

RENOLIN LPG

High-performance synthetic gas compressor lubricants based on polyalkylene glycol (PAG).

Description

RENOLIN LPG series are a high-performance synthetic gas compressor lubricants based on special polyalkylene glycols which have a low solubility with hydrocarbon-based gases.

Conventional mineral oil-based lubricants have a high solubility with chemical gases, especially gases with a high content of hydrocarbons. The solubility of gases (hydrocarbons) will cause a significant drop in viscosity and lubricant performance.

Due to the special synthetic, polyglycol-based components of RENOLIN LPG series, this problem can be overcome. Non-polar gases (hydrocarbon gases) are much less soluble with RENOLIN LPG series than with mineral oil-based lubricants.

Advantages / Benefits

- Reduced gas solubility, which improves the formation of a stable lubricating film, improves the compressor efficiency and reduces foaming
- High chemical stability
- High thermal stability
- Excellent wear protection
- High natural viscosity index (shear-stable)
- Low pourpoint
- Good corrosion protection

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Application

RENOLIN LPG series can be used in gas compressors where the crankcase and bearings operate in a gas-filled atmosphere.

The products can be used in reciprocating piston compressors, screw compressors; vane compressors, etc. (please check the application conditions).

RENOLIN LPG series can be used for the following gases:

- Hydrocarbon chemical gases – propane, butane, mixtures of ethylene, propylene and butylene
- Petroleum gases with a high amount of propane and butane
- Natural gases with a high amount of methane and ethane
- Inert gas such as e.g. argon and helium
- Other chemical gases (e.g. butadiene, NH₃)

RENOLIN LPG series are based on special synthetic polyglycols.

Please note:

Polyglycols are not miscible and compatible with standard mineral oil-based lubricants.

Because of its polar structure, RENOLIN LPG can absorb water (more than 1%).

Common seal and elastomer materials can be used if they are compatible with polyglycol lubricants (nitrile rubber (NBR) or fluoro-silicone are recommended).

Paint materials: Two-component epoxy formulations are normally resistant.

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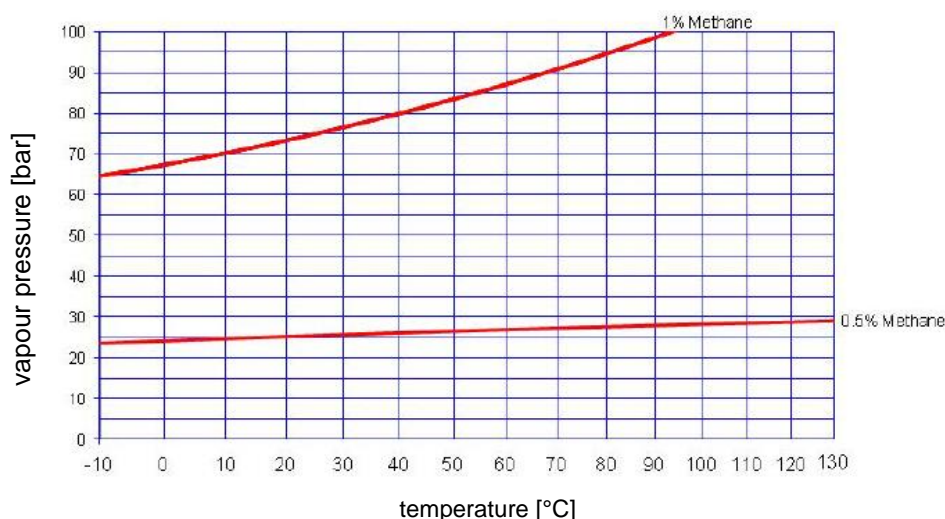
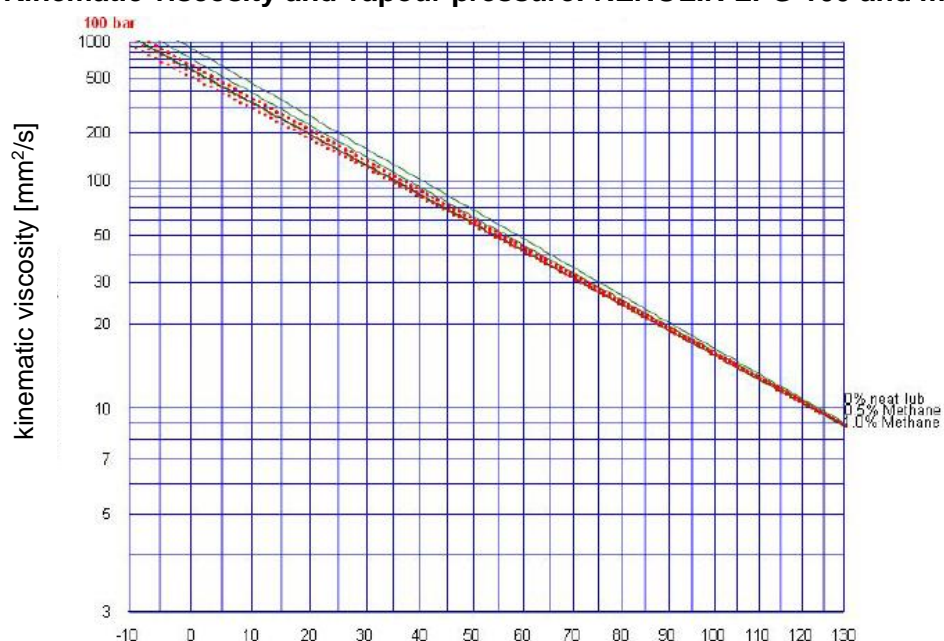
Typical values:

Product name		LPG 100	LPG 185	
Properties	Unit			Test Method
Kinematic viscosity at 40 °C	mm ² /s	100	185	DIN EN ISO 3104
at 100 °C	mm ² /s	16.2	29.1	
Viscosity index	-	175	197	DIN ISO 2909
Density at 15 °C	kg/m ³	1002	1012	DIN 51757
Colour index	ASTM	0.5	0.5	DIN ISO 2049
Flashpoint (Cleveland open cup)	°C	270	280	DIN ISO 2592
Pourpoint	°C	- 39	- 36	DIN ISO 3016
Neutralisation number	mgKOH/g	0.6	0.6	DIN 51558-1
Copper corrosion	degree of corr.	1 – 100 A24	1 – 100 A24	DIN EN ISO 2160
Rust prevention	degree of corr.	0 – A	0 – A	DIN ISO 7120
FZG A/8.3/90 mechanical gear test rig	failure load stage	> 12	> 12	DIN ISO 14635-1
Foaming, Seq. I-III				ASTM D 892
24 °C	ml	0/0	0/0	
93.5 °C	ml	20/0	0/0	
24 °C after 93.5 °C	ml	0/0	0/0	

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Kinematic viscosity and vapour pressure: RENOLIN LPG 100 and methane



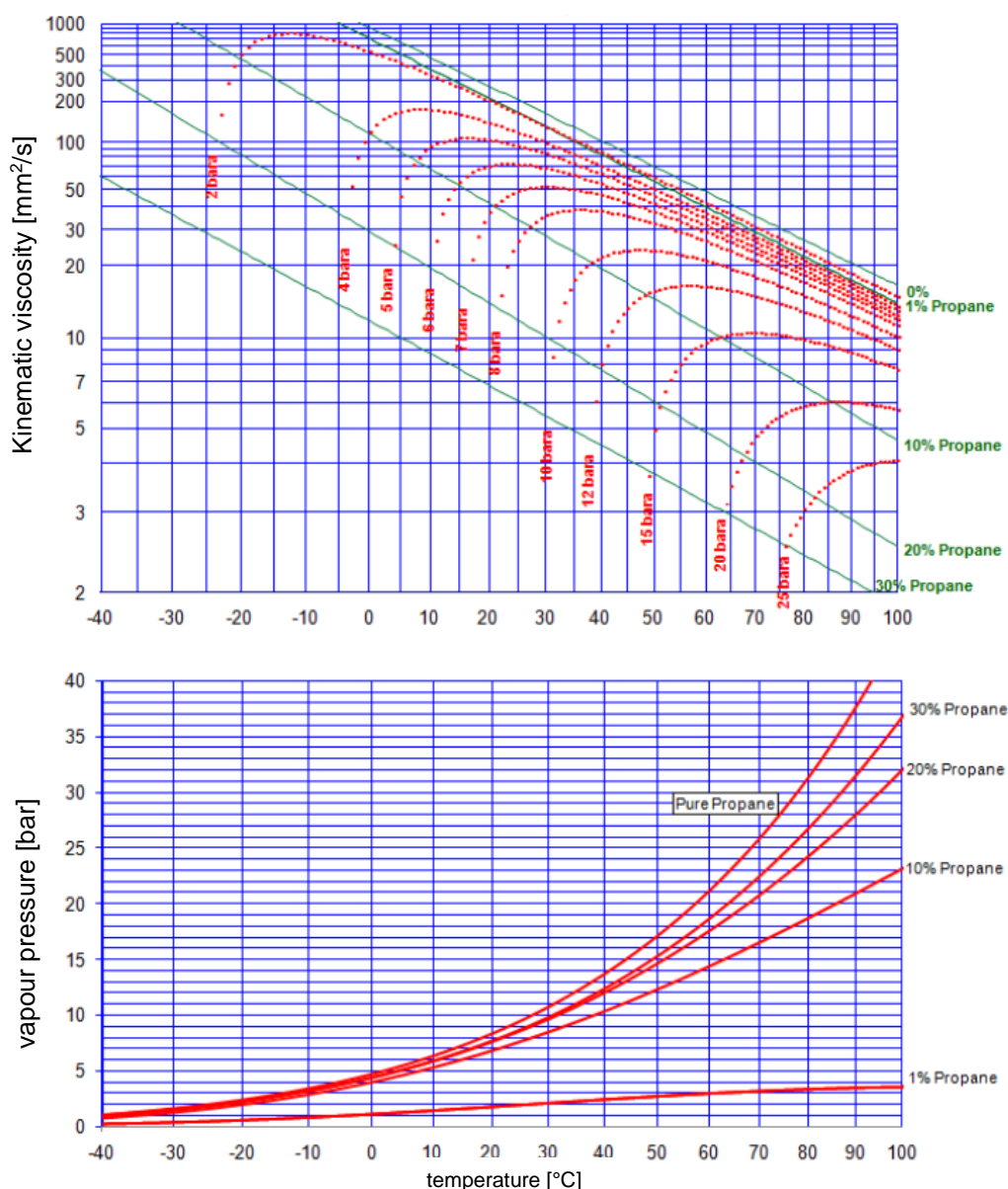
All % figures represent m% in methane-oil-mixture.

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High-performance synthetic gas compressor lubricants based on polyalkylene glycol (PAG).

Kinematic viscosity and vapour pressure: RENOLIN LPG 100 and Propan R290

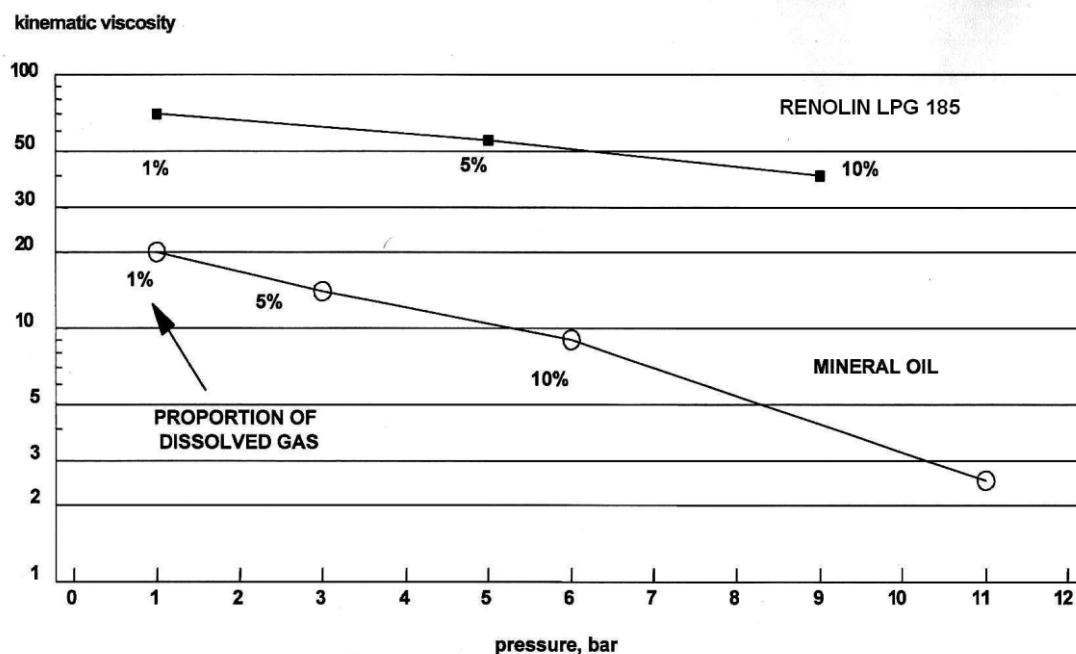


All % figures represent m% refrigerant in the propane-oil-mixture.

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Effect of propane gas solubility on the viscosity of gas compressor lubricants at 60 °C



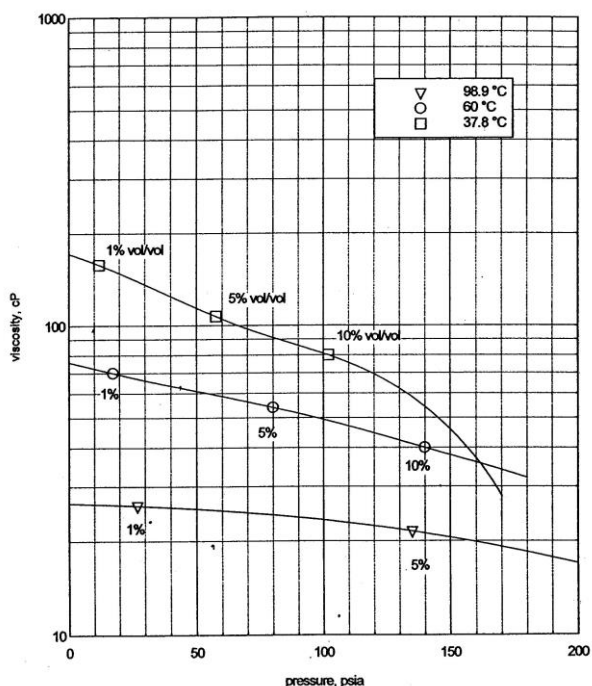
A comparison: mineral oil-based compressor oils – RENOLIN LPG 185 (PAG)

Kinematic viscosity	Mineral oil, ISO VG 68 without gas	Mineral oil, ISO VG 100 without gas	RENOLIN LPG 185, ISO VG 150-220 without gas
at 40 °C, mm²/s	68	100	185
at 60 °C, mm²/s	30	38	80

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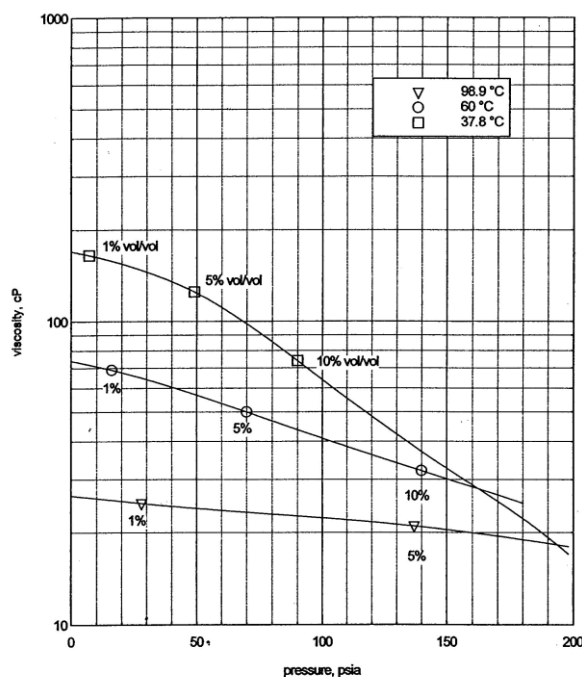
Effect of propane gas solubility on RENOLIN LPG 185



Viscosity-pressure-temperature-diagram: example

Temperature: 60 °C
Pressure: 10 bar
ca. 10% propane is dissolved in RENOLIN LPG 185
Viscosity: 40 mm²/s

Effect of propene gas solubility on RENOLIN LPG 185



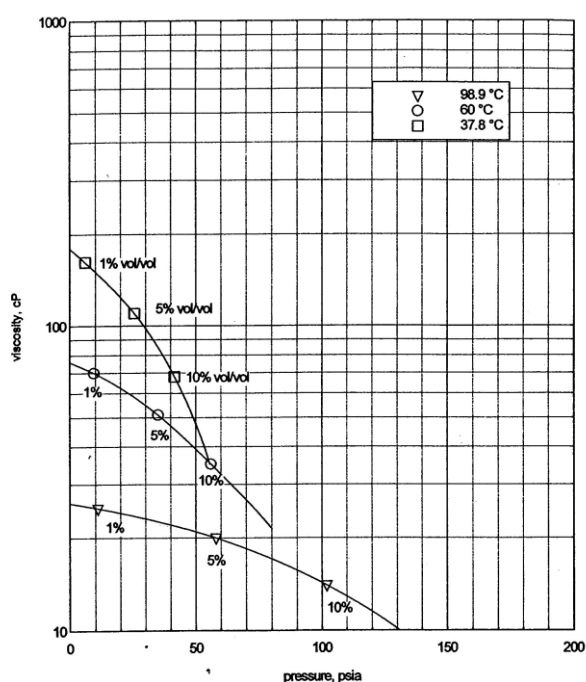
1 bar = 14.504 psi
50 psi = 3.44 bar
100 psi = 6.89 bar

$$\text{psi} = \frac{\text{pound al}}{\text{sq in}}$$

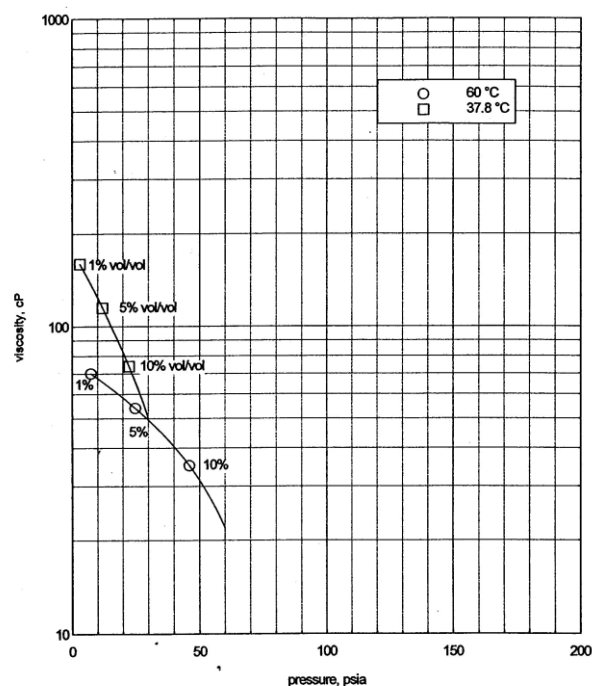
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Effect of butene gas solubility on
RENOLIN LPG 185



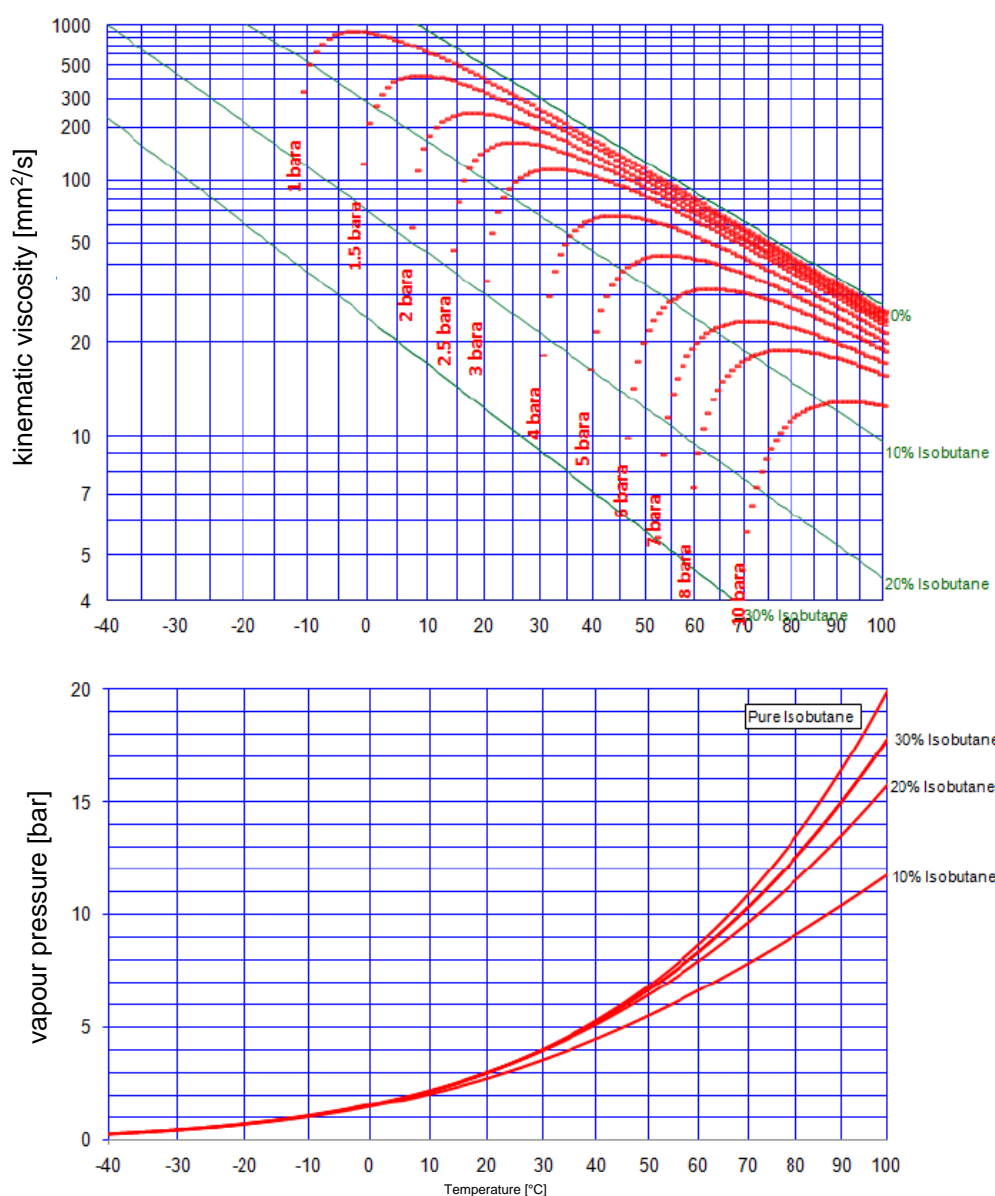
Effect of butadiene gas solubility on
RENOLIN LPG 185



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Kinematic viscosity and vapour pressure: RENOLIN LPG 185 and Iso-butane



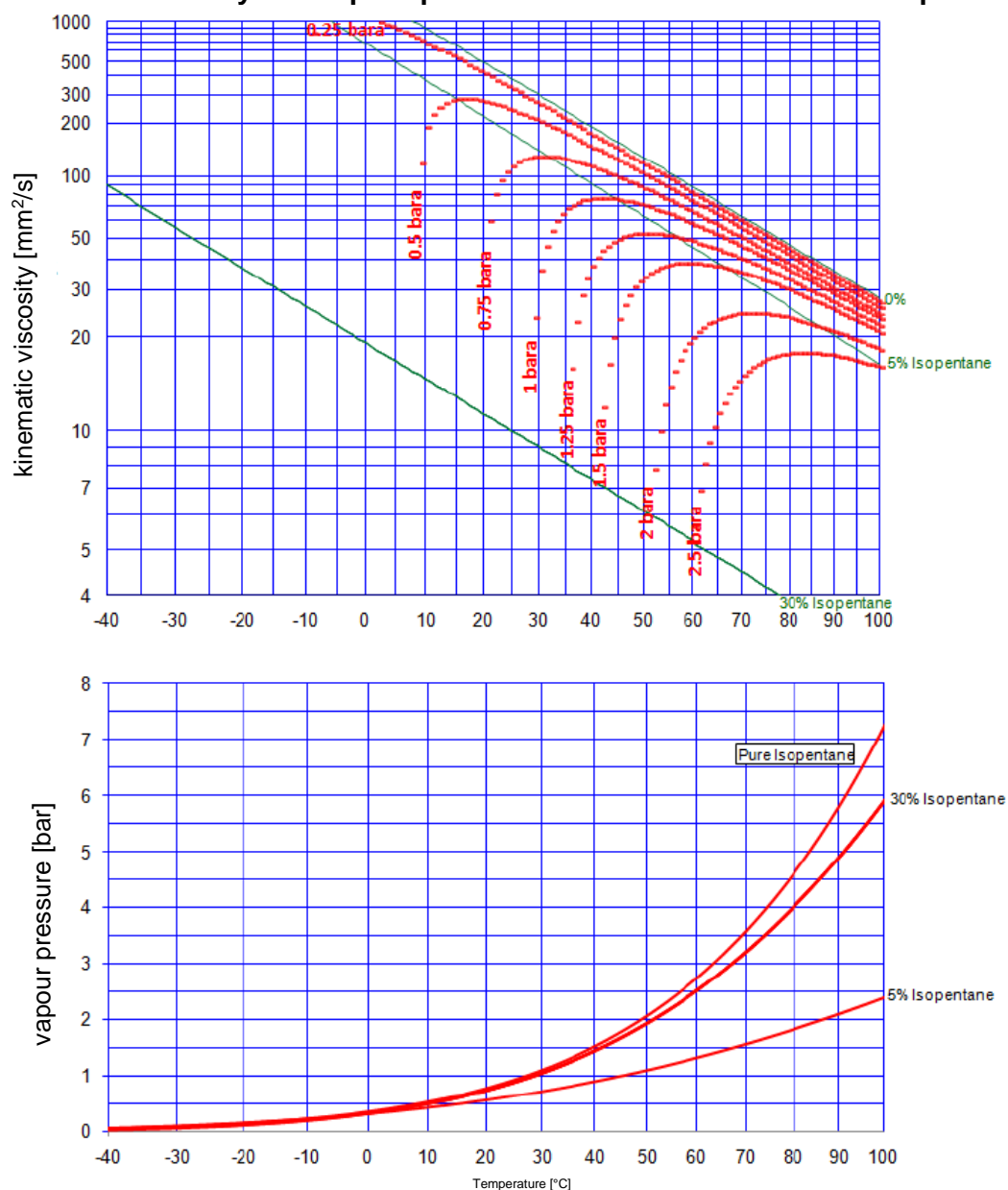
All % figures represent m% refrigerant in Iso-butane-oil-mixture.

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Kinematic viscosity and vapour pressure: RENOLIN LPG 185 and Iso-pentane



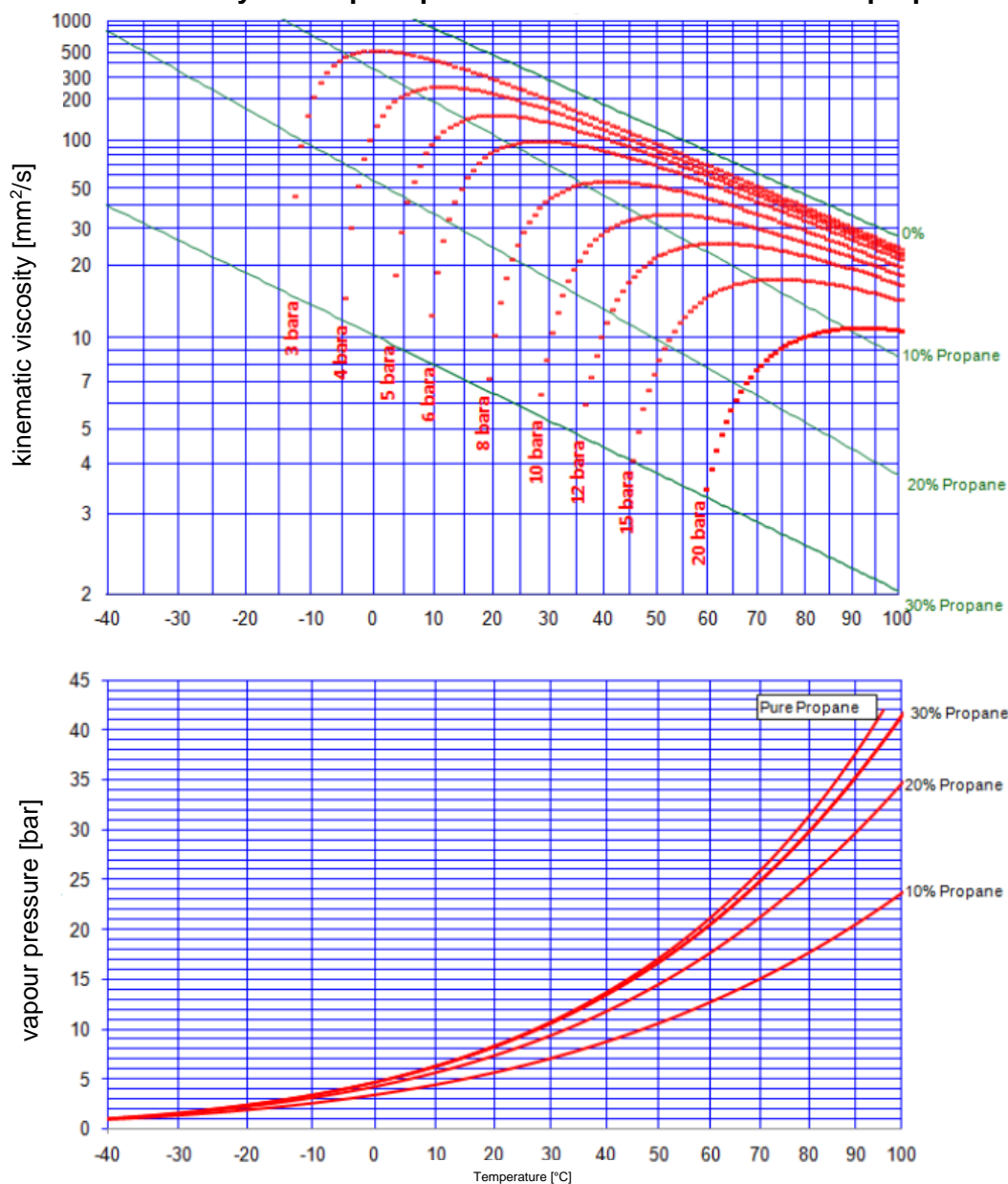
All % figures represent m% refrigerant in Iso-pentane-oil-mixture.

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Kinematic viscosity and vapour pressure: RENOLIN LPG 185 and propane R290

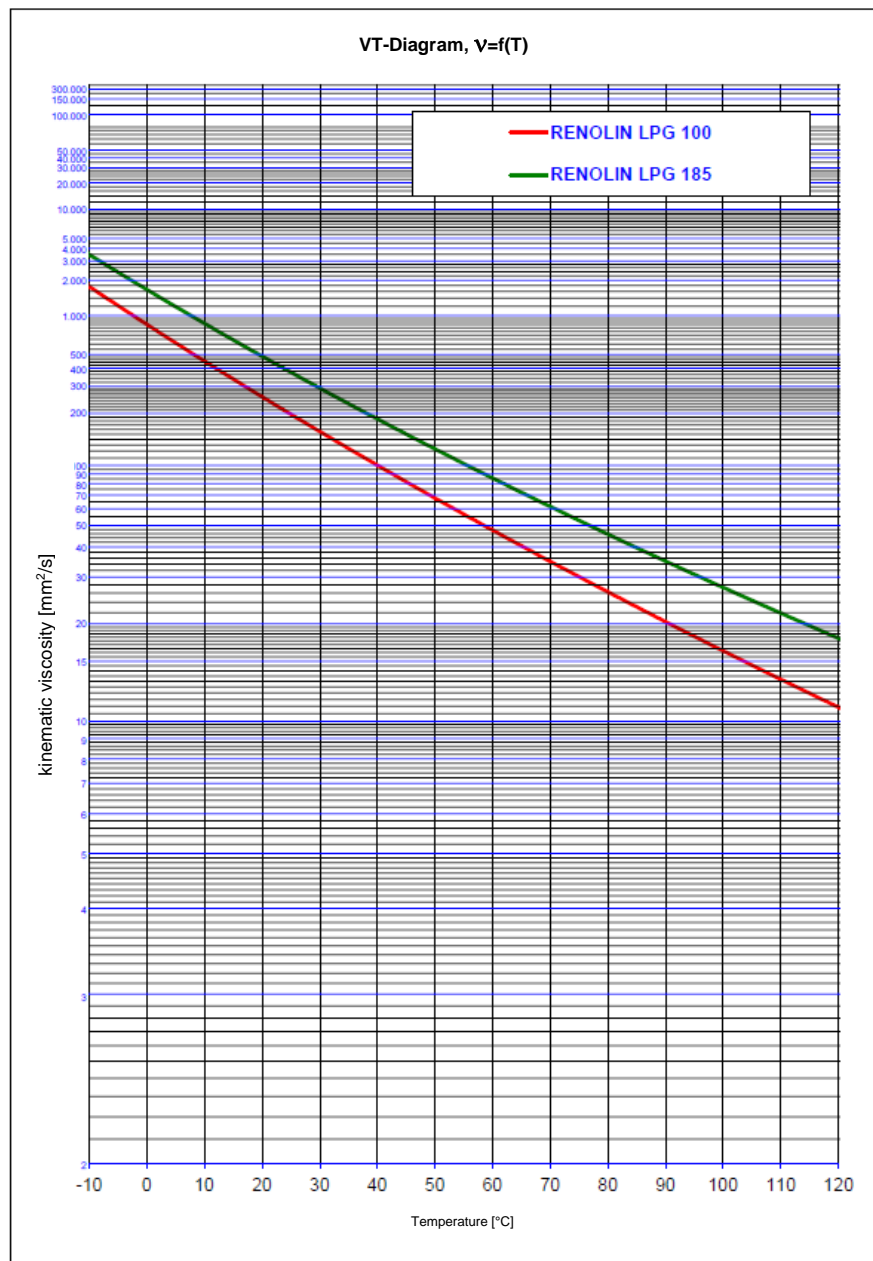


All % figures represent m% refrigerant in propane-oil-mixture.

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Product Information

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Note

The information contained in this product information is based on the experience and know-how of FUCHS LUBRICANTS GERMANY GmbH in the development and manufacturing of lubricants and represents the current state-of-the-art. The performance of our products can be influenced by a series of factors, especially the specific use, the method of application, the operational environment, component pre-treatment, possible external contamination, etc. For this reason, universally-valid statements about the function of our products are not possible.

Our products must not be used in aircraft or spacecraft. Our products may be used in the manufacture of components for aircraft or spacecraft if they are removed without residue from the components prior to assembly into the aircraft or spacecraft.

The information given in this product information represents general, non-binding guidelines. No warranty expressed or implied is given concerning the properties of the product or its suitability for any given application. We therefore recommend that you consult a FUCHS LUBRICANTS GERMANY GmbH application engineer to discuss application conditions and the performance criteria of the products before the product is used. It is the responsibility of the user to test the functional suitability of the product and to use it with the corresponding care.

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