Quality Specification：

Index	Quality Performance
Appearance	Colorless, not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.001
Acidity（as HCl）%≤	0.00001
Evaporation residue %≤	0.01
Chlorides（Cl-） test %≤	0.0003
No condensable gas (V/V) %≤	1.5

Packing: 780KG/926L steel cylinders; ISO TANK.

PS：HS Code 29034200.00.

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Dichlorotrifluoroethane(HCFC-123)

HCFC-123 is a colorless gas under ordinary temperature and a colorless & transparent liquid under the pressure of itself, used as refrigerant, the vital part of blend working substances to substitute R11 and R113.

Properties：

	Unit	HCFC-123
Chemical formula		$CF_3CH\ Cl_2$
Molecular weight	g/mol	152.91
Melting point	℃	
Boiling point	℃	27.6
Specific gravity（25℃）	g/cm^3	1.458
Vapor pressure（25℃）	MPa	
Critical temperature	℃	184
Critical pressure	MPa	3.605
Critical density	g/cm^3	0.549
Vapor heat at boiling point	KJ/kg	167.9
Water solubility（25℃）	W%	0.39
Specific heat（25℃ liquid）	KJ/kg·k	0.985
ODP		0.02
GWP		0.02

Quality Specification：

Index	Quality Performance
Appearance	Colorless, not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.002
Acidity (as HCl) %≤	0.00001
Evaporation residue %≤	0.01

Packing：125KG/100L; 250KG/200L steel drums

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Pentafluoroethane (HFC-125)

HFC-125 is a colorless gas under ordinary temperature and a colorless & transparent liquid under the pressure of itself, used as refrigerants, the vital part of mixed working substances to substitute CFC-502 & HCFC-22, and as flame-retardants to substitute Halon-1211 & Halon-1301.

Properties：

	Unit	HFC-125
Chemical formula		$CH\ F_2CF_3$
Molecular weight	g/mol	120.02
Melting point	℃	-102.95
Boiling point	℃	-48.45
Specific gravity（25℃）	g/cm^3	1.245
Vapor pressure（25℃）	MPa	1.371
Critical temperature	℃	66.05
Critical pressure	MPa	3.592
Critical density	g/cm^3	0.571
Vapor heat at boiling point	KJ/kg	165
Water solubility（25℃）	W%	0.09
Specific heat（25℃ liquid）	KJ/kg·kwh	1.26
ODP		0
GWP		0.84

Quality Specification：

Index	Quality Performance
Purity %≥	99.9%
Moisture %≤	0.001
Acidity(as HCl) %≤	0.00001
Evaporation residue %≤	0.01
Chlorides(Cl-) test %≤	0.0003
No condensable gas (V/V) %≤	1.5

Packing： 870KG/926L steel cylinders; ISO TANK.

PS：HS Code 29034599.00, CAS 354-33-6.

Trifluoroethane(HFC-143a)

HFC-143a can be used as a refrigerant to substitute R502. It does not contain the chlorine atom, give no bad effects against ozonosphere and has excellent safety performances, such as non-explosive ability, non-toxicity, non-pungency, and non-corrosive ability. And it is a colorless gas under ordinary temperature and a colorless & transparent liquid under the pressure of itself.

Properties：

Index	Unit	HFC-143a
Chemical formula		CF_3CH_3
Molecular weight	g/mol	84.0
Boiling point 101.3kpa (℃)	℃	-47.75
Freezing point 101.3kpa (℃)	℃	
Critical temperature	℃	73.15
Critical pressure	KPa	3834
Saturated liquid density（25℃）	Kg/m^3	1300
Specific heat（25℃liquid）	KJ/kg·k	1.31
Critical density	g/cm^3	0.455
Vaporization heat at boiling point	KJ/kg	231.0
Water solubility（25℃）	W%	
ODP		0
GWP		1.1

Quality Specification：

Index	Quality Performance
Appearance	colorless, not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.001
Acidity (as HCL) %≤	0.00001
Evaporation residue %≤	0.01

Packing： 670kg/920L steel cylinders; ISO TANK

PS：UN NO.2035, HS Code 29034300.00, CAS 420-46-2, IMDG Page 2183, Class 2.1.

Difluoroethane(HFC-152a)

HFC-152a is a colorless gas under ordinary temperature, and a colorless & transparent liquid under the pressure of itself, easily solube in oil but poorly in water. It is mainly used as the important raw material for refrigerants, aerosol propellants and synthesis of HCFC-142b. As the substitutive refrigerant for CFC-12, it will be a long-term one and have absolutely no bad effects against ozonosphere.

Properties：

Index	Unit	HFC-152a
Chemical formula		CH_3CHF_2
Molecular weight	g/mol	66.1
Melting point	℃	-24.23
Liquid density（25℃）	g/cm^3	0.90
Vapor pressure（25℃）	MPa	0.596
Critical temperature	℃	113.5
Critical pressure	MPa	4.52
Critical density	g/cm^3	0.368
Vaporization heat at boiling point	KJ/kg	324.2
Water's solubility (25℃)	W%	0.3
ODP		0
GWP		0.03

Quality Specification：

Index	Quality Performance
Appearance	Colorless not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.001
Acidity (as HCL) %≤	0.0001
Evaporation residue %≤	0.01
Chlorides (Cl^-)test %≤	0.0003
No condensable gas (V/V) %≤	1.5

Packing: 320KG/400L; 640KG/800L steel cylinders; ISO TANK.

PS: UN NO.1030, HS Code 29034599.00, CAS 75-37-6, IMDG Page 2132, Class 2.1.

Dichlofluoroethane(R-141b)

HCFC-141b is the leading substitute blowing agent for CFC-11 in rigid foam insulation materials which are widely used for residential and public constructions, home applications and transport vehicles.

Properties：

Index	Unit	R141b
Chemical formula		CH_3CCl_2F
Molecular weight	g/mol	117.0
Boiling Point 101.3 KPa（℃）	℃	32.1
Freezing Point 101.3 KPa（℃）	℃	-103.5
Critical Pressure	KPa	4640.2
Critical Temperature （℃）	℃	210.2
Saturated liquid density (25℃)	Kg/m^3	1227
Specific heat (25℃liquid)	KJ/kg·k	1.17
ODP		0.11
GWP		0.09

Quality Specification：

Index	Quality Performance
Appearance	Bright & Clear Liquid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.005
Acidity(as HCL) %≤	0.00001
Evaporation residue %≤	0.01
Chlorides(Cl^-) test %≤	0.0003

Packing: 13.6kg/30lb; 30kg, 250kg drum.

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Chlorotrifluoroethane (HCFC-142b)

HCFC-142b is a colorless gas under ordinary temperature with slight fragrance, and a colorless & transparent liquid under the pressure of itself, easily soluble in oil but poorly in water. It is mainly used in the refrigerating systems under high temperature conditions, thermostatic control switches, the intermediate of aerial propellant, and the important raw material for vinylidene fluoride.

Properties：

	Unit	HCFC-142b
Chemical formula		$CClF_2CH_3$
Molecular weight	g/mol	100.5
Boiling point (101.325 Pa)	℃	-9.2
Critical temperature	℃	136.45
Critical pressure	MPa	4.15
Critical density	g/cm^3	0.435
Liquid density	g/cm^3	1.096
Latent heat of vaporization at bp	KJ/kg	215
Solubility in water (25℃)	W%	0.14
Specific heat of liquid (30℃)	KJ/kg·k	1.34
ODP		0.06
SWP		0.36

Quality Specification：

Index	Quality Performance
Appearance	Colorless, not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.001
Acidity (as HCl) %≤	0.00001
Evaporation residue %≤	0.01
Chlorides (Cl^-) test %≤	0.0003
No condensable gas (V/V) %≤	1.5

Packing：13.6KG; 400KG; 800KG steel cylinders; ISO TANK.

PS：UN NO.2517, HS Code 29034910.24, CAS 75-68-3, Class 2.1.

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Mixed Refrigerant R404A

R404A is a colorless gas under ordinary temperature, and a colorless & transparent liquid under the pressure of itself, mixed by HFC-125, HFC-134a and HFC-143. It is a long-term substitute for R502, mainly used in the refrigerating systems of low & moderate temperature.

Properties：

		Unit	R404A
Chemical formula			R-134a/R-125/R-32
Molecular weight		g/mol	
Melting point		℃	-46.1
Critical temperature		℃	72.4
Critical pressure		MPa	3.69
Saturated density(25℃)	liquid	g/cm^3	1.045
ODP			0
GWP			0.35

Quality Specification：

Index	Quality Performance
Appearance	Colorless, not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.001
Acidity (as HCL) %≤	0.00001
Evaporation residue %≤	0.01
Chlorides (Cl^-) test %≤	0.0003
No condensable gas (V/V) %≤	1.5

Packing：10.9kg/30lb steel cylinders; ISO TANK.

PS: HS Code 38247800

Mixed Refrigerant R406A

R406A is a colorless gas under ordinary temperature, and a colorless & transparent liquid under the pressure of itself, mixed by HCFC-22, HCFC-142b and R-600a. And it is the substitute for R502 and R12.

Properties：

	Unit	R406A
Chemical formula		R-22/R-142b/R-600a
Molecular weight	g/mol	89.86
Melting point	℃	-32.7
Critical temperature	℃	116.5
Critical pressure	MPa	4.88
Saturated liquid density(25℃)	g/cm^3	
Critical density	g/cm^3	-0.456
ODP		0.036
GWP		0.33

Quality Specification：

Index	Quality Performance
Appearance	Colorless, not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.001
Acidity (as HCL) %≤	0.00001
Evaporation residue %≤	0.01
Chlorides(Cl^-) test %≤	0.0003
No condensable gas (V/V) %≤	1.5

Packing：13.6kg/30lb steel cylinders; ISO TANK

PS: HS Code 38247400

Mixed Refrigerant R410A

R410A is a colorless gas under ordinary temperature, and a colorless & transparent liquid under the pressure of itself, mixed by HFC-32 and HFC-125. And it is the substitute for R22, mainly used in the air conditioners and other refrigerating systems.

Properties：

Index	Unit	R410A
Chemical formula		R-32/ R-125
Molecular weight	g/mol	72.58
Boiling point	℃	-51.53
Critical temperature	℃	72.13
Critical pressure	MPa	4.93
Saturated liquid density(25℃)	g/cm^3	1.062
Liquid specific heat(25℃)	KJ/(Kg·℃)	1.84
Equip pressure specific heat （Cp）(25℃)101.3kPa	KJ/(Kg·℃)	0.832
Critical density	g/cm^3	0.489
Vaporization heat at boiling point	KJ/kg	276.2
ODP		0
GWP		0.42

Quality Specification：

Index	Quality Performance
Appearance	Colorless, not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.001
Acidity (as HCL)%≤	0.00001
Evaporation residue %≤	0.01
Chlorides (Cl-) test %≤	0.0003
No condensable gas (V/V) %≤	1.5

Packing: 11.3kg/25lb; 800kg/926L steel cylinders; ISO TANK.

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Mixed Refrigerant R407C

R407C is a colorless gas under ordinary temperature, and a colorless & transparent liquid under the pressure of itself, mixed by HFC-32, HFC-134a and HFC-125. R407C is the long-term substitute for R22, mainly used in the air conditioner and other non-centrifugal refrigerating systems.

Properties：

	Unit	R407C
Chemical formula		R-32/R-134a/R-125
Molecular weight	g/mol	86.2
Melting point	℃	-43.4
Critical temperature	℃	86.2
Critical pressure	MPa	4.62
Saturated liquid density(30℃)	g/cm^3	1.139
Critical density	g/cm^3	0.527
ODP		0
GWP		1600

Quality Specification：

Index	Quality Performance
Appearance	Colorless, not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.001
Acidity (as HCl) %≤	0.00001
Evaporation residue %≤	0.01
Chlorides(Cl^-) test %≤	0.0003
No condensable gas (V/V) %≤	1.5

Packing: 11.3kg/25lb; 870kg/926L; ISO TANK.

Mixed Refrigerant R507

R507 is a colorless gas under ordinary temperature, and a colorless & transparent liquid under the pressure of itself, mixed by HFC-143 and HFC-125. It is the substitute for R502, mainly used in the low temperature refrigerating systems.

Properties：

		Unit	R507
Chemical formula			R-143/R-125
Molecular weight		g/mol	98.86
Melting point		℃	-46.7
Critical temperature		℃	70.9
Critical pressure		MPa	3.79
Saturated density(30℃)	liquid	g/cm^3	1.06
Critical density		g/cm^3	0.5
ODP			0
GWP			0.96

Quality Specification：

Index	Quality Performance
Appearance	Colorless, not turbid
Odor	No strange stench
Purity %≥	99.9%
Moisture %≤	0.001
Acidity(as HCL) %≤	0.00001
Evaporation residue %≤	0.01
Chlorides(Cl^-) test %≤	0.0003
No condensable gas (V/V) %≤	1.5

Packing: 11.3kg/25lb; ISO TANK.

Isobutane (R600a)

R600a is a HFC and CFC free refrigerant, providing the most environmentally friendly refrigerant available. It is extremely energy efficient, and has high cooling ability, low electricity waste.

Properties：

Index	Unit	R600a
Chemical formula		C_4H_{10}
Molecular weight	g/mol	58.12
Critical temperature	℃	134.98
Critical pressure	KPa	3660
Saturated liquid density (25℃)	Kg/m^3	551
Specific heat (25℃liquid)	KJ/kg·k	2.38
Critical density	g/cm^3	0.221
Vaporization heat at boiling point	KJ/kg	366.5
ODP		0
GWP		0.1

Quality Specification：

Index	Quality Performance
Appearance	Colorless & not turbid
odor	No strange stench
Purity % ≥	99.9
Moisture ppm ≤	0.001
Acidity (as HCl) ppm ≤	0.0001
Evaporation residue ppm ≤	0.01

Packing：6.5kg/30lb; 20kg/40L, 460kg/926L; ISO TANK