

# R600a



## PERFORMANCES

The **R600a** is an isobutane used as a refrigerant.

Highly pure ( $\geq 99.5\%$ ), the **R600a** ensures a long lifespan to any material in contact with the product.

## SPECIFICATIONS

Standard characteristics	Limit values
Appearance	clear
Vapor pressure at 20°C	$2.2 \pm 0.2$ bar
<b>Composition :</b> propane isobutane n-butane C4 unsaturates	$\leq 0.4\%$ volume $\geq 99.5\%$ volume $\leq 0.25\%$ volume $\leq 0.01\%$ volume
Odor	none
Moisture content	$\leq 0.0012\%$ volume

## CHARACTERISTICS

		Units	Values
Chemical Formula			$(\text{CH}_3)_2\text{CH}_2\text{CH}_3$
Molecular weight		g/mol	58
Boiling point	at 1.013 bar	°C	-11.7
Liquid density	at 15°C	kg/dm <sup>3</sup>	0.564
Vapor density	at 15°C	kg/dm <sup>3</sup>	0.007
Absolute pressure	at 15°C	bar	2.56
Critical temperature		°C	134.98
Critical pressure	absolute	bar	37.2
Surface tension ( <i>liquid/vapor interface</i> )	at -11.7°C	dyne/cm	14.1
Lower flammability limit :	in the air at 20°C	% in volume	1.8
Upper flammability limit :	below 1.013 bar		9.4
Auto-ignition temperature		°C	543

## THERMODYNAMIC PROPERTIES

Temperature	Absolute pressure	Density Kg/m <sup>3</sup>	Volume M <sup>3</sup> /kg	Enthalpy KJ/kg		Entropy kJ/(kg.K)		Heat sp <sub>e</sub> c <sub>p</sub>	
°C	MPa	liquid	vapor	liquid	vapor	liquid	vapor	liquid	vapor
-70	0.00465	654.4	6.2209	50.18	465.31	0.3696	2.4131	1.989	1.256
-60	0.00907	644.5	3.3357	70.27	477.63	0.4661	2.3773	2.028	1.302
-50	0.01651	634.3	1.9103	90.76	490.20	0.5600	2.3500	2.069	1.349
-40	0.02833	624.0	1.1570	111.68	502.99	0.6516	2.3300	2.112	1.400
-30	0.04616	613.6	0.73512	133.03	515.96	0.7412	2.3160	2.156	1.453
-20	0.07196	602.8	0.48657	154.85	529.09	0.8289	2.3073	2.203	1.511
-10	0.10791	591.9	0.33356	177.17	542.36	0.9152	2.3029	2.253	1.571
0	0.15643	580.6	0.23566	200.00	555.72	1.0000	2.3023	2.306	1.636
10	0.22014	568.9	0.17084	223.39	569.15	1.0837	2.3048	2.363	1.705
20	0.30182	556.9	0.12661	247.37	582.60	1.1664	2.3099	2.423	1.779
30	0.40437	544.3	0.09561	271.98	596.01	1.2483	2.3172	2.489	1.858
40	0.53083	531.2	0.07333	297.27	609.34	1.3296	2.3262	2.560	1.946
50	0.68438	517.4	0.05698	323.30	622.47	1.4105	2.3363	2.640	2.043

- Please contact us for more information.

## PACKAGING

	Bottles		Container
Capacity (liter)	26	88	930
Tare (kg)	16	38	460
Load (kg)	12	43	435
Diameter (mm)	300	300	860
Height (mm)	630	1530	2330
Outflow external diameter (mm)	21,7	21,7	26,1
Tap : left pitch (mm)	1,814	1,814	1,814
Test pressure (bar)	30	33	33

- Packaging technical characteristics are available upon request to the commercial department.
- Feasibility of filling packaging of the customers if they are in conformity with the legislation.
- Contact us for any other specific packaging.

## STORAGE AND SHELF LIFE

### Precautions for handling and storage:

**French plants are controlled by the regulation of listed Establishments and have to comply with it (or with the local legislation).**

- All packaging will be stored in a dry, well-ventilated, easily accessible place, sheltered from sunlight and bad weather, away from any ignition source.
- It is recommended to store all packaging either in a specific place or isolated and sheltered by a fence.
- All packaging and piping will be grounded to discharge static electricity.
- Leak detectors, put at ground level, will be connected to an audible alarm, which will trigger in the event of leaks.
- The whole equipment will be tested with an appropriate leak detector before use.
- Material and electrical equipment in an explosive atmosphere will comply with the regulations (*grounding, equipotential bonding, ATEX material*).

**INVENTEC can study the set up and assembling of your storage tanks, piping, and pumps, according to the prevailing regulations.**

## CONDITIONS OF USE

**Please refer to the Material Safety Data Sheet (MSDS) before using the product. Workers handling the product should be trained about risks and preventive measures.**

### The R600a is compatible with:

- **The following plastics:**
  - Polyurethane
  - Polyvinyl chloride (PVC)
  - Polyamide
- **The following elastomers:**
  - Acrylonitrile butadiene (BUNA)<sup>®</sup>
- **The following metals:**
  - Ordinary steel

### The R600a is not compatible with:

- Polyethylene
- Polystyrene
- Polyisobutylene

### Handle away from:

- **Heat sources** (*flames or hot metallic surfaces*)
- **In cool and aired premises**

## HEALTH SAFETY AND ENVIRONMENT (HSE)

### Symbols and warnings:

**EXTREMELY FLAMMABLE (F+)**

Risks	
R 12	Extremely flammable

Safety	
S9	Keep container in a well-ventilated place.
S 16	Keep away from ignition sources. No smoking.
S 33	Take precautionary measures against static discharges.

<b>Exposure Limit Value USA (TLV-TWA 8 hours)</b>	<b>800 ppm V</b>
<b>CAS number</b>	<b>75-28-5 : isobutane</b>
<b>EINECS number</b>	<b>200-857-2 : isobutane</b>
<b>ODP (Ozone Depletion Potential)</b>	<b>0</b>
<b>GWP (Global Warming Potential)</b>	<b>&lt; 10 (over 100 years CO<sub>2</sub> = 1)</b>
<b>VOC (Volatile Organic Compound)</b>	<b>Yes (according to the European definition)</b>

*As environmental index calculations evolve constantly, the figures above are communicated as an indication only.*

*This data is based on information that the manufacturer believed to be reliable and offered in good faith. On no account, Inventec will be responsible for special, incidental and consequential damages. The user is responsible, to the Administrative Authorities (Regulation of the listed establishments for the protection of the environment), for the conformity of his installation.*