



PROMCHIM GROUP

Promchim Perm / Promchim Export / NPP SINTEZ

Green hydrocarbon refrigerants for HVAC/R



EST.
1991

MADE IN RUSSIA



COMPANY STRUCTURE



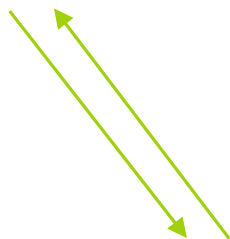
PROMCHIM
PERM

The headquarter and
production plant
established in 1991



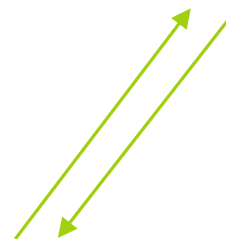
SINTEZ

Green refrigerants
production since 1998:
R600a, R290, R1270



PROMCHIM
EXPORT

The only official export
trading subsidiary of
PROMCHIM GROUP



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MISSION

•Tradition and Technology:

Since 1998 NPP SINTEZ has been the only manufacturer of natural hydrocarbon refrigerants in Russia, the Middle East and Eastern Europe.

•Green refrigeration:

We produce only natural refrigerants, which have zero Ozone Depletion Potential (ODP) and minimum Global Warming Potential (GWP).

•Sustainability and Environment:

Our refrigerants are developed as substitutes for the environmental unfriendly freons and are aimed for their phase-down as according to the Kigali Amendment of the Montreal Protocol.



REFRIGERANT R290

R290	G.W.P* = 3
R32	G.W.P* = 675
R410a	G.W.P* = 2088

* G.W.P. - Global Warming Potential

REFRIGERANT R600a

R600a	G.W.P* = 3
R12	G.W.P = 10200
R134a	G.W.P = 1300

* G.W.P. - Global Warming Potential

REFRIGERANT R1270

R1270	G.W.P* = 1.8
R12	G.W.P = 1760
R32	G.W.P = 677

* G.W.P. - Global Warming Potential

REFRIGERANT R600

R600	G.W.P* = 4
R410a	G.W.P = 208
R134a	G.W.P = 1300

* G.W.P. - Global Warming Potential



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TRADITION & INNOVATION



- Our R&D base is carrying out scientific research, developing new advanced materials and technology for the production of high purity hydrocarbon refrigerants.
- Our professional team has more than 30 years of experience in the scientific work, design, and production.
- The highest quality hydrocarbon materials are maintained based on the unique technology of production based on excluding first and last fractions from the refinery.



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QUALITY & CERTIFICATION

We pay a lot of attention to keep the highest quality level, in this regard, our QC department verifies every stage of production, management, and services. The quality of our refrigerants is compliant with the highest Standards of GOST, DIN 8960.1998 and/or AHRI 700.2019.



ISO 9001:2015



REACH & EAC



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PRODUCTION



- **Factory**

The manufacturing facility is located in the center of the chemical area of Russia - Perm region. It allows us to get essential raw materials locally and not to depend on changing import conjunction and logistic issues. Thus, we carry out a full production cycle on site.



- **Capacity**

Total capacity: 7'500MT, can be extended rapidly.
Refrigerants: R290 (propane), R1270 (propylene), R600a (i-butane), R600 (n-butane), and blends of high and extra-high purity.

Propellent gases: medical, cosmetic & aerosol grade.

Industrial grades: for LNG compressors colling



- **Infrastructure**

Stable Storages, ISO Tanks and SWAP tanks for overseas transportation, 1000L Tanks and Steel Cylinders for local deliveries, One-off tin cans for retail, aftersales and service.



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NATURAL REFRIGERANTS

Table 1. Hydrocarbon (HC) and Hydroolefin (HO) NPP SINTEZ refrigerant portfolio

R600a	HC	isobutane	Grade I 97 %	Grade A, D 99,5 %	Grade R 99,99 %
R290	HC	propane	97 %	99,5 %	99,99 %
R1270	HO	propylene	97 %	99,5 %	99,99 %
R600	HC	N-butane	97 %	99,5 %	99,99 %

Table 2. Hydrocarbon blends NPP SINTEZ

R433	HO+HC	R1270 / R290	R433a 30/70 %	R433b 5/95 %	R433c 25/75 %
R436	HC	R290 / R600a	R436a 56/44 %	R436b 52/48 %	-



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REFRIGERANT
R600a

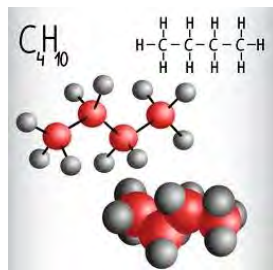
R600a	G.W.P* ■ 3
R12	G.W.P ■ 10200
R134a	G.W.P ■ 1300

* G.W.P - Global Warming Potential

R600a

Natural refrigerant

Technical specification 19.20.31-114-48420562-2020



Description:

- Natural highly pure colorless odorless gas, non-toxic
- ODP = 0, GWP = 3
- Highly soluble in mineral oil
- High coefficient of performance that reduces power consumption
- A natural substitute for R12 & R134a

Field of Application:

- Mainly household refrigeration
- Also medical, commercial and industrial refrigeration
- Scientific research and development



	Unit	Grade I	Grade AH	Grade A	Grade D
Appearance		Visually clean liquid			
i-Butane	Wt >, %	97	97,5	99,5	99,5
Other Allowable Impurities * 2% of C3 and C4 saturated hydrocarbons	Wt <, %	3 *	2 *	0,5	0,5
1,3-butadien	Wt <, ppm	-	-	-	5
n-Hexane	Wt <, ppm	-	-	-	50
Benzene	Wt <, ppm	-	-	-	1
Sulfur	Wt <, ppm	1	1	1	1
Air and other non-condensable gases	Vol. <, %	-	1,5	1,5	1,5
Water	Wt <, ppm	10	10	10	10
Acidity	Wt <, ppm	-	1	1	1
High boiling residue	Wt <, ppm	200	100	100	50

Packaging:

ISO TANK
11MT max

TON TANK
470kg max

Steel cylinder
12kg - 60kg

Disposable cylinders and
cans: 470g - 6.5kg



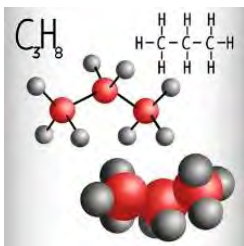
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R290

Natural refrigerant

Technical specification 19.20.31-111-48420562-2020



Description:

- Natural highly pure colorless odorless gas, non-toxic
- ODP = 0, GWP = 3.3 - 9.5.
- Highly soluble in mineral oil
- High coefficient of performance that reduces power consumption
- A natural substitute for R32, R410a, R134a

Field of Application:

- Household air conditioning and refrigeration
- Commercial and industrial air conditioning and refrigeration
- Scientific research and development



	Unit	Grade I	Grade AH	Grade A	Grade D
Appearance		Visually clean liquid			
propane	Wt >, %	97	97,5	99,5	99,5
Other Allowable Impurities * 2% of C3 and C4 saturated hydrocarbons	Wt <, %	3 *	2 *	0,5	0,5
1,3-butadien	Wt <, ppm	-	-	-	5
n-Hexane	Wt <, ppm	-	-	-	50
Benzene	Wt <, ppm	-	-	-	1
Sulfur	Wt <, ppm	1	1	1	1
Air and other non-condensable gases	Vol. <, %	-	1,5	1,5	1,5
Water	Wt <, ppm	10	10	10	10
Acidity	Wt <, ppm	-	1	1	1
High boiling residue	Wt <, ppm	200	100	100	50

Packaging:

ISO TANK
10.3MT max

TON TANK
390kg max

Steel cylinder
10kg - 50kg

Disposable cylinders and
cans: 390g - 5.5kg

REFRIGERANT
R290

R290	G.W.P* = 3
R32	G.W.P* = 675
R410a	G.W.P* = 2088

* G.W.P. - Global Warming Potential



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REFRIGERANT
R1270

R1270	G.W.P* = 1.8
R12	G.W.P = 1760
R32	G.W.P = 677

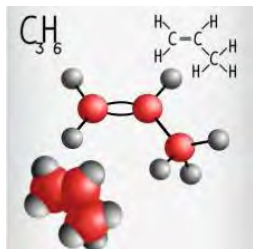
* G.W.P. - Global Warming Potential

R1270

Natural refrigerant

Technical specification 20.14.11-102-48420562-2021

CAS: 115-07-1



Description:

- Natural highly pure colorless gas, with a sweet odor, non-toxic
- ODP = 0, GWP = 1.8
- Highly soluble in mineral oil
- High coefficient of performance that reduces power consumption
- A natural substitute for R22 & R32

Field of Application:

- Commercial and industrial refrigeration appliances
- Commercial and industrial air-conditioning
- Chillers and cold-rooms



	Unit	Norm
Appearance		Visually clean liquid
Propylene	Wt >, %	99,5
Other Allowable Impurities	Wt <, %	1
High boiling residue	Wt <, %	0,01
Sulfur	Wt <, ppm	1
Water	Wt <, ppm	10
Acidity	Wt <, ppm	1
Air and other non-condensable gases	Vol. <, %	1,5

Packaging:

ISO TANK
10.3MT max

TON TANK
390kg max

Steel cylinder
12kg – 50kg

Disposable cylinders and
cans: 390g – 5.5kg



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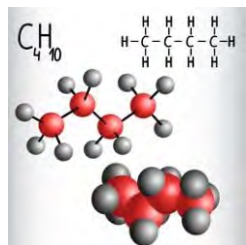
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R600

Natural refrigerant and foaming agent

Technical specification 20.14.11-109-48420562-2019

CAS: 106-97-8



Description:

- Natural highly pure colorless odorless gas, non-toxic
- ODP = 0, GWP = 4 – 6,5
- Highly soluble in mineral oil
- High coefficient of performance that reduces power consumption
- A natural substitute for R134a, R410a, HCFC 141b

Field of Application:

- As refrigerant in industrial, commercial and household refrigeration
- As foaming agent in industrial and commercial refrigeration
- As heat carrier in geothermal industry
- As a propellant in aerosol and cosmetic industries



	Unit	Norm (DIN/AHRI)
Appearance		Visually clean liquid
Propylene	Wt >, %	99,5
Other Allowable Impurities *2% of C3 and C4 saturated hydrocarbons	Wt <, %	2*
High boiling residue	Wt <, %	0,01
Sulfur	Wt <, ppm	1
Water	Wt <, ppm	10
Acidity	Wt <, ppm	1
Air and other non-condensable gases	Vol. <, %	1,5

Packaging:

ISO TANK
11MT max

TON TANK
430kg max

Steel cylinder
12kg – 60kg

Disposable cylinders and
cans: 430g – 6.5kg

REFRIGERANT
R600

R600	G.W.P* = 4
R410a	G.W.P = 208
R134a	G.W.P = 1300

* G.W.P - Global Warming Potential



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R436

Natural refrigerant

Technical specification 20.14.11-106-48420562-2022

CAS:
74-98-6
75-28-5

Description:

- Natural highly pure colorless odorless gas, non-toxic
- ODP = 0, GWP = 3,16 – 3,23
- Highly soluble in mineral oil
- High coefficient of performance that reduces power consumption
- A natural substitute for R22 & R32

Field of Application:

- Commercial and industrial refrigeration appliances
- Home and industrial air-conditioning
- Automobile air-conditioning



	Unit	R436a	R436b
Appearance		Visually clean liquid	
Propane R290 / Isobutane R600a	Wt within, %	56±1 / 44±1	52±1 / 48±1
Other Allowable Impurities * 2% of C3 and C4 saturated hydrocarbons	Wt <, %	2	
High boiling residue	Wt <, %	0,01	
Sulfur	Wt <, ppm	1	
Water	Wt <, ppm	10	
Acidity	Wt <, ppm	1	
Air and other non-condensable gases	Vol. <, %	1,5	

Packaging:

ISO TANK
10.5MT max

TON TANK
400kg max

Steel cylinder
15kg – 55kg

Disposable cylinders and
cans: 400g – 6kg



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HCAP

Hydrocarbon Aerosol Propellant

Technical specification 20.14.11-106-48420562-2022

CAS:
106-97-8
75-28-5
74-98-6

Description:

- Natural highly pure colorless odorless gas, non-toxic
- ODP = 0, GWP = 3,6- 6,2
- Highly soluble in mineral oil
- High coefficient of performance that reduces power consumption
- A substitute of DME and HFC propellants

Field of Application:

- As a natural propellant for aerosols in food, medical and cosmetic industries



	Unit	Norm
Appearance		Visually clean liquid
n-Butane	Wt within, %	56 - 57
i-Butane	Wt within, %	25 - 26
Propane	Wt within, %	17 - 18
1,3-Butadiene	Wt <, %	0.01
Pressure	Bar	2.6 - 2.8
Density at 20°C	Kg/l	0.556 - 0.559

Packaging:

ISO TANK
11MT max

TON TANK
430kg max

Steel cylinder
12kg - 60kg

Disposable cylinders and
cans: 430g - 6.5kg



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BLEND

Natural Industrial Refrigerants

Technical specification 20.14.11-106-48420562-2022

CAS:
106-97-8
75-28-5
74-98-6

Description:

- Natural highly pure colorless odorless gas, non-toxic
- ODP = 0, GWP = 3,6– 6,2
- Highly soluble in mineral oil
- High coefficient of performance that reduces power consumption
- A substitute of DME and HFC propellants

Field of Application:

- As a refrigerant for natural gas liquifying compressors
- For industrial refrigeration



	Unit	Norm
Appearance		Visually clean liquid
n-Butane	Wt, %	on demand
i-Butane	Wt, %	on demand
Propane	Wt, %	on demand
1,3-Butadiene	Wt <, %	0.01
Sulfur	Wt <, ppm	1
Water	Wt <, ppm	10

Packaging:

TRUCK TANK
20MT max

ISO TANK
10MT max

TON TANK
400kg max



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