Klüberoil GEM 1 N

High-performance gear and multipurpose oil based on mineral oil

Your benefits at a glance

- High scuffing protection
- Excellent wear protection for gears and rolling bearings
- Good shear stability for reliable lubricant film formation
- Excellent ageing and oxidation resistance
- Low foaming tendency

Your requirements - our solution

Klüberoil GEM 1 N is a high-performance gear and multipurpose oil based on selected mineral oils satisfying the growing requirements and increasing power density of modern gears.

Klüberoil GEM 1 N clearly exceeds CLP requirements according to DIN 51517-3. Corresponding gears can be switched to Klüberoil GEM 1 N without prior consultation with the gear manufacturer provided the general application notes are observed.

Klüberoil GEM 1 N offers high scuffing load capacity. Gears are sufficiently protected against scuffing even at extremely high peak loads, vibrations or oscillations. The excellent wear protection of both gears and rolling bearings ensures that the service life calculated for the lubricated components is achieved, leading to lower maintenance and repair costs.

Klüberoil GEM 1 N offers a much longer service life than mineral oil-based standard gear oils due to the excellent ageing and oxidation resistance of the selected raw materials; thus service intervals can be extended and maintenance costs reduced. The product's low foaming tendency and anti-corrosive properties enable problem-free gear operation.

By using Klüberoil GEM 1 N you can benefit from a number of advantages that will help you save costs easily and efficiently. We look forward to hearing from you.

Application

Klüberoil GEM 1 N was specially developed for the lubrication of spur, bevel and planetary gears that are subject to high loads. Such gears are frequently used in the steel, mining and sugar industries. It is also used for the lubrication of standard worm gears as defined in DIN 3996.

Klüberoil GEM 1 N can also be used for the lubrication of plain and rolling bearings, all kinds of toothed couplings, chains, guideways, joints, spindles and pumps.

Application notes

Klüberoil GEM 1 N can be applied by means of immersion, immersion circulation or injection.

The use of drip-feed oilers, brushes, oil cans or suitable automatic lubricating systems is also possible. When using automatic lubricating systems, please note the manufacturer's instructions regarding the maximum permissible viscosity. The low-viscosity varieties are also used for oil mist lubrication.

It should be noted that elastomers from one or several manufacturers can behave differently; therefore tests should be performed.

For checking the contact pattern during running-in, the inspection paint Klübertop P 39-462 Spray (Art. No. 081295) can be used.

When changing over to Klüberoil GEM 1 N, residues of a previously used gear oil can be more easily removed if Klüber Summit Varnasolv HV (Article No. 050135) is added.

When determining the oil viscosity for gear lubrication, the gear manufacturer's instructions take priority. Only for applications where manufacturer's instructions are not available, the suitable viscosity can be determined as laid down in DIN 51509. To determine the correct oil viscosity for bearings, please observe the bearing manufacturer's instructions.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

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Pack sizes	Klüberoil GEM 1-46 N	Klüberoil GEM 1-68 N	Klüberoil GEM 1-100 N	Klüberoil GEM 1-150 N
Canister 500 ml	+			
Canister 1 l	+	+	+	+
Canister 5 l	+	+	+	+
Canister 20 l	+	+	+	+
Canister 30 l				+
Drum 200 l	+	+	+	+

Pack sizes	Klüberoil GEM 1-220 N	Klüberoil GEM 1-320 N	Klüberoil GEM 1-460 N	Klüberoil GEM 1-680 N
Canister 500 ml				
Canister 1 l	+	+	+	+
Canister 5 l	+	+		
Canister 20 l	+	+	+	+
Canister 30 l				
Drum 200 l	+	+	+	+

Pack sizes	Klüberoil GEM 1-1000 N
Canister 500 ml	
Canister 1 l	
Canister 5 l	
Canister 20 l	+
Canister 30 l	
Drum 200 l	+

Characteristics	Klüberoil GEM 1-46 N	Klüberoil GEM 1-68 N	Klüberoil GEM 1-100 N	Klüberoil GEM 1-150 N
Article number	030050	030051	030054	030057
Service temperature, lower limit	-15 °C	-15 °C	-5 °C	-5 °C
Service temperature, upper limit	100 °C	100 °C	100 °C	100 °C
Designation, DIN 51502	CLP 46	CLP 68	CLP 100	CLP 150
Designation, ISO 12925-1	CKC 46	CKC 68	CKC 100	CKC 150
Density, DIN 51757, 15°C	approx. 870 kg/m³	approx. 880 kg/m³	approx. 880 kg/m³	approx. 880 kg/m³

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Characteristics	Klüberoil GEM 1-46 N	Klüberoil GEM 1-68 N	Klüberoil GEM 1-100 N	Klüberoil GEM 1-150 N
Flash point, DIN EN ISO 2592, Cleveland open cup	≥ 200 °C	≥ 200 °C	≥ 200 °C	≥ 200 °C
Foam test, ISO 6247 / ASTM D892, 24°C, sequence I	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml
Foam test, ISO 6247 / ASTM D892, 24°C, sequence III	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml
Foam test, ISO 6247 / ASTM D892, 93.5°C, sequence II	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml
ISO viscosity grade, DIN ISO 3448, ISO VG	46	68	100	150
Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 100°C	approx. 7 mm²/s	approx. 9 mm²/s	approx. 11 mm²/s	approx. 15 mm²/s
Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 40°C	approx. 46 mm²/s	approx. 68 mm²/s	approx. 100 mm²/s	approx. 150 mm²/s
Viscosity index, DIN ISO 2909	≥ 90	≥ 90	≥ 90	≥ 90
Copper corrosion, DIN EN ISO 2160, 3 h, 100°C	1 - 100 - 3 corrosion degree	1 - 100 - 3 corrosion degree	1 - 100 - 3 corrosion degree	1 - 100 - 3 corrosion degree
Steel corrosion, DIN ISO 7120 / ASTM D665, method A, 24 h, 60°C	rust-free	rust-free	rust-free	rust-free
Pour point, DIN ISO 3016, ASTM D97, ASTM D5950, ASTM D7346	≤ -20 °C	≤ -15 °C	≤ -15 °C	≤ -10 °C
Ageing behaviour, DIN EN ISO 4263-4 / ASTM D2893, 312 h, 95°C, increase in viscosity at 100°C	≤ 6 %	≤ 6 %	≤ 6 %	≤ 6 %
FAG FE8 rolling bearing test, DIN 51819-3, D-7.5 / 80-80, wear of cage	≤ 200 mg	≤ 200 mg	≤ 200 mg	≤ 200 mg
FAG FE8 rolling bearing test, DIN 51819-3, D-7.5 / 80-80, wear of rolling elements	≤ 30 mg	≤ 30 mg	≤ 30 mg	≤ 30 mg
FZG scuffing test, DIN ISO 14635-1, A / 8.3 / 90, failure load stage	≥ 12	≥ 12	≥ 12	≥ 12
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	60 months	60 months	60 months	60 months

Characteristics	Klüberoil GEM 1-220 N	Klüberoil GEM 1-320 N	Klüberoil GEM 1-460 N	Klüberoil GEM 1-680 N
Article number	030058	030062	030063	030064
Service temperature, lower limit	-5 °C	-5 °C	-5 °C	0 °C
Service temperature, upper limit	100 °C	100 °C	100 °C	100 °C
Designation, DIN 51502	CLP 220	CLP 320	CLP 460	CLP 680

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Characteristics	Klüberoil GEM 1-220 N	Klüberoil GEM 1-320 N	Klüberoil GEM 1-460 N	Klüberoil GEM 1-680 N
Designation, ISO 12925-1	CKC 220	CKC 320	CKC 460	CKC 680
Density, DIN 51757, 15°C	approx. 890 kg/m³	approx. 900 kg/m³	approx. 910 kg/m³	approx. 930 kg/m³
Flash point, DIN EN ISO 2592, Cleveland open cup	≥ 200 °C	≥ 200 °C	≥ 200 °C	≥ 200 °C
Foam test, ISO 6247 / ASTM D892, 24°C, sequence I	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml
Foam test, ISO 6247 / ASTM D892, 24°C, sequence III	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml
Foam test, ISO 6247 / ASTM D892, 93.5°C, sequence II	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml	≤ 100/10 ml
ISO viscosity grade, DIN ISO 3448, ISO VG	220	320	460	680
Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 100°C	approx. 19 mm²/s	approx. 25 mm²/s	approx. 30 mm²/s	approx. 37 mm²/s
Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 40°C	approx. 220 mm²/s	approx. 320 mm²/s	approx. 460 mm²/s	approx. 680 mm²/s
Viscosity index, DIN ISO 2909	≥ 90	≥ 90	≥ 90	≥ 85
Copper corrosion, DIN EN ISO 2160, 3 h, 100°C	1 - 100 - 3 corrosion degree	1 - 100 - 3 corrosion degree	1 - 100 - 3 corrosion degree	1 - 100 - 3 corrosion degree
Steel corrosion, DIN ISO 7120 / ASTM D665, method A, 24 h, 60°C	rust-free	rust-free	rust-free	rust-free
Pour point, DIN ISO 3016, ASTM D97, ASTM D5950, ASTM D7346	≤ -10 °C	≤ -10 °C	≤ -10 °C	≤ -5 °C
Ageing behaviour, DIN EN ISO 4263-4 / ASTM D2893, 312 h, 95°C, increase in viscosity at 100°C	≤ 6 %	≤ 6 %	≤ 6 %	≤ 6 %
FAG FE8 rolling bearing test, DIN 51819-3, D-7.5 / 80-80, wear of cage	≤ 200 mg	≤ 200 mg	≤ 200 mg	≤ 200 mg
FAG FE8 rolling bearing test, DIN 51819-3, D-7.5 / 80-80, wear of rolling elements	≤ 30 mg	≤ 30 mg	≤ 30 mg	≤ 30 mg
FZG scuffing test, DIN ISO 14635-1, A / 8.3 / 90, failure load stage	≥ 12	≥ 12	≥ 12	≥ 12
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	60 months	60 months	60 months	60 months

Characteristics	Klüberoil GEM 1-1000 N
Article number	030049
Service temperature, lower limit	0 °C
Service temperature, upper limit	100 °C

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Characteristics	Klüberoil GEM 1-1000 N
Designation, DIN 51502	CLP 1000
Designation, ISO 12925-1	CKC 1000
Density, DIN 51757, 15°C	approx. 920 kg/m³
Flash point, DIN EN ISO 2592, Cleveland open cup	≥ 200 °C
Foam test, ISO 6247 / ASTM D892, 24°C, sequence I	≤ 100/10 ml
Foam test, ISO 6247 / ASTM D892, 24°C, sequence III	≤ 100/10 ml
Foam test, ISO 6247 / ASTM D892, 93.5°C, sequence II	≤ 100/10 ml
ISO viscosity grade, DIN ISO 3448, ISO VG	1000
Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 100°C	approx. 48 mm²/s
Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 40°C	approx. 1000 mm²/s
Viscosity index, DIN ISO 2909	≥ 85
Copper corrosion, DIN EN ISO 2160, 3 h, 100°C	1 - 100 - 3 corrosion degree
Steel corrosion, DIN ISO 7120 / ASTM D665, method A, 24 h, 60°C	rust-free
Pour point, DIN ISO 3016, ASTM D97, ASTM D5950, ASTM D7346	≤ -3 °C
Ageing behaviour, DIN EN ISO 4263-4 / ASTM D2893, 312 h, 95°C, increase in viscosity at 100°C	≤ 6 %
FAG FE8 rolling bearing test, DIN 51819-3, D-7.5 / 80-80, wear of cage	≤ 200 mg
FAG FE8 rolling bearing test, DIN 51819-3, D-7.5 / 80-80, wear of rolling elements	≤ 30 mg
FZG scuffing test, DIN ISO 14635-1, A / 8.3 / 90, failure load stage	≥ 12
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	60 months

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Klüber Lubrication – your global specialist

Innovative tribological solutions are our passion. Through personal contact and consultation, we help our customers to be successful worldwide, in all industries and markets. With our ambitious technical concepts and experienced, competent staff we have been fulfilling increasingly demanding requirements by manufacturing efficient high-performance lubricants for more than 95 years.

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