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,
- other chemical gases (e.g. butadiene, NH_3)

RENOLIN LPG series are based on special synthetic polyglycols.
Please note: polyglycols are not miscible and compatible with standard mineral oil-based lubricants.

The compression gas should be dry. 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	DIN EN ISO 3104
Viscosity index	-	175	197	DIN ISO 2909
Density at 15°C	kg/m^3	1002	1012	DIN 51 757
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 51 558-1
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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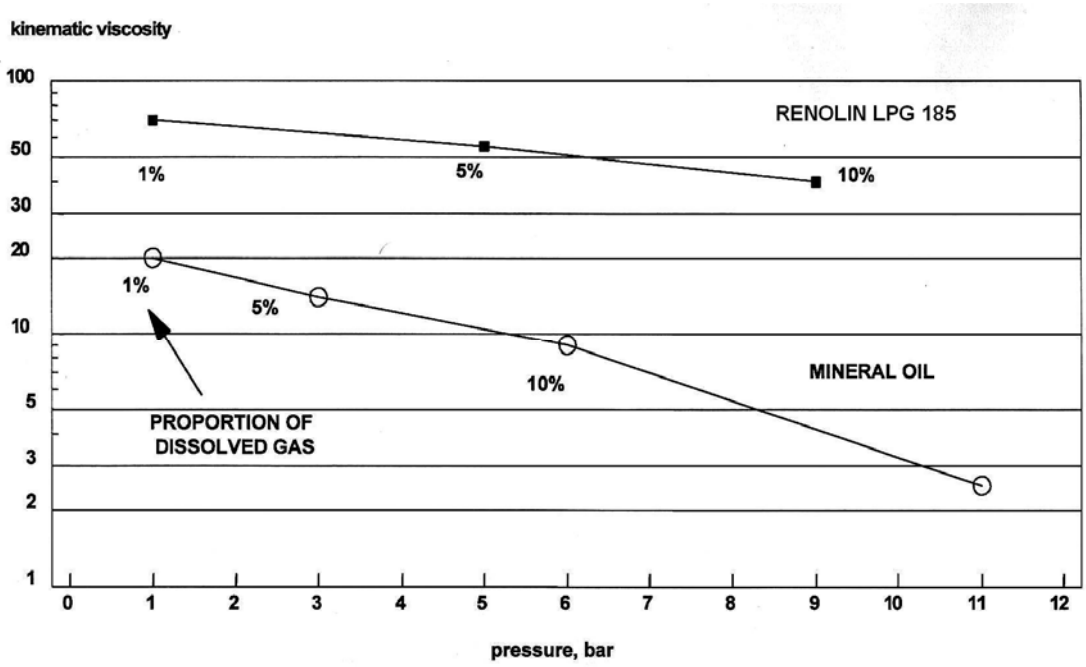
Effect of propane gas solubility on the viscosity of gas compressor lubricants at 60°C



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, mm^2/s	68	100	185
at 60 °C, mm^2/s	30	38	80

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RENOLIN LPG

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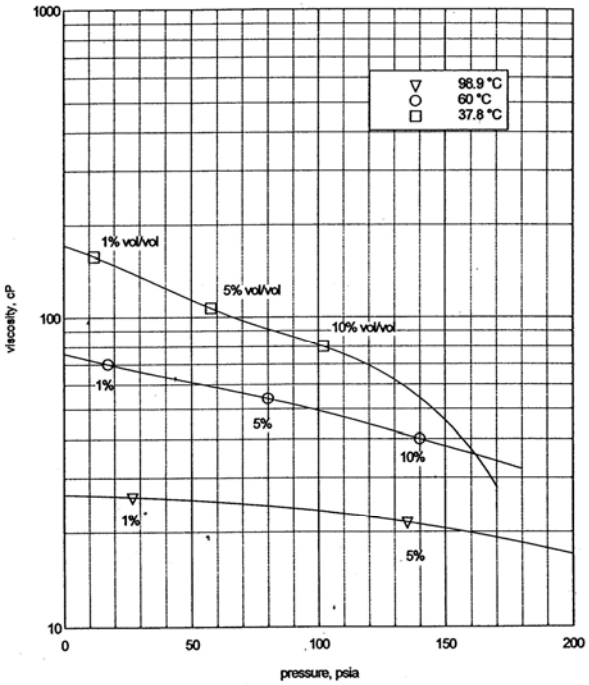
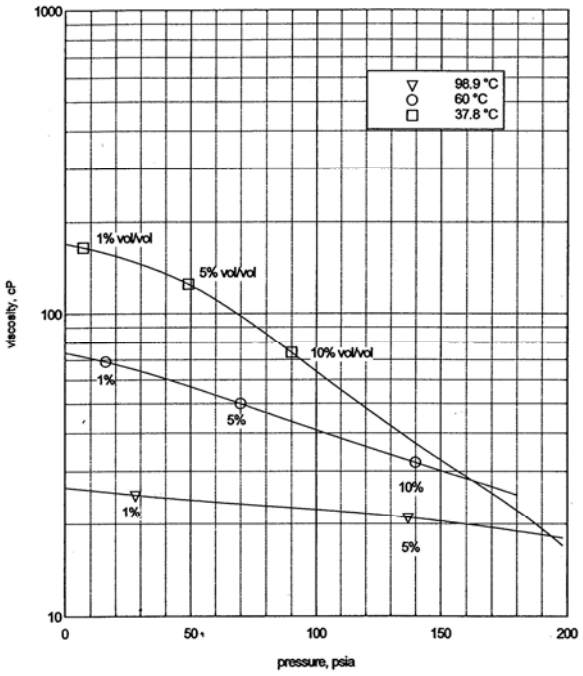
Effect of propane gas solubility on RENOLIN LPG 185



Viscosity-pressure-temperature-diagram: example

Temperature: 60°C
Pressure: 10 bar
Ca. 10% propane is dissolved in RENOLIN LPG 185
Viscosity: 40 mm^2/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

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

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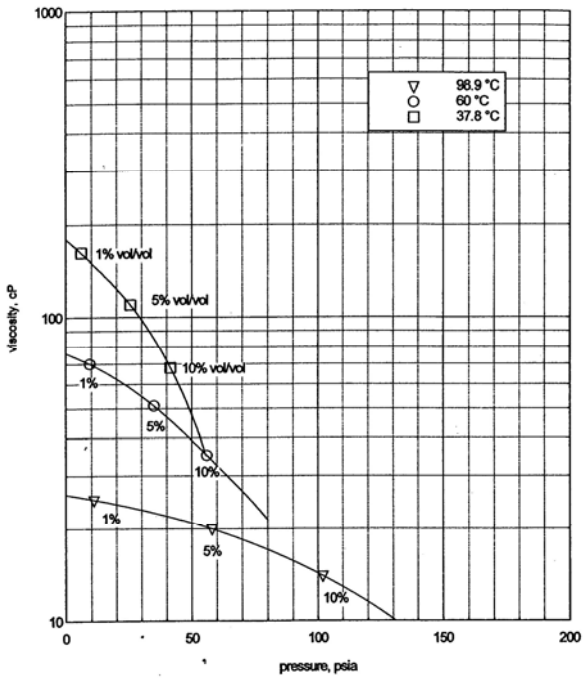
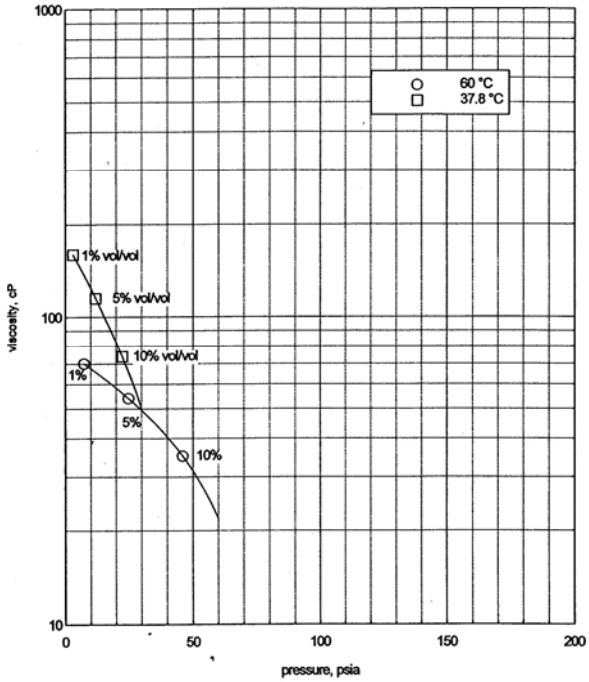
Effect of butene gas solubility on RENOLIN LPG 185



Effect of butadiene gas solubility on RENOLIN LPG 185



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