

Klüberoil GEM 1 N

High-performance gear oils / multi-purpose oils based on mineral oil and KlüberComp Lube Technology



Benefits for your application

- The oils meet the requirements according to DIN 51517-3, CLP. Corresponding gears can be switched to Klüberoil GEM 1 N oils without prior consultation with the gear manufacturer provided the general application notes are observed.
- KlüberComp Lube Technology involves the selection of high-quality raw materials and individual consultation and services by Klüber, ensuring high-performance lubrication of different gearbox components.
- Klüberoil GEM 1 N oils offer a high scuffing load resistance of ISO VG 150 API GL-4 or higher. Gears are sufficiently protected against scuffing even at extremely high peak loads, vibrations or oscillations.
- The oils' high micropitting resistance according to FVA 54 GFT ≥ 10 offers sufficient protection to gears that are subject to high loads and would normally be susceptible to this type of damage.
- The good 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.
- 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.
- Low foaming tendency as determined in the Flender foam test enable leakage and problem-free gear operation.
- Freudenberg seals made of 72 NBR 902, 75 FKM 585 and 75 FKM 170055 are resistant to Klüberoil GEM 1 N oils. Leakage and contamination are prevented.
- Approved by Siemens (Flender), Siemens Geared Motors, FLSmidth MAAG Gears, SEW Eurodrive, Getriebebau Nord, Lenze Gears, Stöber Antriebstechnik, ZAE Antriebssysteme, Moventas, Bonfiglioli etc.

Description

Klüberoil GEM 1 N oils are gear and multi-purpose oils based on selected mineral oils with a high resistance to oxidation.

They have a high resistance to scuffing and micropitting as laid down in FVA 54.

The good antiwear characteristics of the Klüberoil GEM 1 N oils were also proven for rolling bearings in the standard FAG FE8 test rig for gear oils.

Application

The Klüberoil GEM 1 N oils were specially developed for the lubrication of spur, bevel, hypoid and planetary gears that are subject to high loads. Such gears are frequently used in the wind, steel, mining and sugar industries.

The Klüberoil GEM 1 N oils are also used for the lubrication of standard worm gears as defined in DIN 3996.

They are also 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 oils 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. Low-viscosity lubricants 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.

Viscosity selection

When determining the oil viscosity for gears, the 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 51 509. To determine the correct oil viscosity for bearings, please observe the bearing manufacturer's instructions.

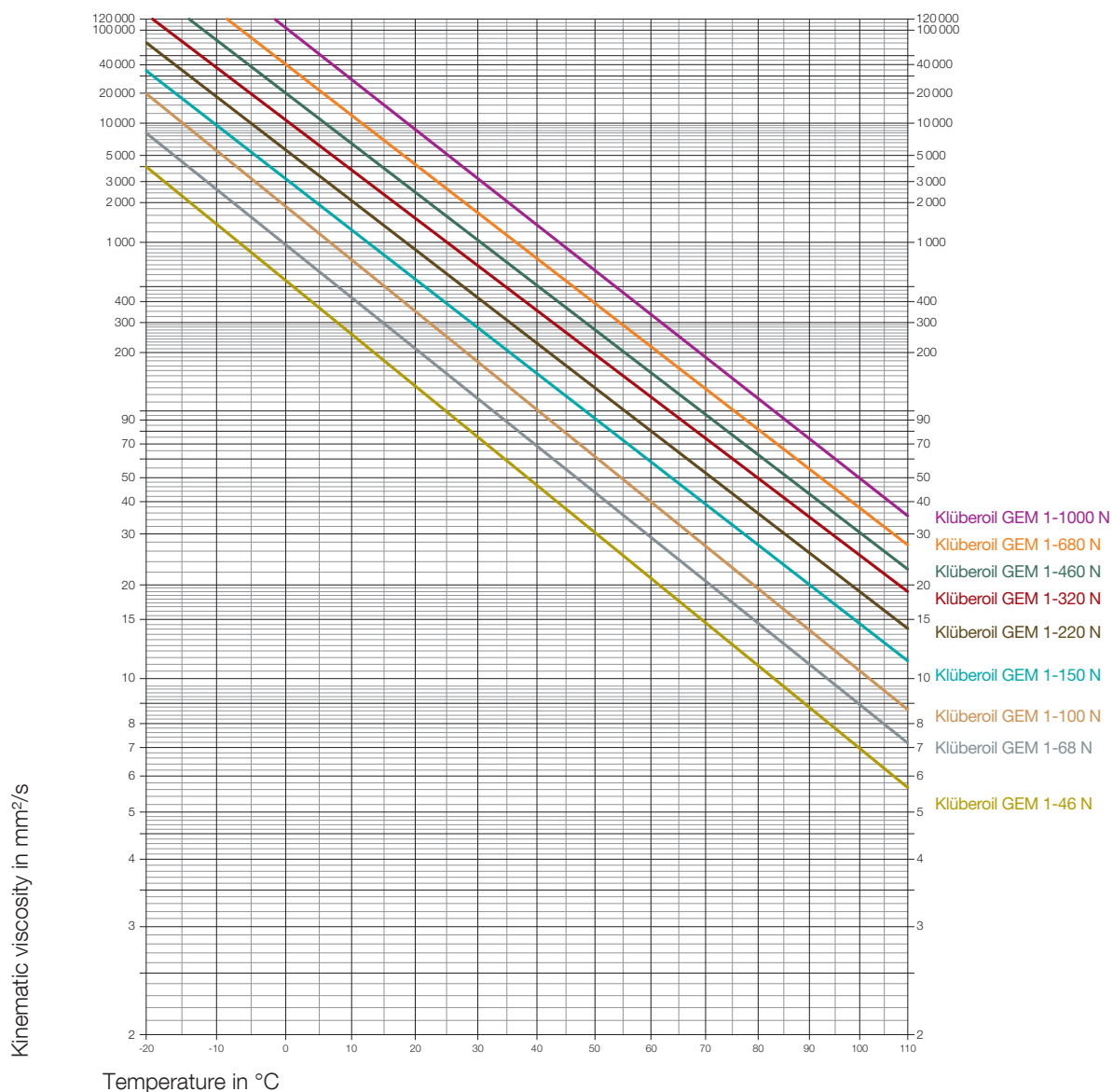
Klüberoil GEM 1 N

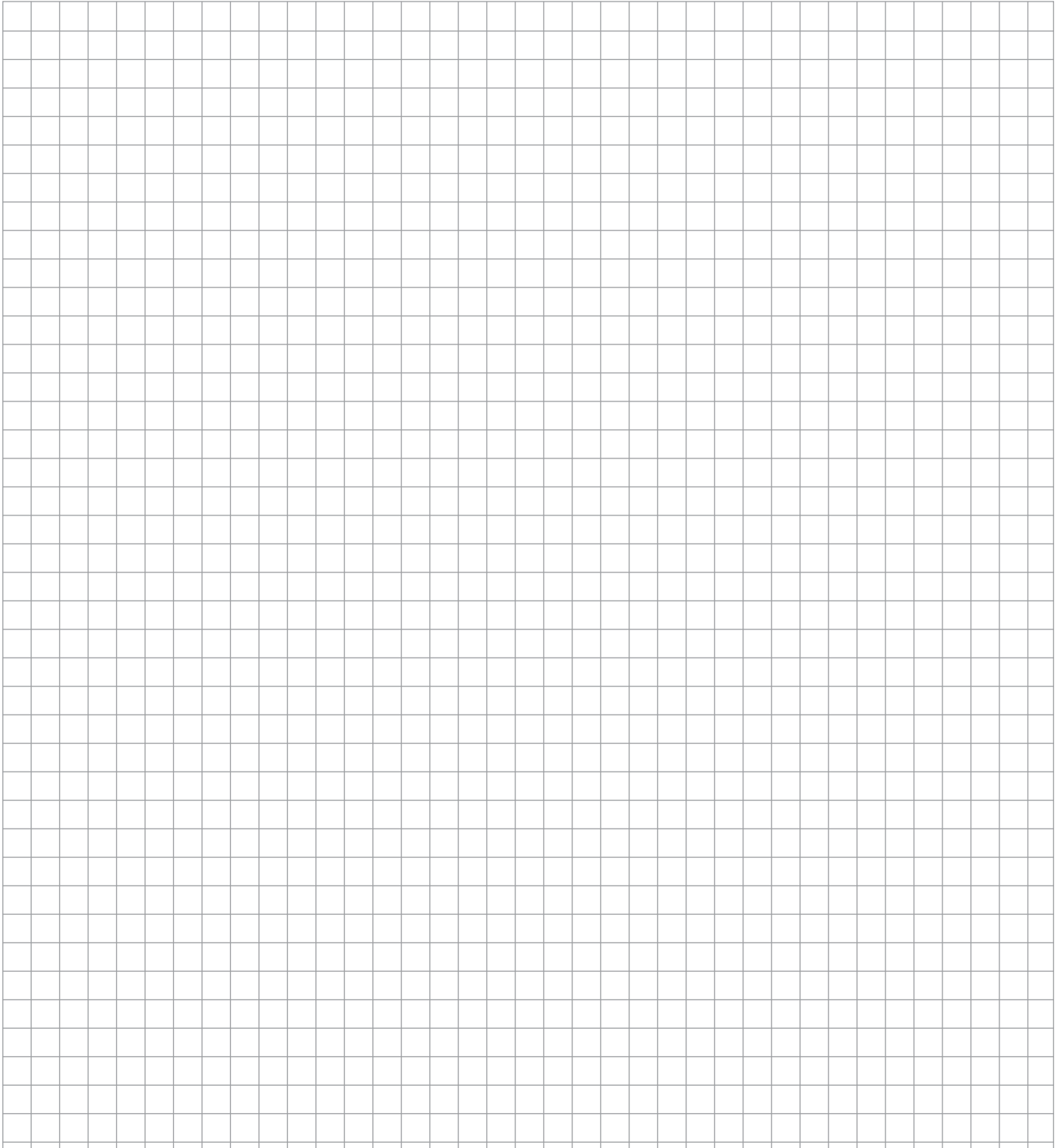
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Material safety data sheets

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.

Viscosity-temperature diagram





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Pack sizes	Klüberoil GEM 1-46 N	Klüberoil GEM 1-68 N	Klüberoil GEM 1-100 N
Canister 20 l	+	+	+
Drum 200 l	+	+	+

Product data	Klüberoil GEM 1-46 N	Klüberoil GEM 1-68 N	Klüberoil GEM 1-100 N
Article number	030050	030051	030054
Marking acc. to DIN 51502	CLP 46	CLP 68	CLP 100
Classification acc. to ISO 12925-1	CKC 46	CKC 68	CKC 100
Lower service temperature	-15 °C / 5 °F	-15 °C / 5 °F	-5 °C / 23 °F
Upper service temperature	100 °C / 212 °F	100 °C / 212 °F	100 °C / 212 °F
Density, based on DIN 51757) at 15 °C	approx. 870 kg/m³	approx. 880 kg/m³	approx. 880 kg/m³
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 46 mm²/s	approx. 68 mm²/s	approx. 100 mm²/s
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 7 mm²/s	approx. 9 mm²/s	approx. 11 mm²/s
Viscosity index, DIN ISO 2909	>= 90	>= 90	>= 90
ISO viscosity grade, DIN ISO 3448	46	68	100
Flash point, DIN EN ISO 2592, Cleveland, open-cup apparatus	>= 200 °C	>= 200 °C	>= 200 °C
Pour point, DIN ISO 3016	<= -20 °C	<= -15 °C	<= -15 °C
Foam test, ASTM-D 892, ISO 6247, sequence I/24 °C	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml
Foam test, ASTM-D 892, ISO 6247, sequence II/ 93.5 °C	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml
Foam test, ASTM D 892, ISO 6247, sequence III/24°C	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml
Ageing properties, ASTM D 2893, increase in viscosity	<= 6 %	<= 6 %	<= 6 %
FZG scuffing test, DIN ISO 14635-1, A/8.3/90, scuffing load stage	>= 14	>= 14	>= 14
FZG scuffing test, based on DIN ISO 14635-1, A/16.6/90, scuffing load stage	>= 12	>= 12	>= 12
API scuffing load capacity			
FAG FE8 rolling bearing test, DIN 51819-3, D 7,5/80-80, wear of rolling element	<= 30 mg	<= 30 mg	<= 30 mg
FAG FE8 rolling bearing test, DIN 51819-3, D 7,5/80-80, wear of cage	<= 200 mg	<= 200 mg	<= 200 mg
Anticorrosive properties on steel, DIN ISO 7120, method A, steel, 24 h/60 °C	no rust	no rust	no rust
Copper corrosion, DIN EN ISO 2160, 3 h/100 °C	1 - 100 corrosion degree	1 - 100 corrosion degree	1 - 100 corrosion degree
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



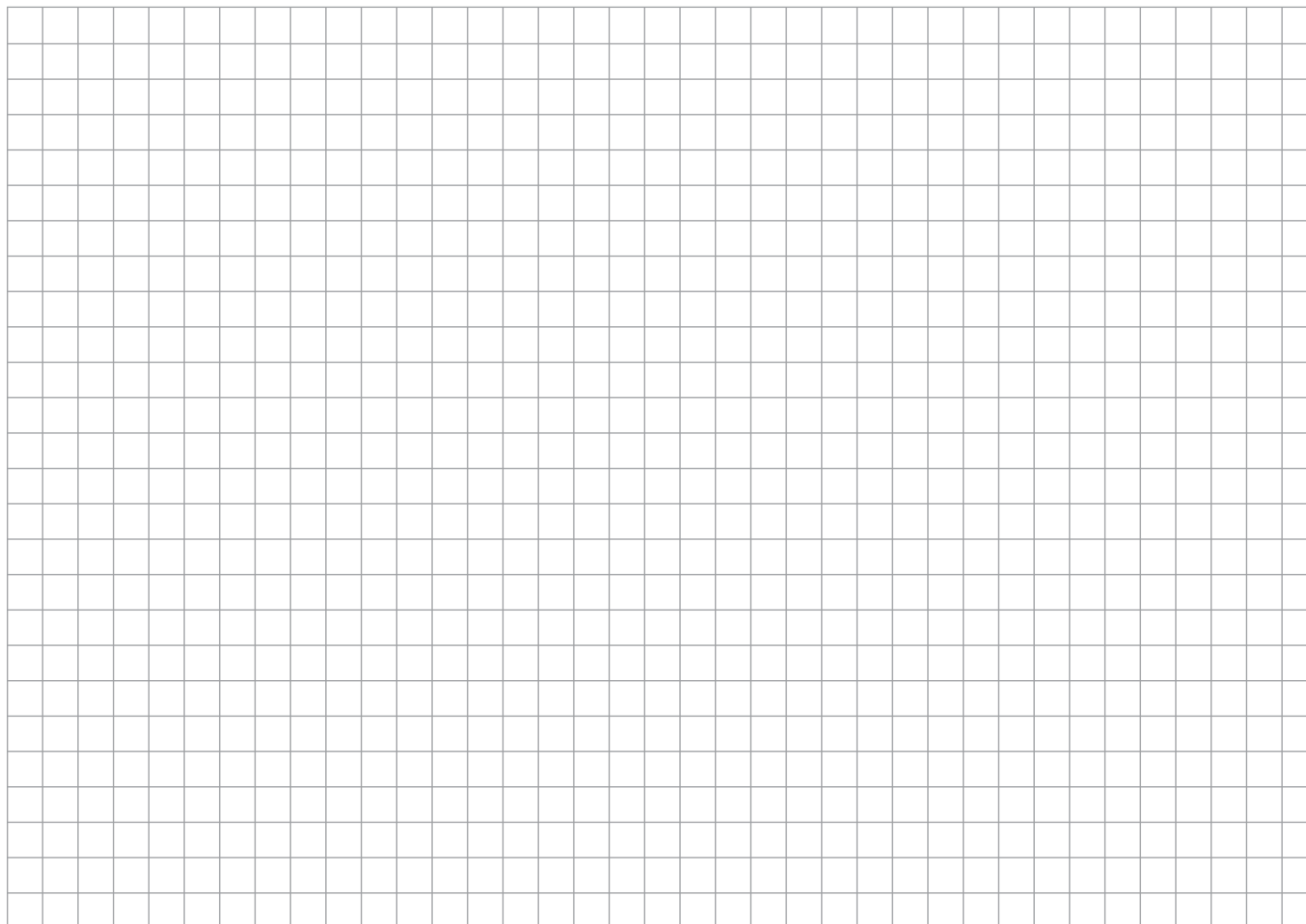
Klüberoil GEM 1-150 N	Klüberoil GEM 1-220 N	Klüberoil GEM 1-320 N	Klüberoil GEM 1-460 N	Klüberoil GEM 1-680 N	Klüberoil GEM 1-1000 N
+	+	+	+	+	+
+	+	+	+	+	+

Klüberoil GEM 1-150 N	Klüberoil GEM 1-220 N	Klüberoil GEM 1-320 N	Klüberoil GEM 1-460 N	Klüberoil GEM 1-680 N	Klüberoil GEM 1-1000 N
030057	030058	030062	030063	030064	030049
CLP 150	CLP 220	CLP 320	CLP 460	CLP 680	CLP 1000
CKC 150	CKC 220	CKC 320	CKC 460	CKC 680	CKC 1000
-5 °C / 23 °F	-5 °C / 23 °F	-5 °C / 23 °F	-5 °C / 23 °F	0 °C / 32 °F	0 °C / 32 °F
100 °C / 212 °F	100 °C / 212 °F	100 °C / 212 °F	100 °C / 212 °F	100 °C / 212 °F	100 °C / 212 °F
approx. 880 kg/m³	approx. 890 kg/m³	approx. 900 kg/m³	approx. 910 kg/m³	approx. 930 kg/m³	approx. 920 kg/m³
approx. 150 mm²/s	approx. 220 mm²/s	approx. 320 mm²/s	approx. 460 mm²/s	approx. 680 mm²/s	approx. 1 000 mm²/s
approx. 15 mm²/s	approx. 19 mm²/s	approx. 25 mm²/s	approx. 30 mm²/s	approx. 37 mm²/s	approx. 48 mm²/s
>= 90	>= 90	>= 90	>= 90	>= 85	>= 85
150	220	320	460	680	1 000
>= 200 °C	>= 200 °C	>= 200 °C	>= 200 °C	>= 200 °C	>= 200 °C
<= -10 °C	<= -10 °C	<= -10 °C	<= -10 °C	<= -5 °C	<= -3 °C
<= 100/10 ml	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml
<= 100/10 ml	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml
<= 100/10 ml	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml	<= 100/10 ml
<= 6 %	<= 6 %	<= 6 %	<= 6 %	<= 6 %	<= 6 %
>= 14	>= 14	>= 14	>= 14	>= 14	>= 14
>= 12	>= 12	>= 12	>= 12	>= 12	>= 12
API GL 4	API GL 4	API GL 4	API GL 4	API GL 4	API GL 4
<= 30 mg	<= 30 mg	<= 30 mg	<= 30 mg	<= 30 mg	<= 20 mg
<= 200 mg	<= 200 mg	<= 200 mg	<= 200 mg	<= 200 mg	<= 200 mg
no rust	no rust	no rust	no rust	no rust	no rust
1 - 100 corrosion degree	1 - 100 corrosion degree	1 - 100 corrosion degree	1 - 100 corrosion degree	1 - 100 corrosion degree	1 - 100 corrosion degree
60 months	60 months	60 months	60 months	60 months	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 80 years.

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