

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, 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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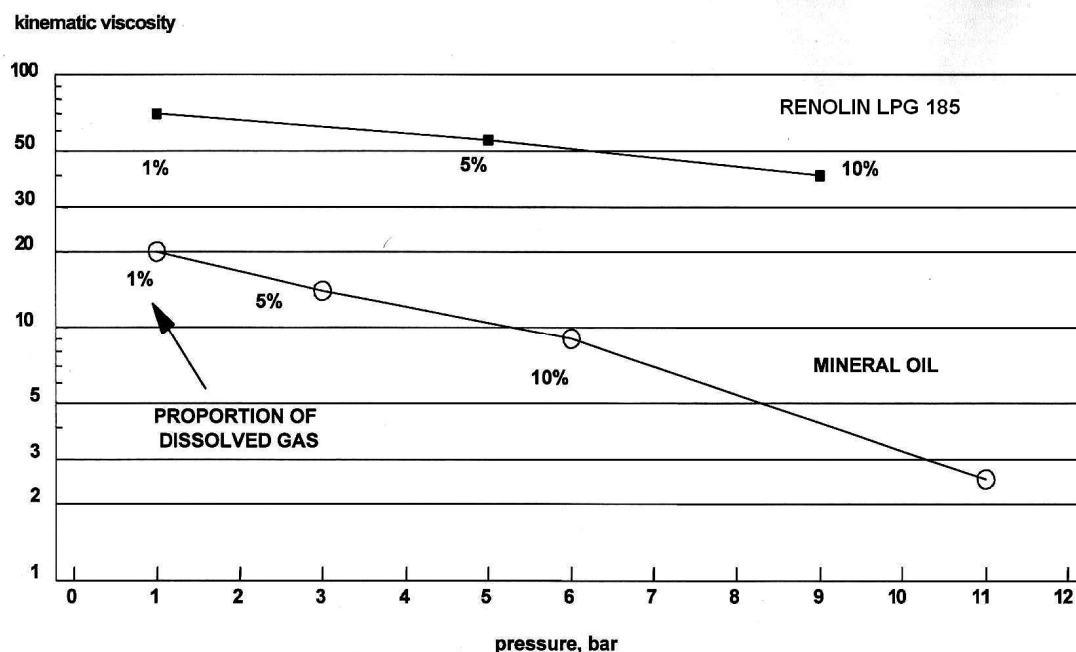
Typical values:

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



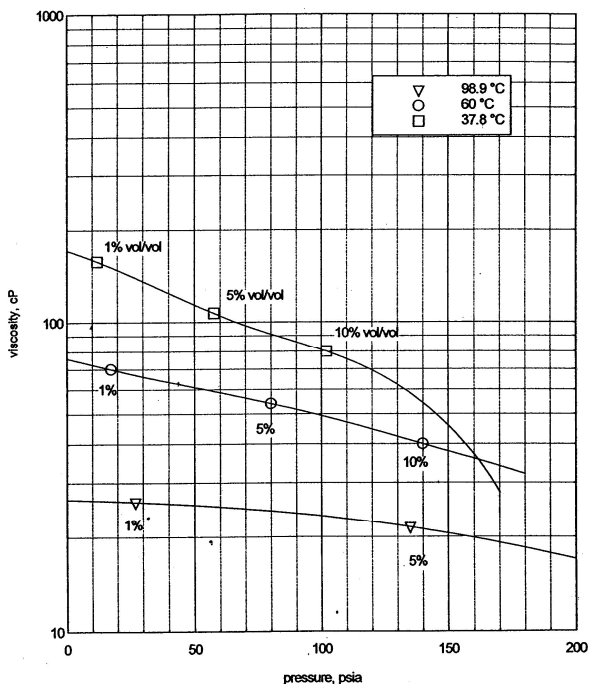
A comparison: mineral oil-based compressor oils – RENOLIN LPG 185 (PAG)

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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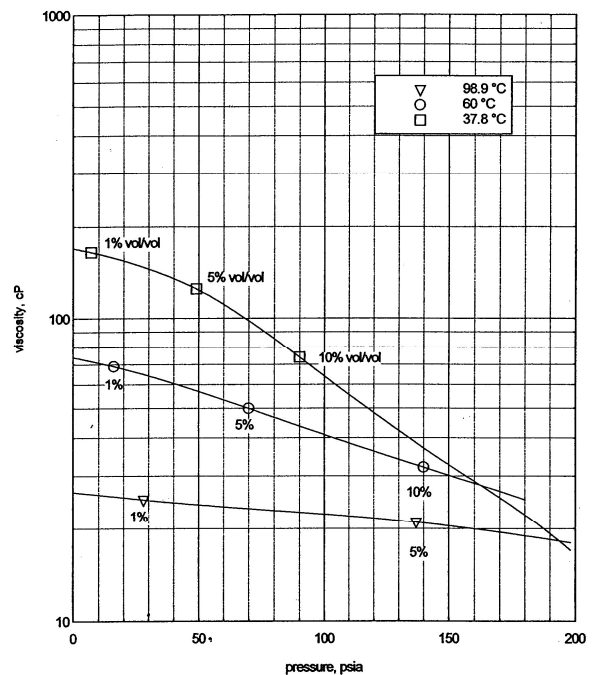
Effect of propane gas solubility on
RENOLIN LPG 185



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



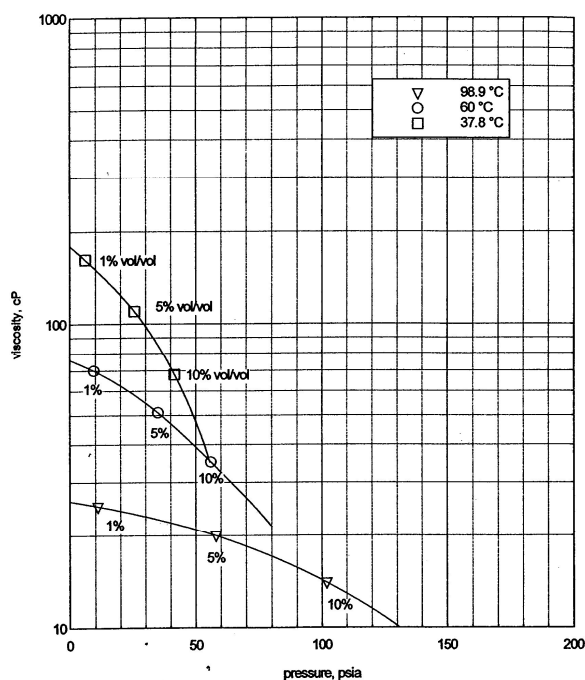
1 bar = 14.504 psi
50 psi = 3.44 bar
100 psi = 6.89 bar

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

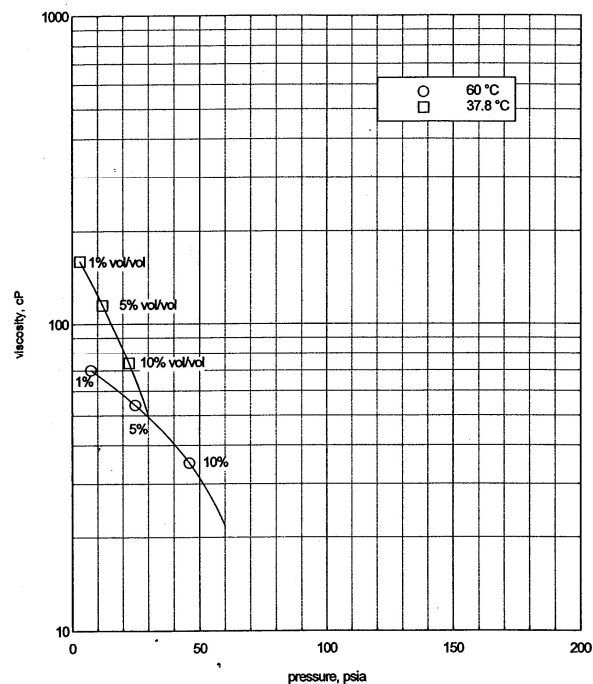
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Effect of butene gas solubility on
RENOLIN LPG 185



Effect of butadiene gas solubility on
RENOLIN LPG 185



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