RENOLIN UNISYN OL

Synthetic EP air compressor oils based on PAO, for screw, vane and piston compressors, High-performance synthetic, PAO-based hydraulic fluids

Description

Compressed air has become a major form of energy and the reliable generation of compressed air is vital. Operators require compressors to function perfectly over and beyond entire service intervals.

The RENOLIN UNISYN OL series was developed to meet the increased requirements of compressor manufacturers on the service life of compressor oils. Due to the function of compressors, intensive swirling of the cooling oil and air occurs. At high compression temperatures, the oils are subjected to a strong oxidative attack that accelerates ageing. The selection of special synthetic base oils and additive systems makes long, interruption-free operation possible. To ensure optimum performance of the oil separator, the air release properties and low foaming are characteristic for screw compressor oils. RENOLIN UNISYN OL 32, 46 and 68 offer long service life, and they fulfill the requirements mentioned above as well as the requirements according to DIN 51 506 VDL.

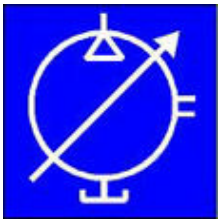
The most important functions of lubricating and cooling oils in screw compressors are:
* Cooling the compressed air
* Bearing lubrication
* Sealing the chambers
* Corrosion protection
* Preventing the formation of deposits.

RENOLIN UNISYN OL 100 and 150 are recommended in particular for long-term use in piston and rotary compressors that must meet the strict requirements for low residue formation according to DIN 51 506 VDL.

RENOLIN UNISYN OL fluids can also be used as hydraulic fluids according to DIN 51 524.

Advantages

- **Excellent viscosity-temperature behaviour (high natural viscosity index), shear-stable**
- **Excellent oxidation stability**
- **Low evaporation losses**
- **Excellent wear protection (EP/AW!)**
- **Excellent FE8 performance**
- **Good demulsifying properties**
- **Excellent corrosion protection**
- **Good compatibility with elastomers**
- **Low foaming / Good air release**
- **Suitable for high-temperature applications**
- **Synthetic hydraulic fluids, excellent deep temperature flowability**
- **Exceed DIN 51 506 - VDL**



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FUCHS EUROPE SCHMIERSTOFFE GMBH
Friesenheimer Straße 15
68169 Mannheim/Germany

Telefon: +49 621 3701-0
Telefax: +49 621 3701-570
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Application

RENOLIN UNISYN OL products are recommended for use in flooded or oil injection screw-type air compressors (ISO VG 32, 46, 68) and for piston and rotary vane compressors (ISO VG 100, 150).

RENOLIN UNISYN OL products should always be used if mineral oil-based products are found to display insufficient thermal stability (resistance to ageing) or poor viscosity-temperature behaviour. Compared to mineral oil-based oils, RENOLIN UNISYN OL products foam less, offer better demulsification and have superior air release properties.

The use of RENOLIN UNISYN OL products is especially recommended in unfavourable conditions and at high temperatures in which other oils fail because they allow coke to form, thus leading to unacceptably short oil life. These oils are also recommended for compressors which are subject to extreme loads.

Compared to mineral oil products, the life of RENOLIN UNISYN OL products is considerably longer, operational reliability is much improved and breakdowns are effectively reduced (service intervals can be extended).

RENOLIN UNISYN OL products can also be used as hydraulic fluids, especially with good low-temperature behaviour.

Specifications

DIN 51 506: VDL
ISO DP 6521 (draft): L-DAB, L-DAH / L-DAG
DIN 51 524: HLP, (HVLP)

Excellent Viscosity-Temperature Behaviour (High natural Viscosity Index)

RENOLIN UNISYN OL products display good "natural" viscosity-temperature behaviour. Compared to equiviscous mineral oils, the start-up viscosity of such oils at low temperatures is significantly less. This also ensures the fastest possible oil feed to bearings. Furthermore, compared to mineral oil-based products of the same ISO-VG, the viscosity of UNISYN OL products at operating temperatures is higher. This ensures that an optimal lubricating film (higher viscosity) is always formed. Even at high loads and after long periods of use, no shearing losses (drop in VI) occur.

Excellent Oxidation Stability

When running, the lubricating oil in screw compressors comes into close contact with the oxygen in the air. Oxidation is accelerated by the large volumes of air along with the relatively large surfaces on the inside of such compressors. The temperature peaks encountered in screw compressors also subject the lubricating oil to thermal stress. The use of RENOLIN UNISYN OL products, especially at high temperatures (caused by high pressures) avoids the formation of ageing by-products and coke. Moreover, they hinder the formation of corrosive oxidation by-products as well as rubbery or lacquer-like deposits. RENOLIN UNISYN OL oils reduce breakdowns and maintenance work, increase the life of filters and improve the performance of compressors. The outstanding oxidation resistance of the base oils used which is boosted by special oxidation inhibitors avoids the formation of ageing by-products, coke and other products which detrimentally affect performance. These features also significantly increase the life of the oil.

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Low Evaporation Losses

Mineral oil-based lubricants, especially at high operating temperatures, tend to evaporate their highly volatile components causing the viscosity to increase and oil mist pollution of the compressed air. The very low evaporation losses of the synthetic base oils used for RENOLIN UNISYN OL products largely eliminate such problems.

Excellent Wear Protection (EP)

The heat which is generated at high compressor outlet pressures often causes the oil film between the rotor flanks to become so thin that metal-to-metal contact takes place and thus wear. RENOLIN UNISYN OL products contain special AW/EP additives which enable a protective film to be formed even at extreme pressures. This minimizes bearing and rotor wear and thus significantly increases the operational reliability of the compressor. RENOLIN UNISYN OL 68 was tested in the FE8 test rig, with excellent results.

Excellent Performance in Hydraulic Equipment

RENOLIN UNISYN OL products offer excellent wear protection in hydraulic equipment. RWTÜV Germany, a well-known independent institute, has done the Vickers Vane Pump Test with RENOLIN UNISYN OL 46, with excellent results. Extreme wear protection guarantees a long lifetime of the components.

Good Demulsifying Properties

Water can get into compressors through condensation. Such moisture can accelerate the ageing of the oil. Furthermore, water in compressors can lead to bearing failure and to negative reactions. And on top of that, water can wash out the water-soluble additives in the oil which again reduces lubricity. Condensation can also occur in compressors which are used intermittently or which are rarely run at full power. Moisture in the oil can create sludge or stable water-in-oil emulsions which can block oil passages, causing partial seizures. Any moisture which gets mixed with RENOLIN UNISYN OL separates-out and can be drained. This reduces the problems associated with the formation of emulsions which have to be disposed-of as special waste. All these features help reduce costs.

Excellent Corrosion Protection for Steel and Nonferrous Metals

DIN 51 585 examines the corrosion protection properties of an oil and distilled water on a steel test panel. In this test, RENOLIN UNISYN OL products caused no corrosion throughout the duration of the test. The same excellent results also apply to nonferrous metals (DIN EN ISO 2160). Practically, this means that all machine components remain well protected against corrosion.

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Typical Properties:

Product name		**32**	**46**	**68**	**100**	**150**	
Property	**Unit**						**Test Method**
ISO VG		32	46	68	100	150	DIN 51 519
Colour index		0	0	0	0.5	0.5	DIN ISO 2049
Kinematic viscosity at 40 °C at 100 °C	 mm^2/s mm^2/s	 32 6.1	 46 7.9	 68 10.6	 100 14.4	 150 19.4	DIN 51 550 with DIN 51 562-1
Viscosity index		142	146	144	148	148	DIN ISO 2909
Density at 15 °C	kg/m^3	838	843	845	845	849	DIN 51 757
Flashpoint, Cleveland open cup	°C	240	260	265	250	250	DIN ISO 2592
Pour point	°C	< -60	< -60	< -60	-60	< -57	DIN ISO 3016
Copper corrosion	Degree of corr.			1-100 A3			DIN EN ISO 2160
Steel/ferrous corrosion protection properties	Degree of corr.	0-A 0-B	0-A 0-B	0-A 0-B	0-A 0-B	0-A 0-B	DIN 51 585 DIN 51 585
Neutralization number	mgKOH/g	0.1	0.1	0.1	0.5	0.6	DIN 51 558-1
Water content	% mass			not detectable			DIN ISO 3733
Demulsification at 54°C	min	10	10	15	-	-	DIN 51 599
Demulsification at 82°C	min	-	-	-	5	5	DIN 51 599
Air release at 50°C	min	1	2	5	9	14	DIN 51 381
Foaming, Seq. I: 24°C Seq. II: 93.5°C Seq. III: 24°C after 93.5°C	 ml ml ml	 0/0 0/0 0/0	 0/0 0/0 0/0	 0/0 0/0 0/0	 0/0 5/0 0/0	 0/0 5/0 0/0	ASTM D 892

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Typical Properties:

Product name		**32**	**46**	**68**	**100**	**150**	
Property	**Unit**						**Test Method**
ISO VG		32	46	68	100	150	DIN 51 519
Sulphate ash	% mass	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	DIN 51 575
Rotary vane pump test * 250 h, 140 bar max. pressure weight loss ring weight loss vane	 mg mg	 pass pass	 11 7	 pass pass	 not de-termined	 not de-termined	DIN 51 389-2
Ageing stability: Increase CCT after ageing Increase CCT after ageing with Fe	 % %	 0.02 0.4	 0.02 0.4	 0.02 0.4	 0.02 0.4	 0.02 0.4	 DIN 51 352-1 DIN 51 352-2
Shear stability (Bosch pump), relative drop in viscosity at 100°C after 250 cycles	%	< 0.1	< 0.1 shear	< 0.1 stable	< 0.1	< 0.1	DIN 51 382
FZG mechanical gear test rig	failure load stage	> 12	> 12	> 12	> 12	> 12	DIN 51 354-2
FE8 roller test, C 7,5/80-80 Wear of the roller elements	 mg	 	 	 type test: 7,8	 	 	DIN 51 819-3
Effect on SRE-NBR 1 seal material acc. to DIN 53 538-1, 100°C / 7 days, relative volume change change in Shore A hardness	 % Shore	 +2.5 +1	 +2.3 +1	 +2 +1	 +3.7 -2	 +3.7 -2	DIN 53 521 together with DIN 53 505

* RWTÜV report is available for RENOLIN UNISYN OL 46

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