

GEOlube[®] LPG 9 is a high performance gas compressor lubricant based on a polyalkylene glycol. It is designed for enclosed pattern gas compressors for hydrocarbon and chemical gases where the crankcase and bearings operate in a gas-filled atmosphere. Under these conditions, the gas is readily soluble in mineral oil lubricants, which, on dilution, suffer a significant drop in viscosity (see Figure 1) and lubricant performance.

This problem can be overcome by using **GEOlube**[®] **LPG 9**, in which the gases are much less soluble. **GEOlube**[®] **LPG 9** is particularly suitable for marine service on vessels carrying specialist liquefied gas cargoes.

Typical Physical Properties *

Property	Value	Method
Kinetic viscosity @ 40°C, mm²/ s	185	ASTM D445
Kinetic viscosity @ 100°C, mm²/ s	35	ASTM D445
Viscosity index	237	ASTM D2270
Density @ 20°C, kg/m ³	1050	ASTM D1298
Flash point, COC, °C	>290	ASTM D92
Pour point, °C	-40	ASTM D97

* The typical values presented here are believed to be accurate; they should not, however be considered to constitute a specification.

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Applications

GEOlube[®] LPG 9 is used for the following gases:

- Liquefied petroleum gases such as propane and butane,
- Liquefied natural gases such as methane and ethane,
- Hydrocarbon chemical gases such as ethylene, propylene and butylene,
- Chemical gases such as ammonia, vinyl chloride and butadiene.

Advantages over mineral oils and competitive synthetic fluids are as follows:

- Reduced gas solubility, leading to improved wear protection, extended lubricant life, improved compressor efficiency and reduced foaming.
- Multigas service for a wide range of gases including vinyl chloride and butadiene. The lubricant does not promote the dimerisation of butadiene or generate solid deposits. **GEOlube**[®] **LPG 9** therefore obviates the need to change the mineral oil for butadiene compression, thus simplifying the lubricant inventory, avoiding mistakes and saving time and expense.

Ideally, compression gas should be dry, but this product will tolerate up to 4% water before hazing at 80°C. Common seal and gasket materials are unaffected by **GEOlube**[®] **LPG 9**. Nitrile rubber (NBR), Fluoro-Silicone or Vinyl-Methyl Polysiloxane (Q) are recommended. Ordinary industrial paint soften in the presence of this product. Two-pack epoxy formulations are normally resistant. This product should not be mixed with mineral oil.

OEM Approvals

GEOlube[®] **LPG 9** has been tested and approved by Burckhardt A.G for use in their K-type gas cargo compressors for general LPG/LNG service and for ammonia, vinyl chloride monomer and butadiene.

Registration & Regulatory Information: Please refer to the safety datasheet.

Handling & Storage: This product can be stored for up to 5 years at ambient storage temperature and conditions without any deterioration. Please refer to the safety datasheet for more details.

Miscellaneous: Various pack types available; please contact your local GEO Specialty Chemicals representative for further information.

All information and data, including the formulations and procedures discussed herein, are believed to be correct. However, this should not be accepted as a guarantee of their accuracy, and confirming tests should be run in your laboratory or plant. No statement should be construed as a recommendation for any use which would violate any patent rights. Sales of all products are pursuant to terms and conditions included in GEO Specialty Chemicals sales documents. Nothing contained therein shall constitute a guarantee or warranty with respect to the products described or their use. Safety information regarding these products is contained in their Safety Data Sheets. Users of these products are urged to review and use this information.

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Performance Data

Test	Result	Method	
Foam test (with air)			
Sequence I (24°C)	0/0	ASTM D892	
Sequence II (93.5°C)	0/0		
Sequence III (24°C)	0/0		
Air Release value, minutes	12	IP313	
Copper corrosion	1a	ASTM D130	
Steam turbine corrosion test (with distilled water)	Pass	ASTM D665A	
Oxidative stability (95°C) V ₁₀₀ change, %	+0.6	ASTM D2893	
4-ball			
Wear scar (40kg, 1hr, RT), mm	0.48	IP139	
Weld load, kg	180		

Figure 1: Effect of Propane gas pressure on the viscosity of LPG



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Pressure Viscosity Relationships

The following diagrams show more detailed information concerning pressure viscosity behaviour.





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Figure 3: Effect of Butene gas pressure on GEOlube[®] LPG 9 viscosity



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Figure 5: Effect of Propane gas pressure on GEOlube® LPG 9 viscosity



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Figure 6: Effect of Ammonia gas pressure on GEOlube® LPG 9 viscosity



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Figure 7: Effect of Methyl Chloride gas pressure on GEOlube $\ensuremath{\mathbb{B}}$ LPG 9 viscosity



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