

Klübersynth GH 6

Synthetic high-performance gear and high-temperature oil with KlüberComp Lube Technology



Your benefits at a glance

- High scuffing protection
- Excellent wear protection for gears and rolling bearings
- Good shear stability for reliable lubricant film formation
- High micropitting resistance
- Optimised for the lubrication of worm gears
- Excellent ageing and oxidation resistance
- Wide service temperature range due to good viscosity-temperature behaviour
- Low foaming tendency
- Energy savings due to optimised friction behaviour
- Good elastomer compatibility
- Approvals by numerous gear OEMs

Your requirements - our solution

Klübersynth GH 6 is a synthetic high-performance gear and high-temperature oil based on polyglycol satisfying the growing requirements and increasing power density of modern gears. It includes KlüberComp Lube Technology*, i.e. it is based on especially high-grade raw materials and advanced additives, enabling maximum performance in the lubrication of all gear components.

Klübersynth GH 6 clearly exceeds CLP requirements according to DIN 51517-3. Corresponding gears can be switched to Klübersynth GH 6 without prior consultation with the gear manufacturer provided the general application notes are observed.

Klübersynth GH 6 offers high scuffing load capacity of API GL-5 if ISO VG 220 or higher is selected. Gears are sufficiently protected against scuffing even at extremely high peak loads, vibrations or oscillations, or if no running-in was performed. 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. The oil's high micropitting resistance of GFT ≥ 10 according to FVA 54/7 (tested at 90, 60 and 40 °C) offers sufficient protection to gears that are subject to high loads and would normally be susceptible to this type of damage.

Klübersynth GH 6 offers a much longer service life than mineral oils due to the excellent ageing and oxidation resistance of the selected raw materials; thus service intervals can be extended and maintenance costs reduced. In certain applications, even lifetime

lubrication is possible. The product's low foaming tendency and anti-corrosive properties enable problem-free gear operation. Freudenberg seals made of 72 NBR 902 (exception: ISO VG 22), 75 FKM 585, 75 FKM 260466 and 75 FKM 170055 are statically and dynamically resistant to Klübersynth GH 6. Leakage and oil contamination are prevented.

The excellent viscosity-temperature behaviour supports the formation of a sufficient lubricant film across a wide service temperature range, even at elevated and high temperatures. Therefore, a single viscosity grade can cover both low and high temperatures in many applications.

The optimised friction behaviour enabled by the carefully selected base oils reduces power loss and improves gear efficiency, especially in worm gears. Due to the optimised additives wear values are reduced and a very low wear intensity according to DIN 3996 (calculation of load capacity of worm gears) is achieved.

Klübersynth GH 6 is approved by Flender, Siemens, Siemens Geared Motors, SEW Eurodrive, Getriebbau Nord, Stöber Antriebstechnik, Lenze, ZAE Antriebssysteme, Cavex, Bonfiglioli, Rossi Motoriduttori, Motovario, Moventas, Boston Gear, Baldor, Yilmaz Redüktör etc.

By using Klübersynth GH 6 you can benefit from a number of advantages that will help you save costs easily and efficiently. We look forward to hearing from you.

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* For further information, please see our flyer: KlüberComp Lube Technology – Gear oils meeting the highest requirements

Application

Klübersynth GH 6 oil was especially developed for the lubrication of worm gears with steel/bronze or steel/grey cast iron pairings.

Klübersynth GH 6 oil is also used for the lubrication of bevel and spur gears, rolling and plain bearings as well as all types of toothed couplings, especially when exposed to high temperatures.

It can also be used for the lubrication of lifting, drive and transport chains.

Application notes

Klübersynth GH 6 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.

Klübersynth GH 6 is not miscible with mineral oil or synthetic hydrocarbons. Prior to switchover, lubrication points should be cleaned, or gears or enclosed lubrication systems be flushed with the Klübersynth GH 6 oil to be used.

Klübersynth GH 6 oil is neutral towards virtually all nonferrous metals.

Viscosity selection

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 the worksheet "Hints for Practice - selection of oil viscosity for gears". To determine the correct oil viscosity for bearings, please observe the bearing manufacturer's instructions.

Due to the better viscosity-temperature behaviour of Klübersynth GH 6 compared to mineral oils, the actual viscosity of Klübersynth GH 6 during operation differs.

There may be increased wear when the contact surfaces of design elements made of aluminium or aluminium alloys are exposed to dynamic loads. If necessary, preliminary wear tests should be carried out.

For use at permanent temperatures of 80 °C max. and with the higher viscosity varieties, seals made of NBR may be used. For higher temperatures, seals made of FKM should be chosen. It should be noted that elastomers from one or several manufacturers can behave differently; therefore tests should be performed.

When applying Klübersynth GH 6 oil we recommend the use of two-component paints (reaction paints) for interior coating. Oil gauge glasses should preferably be made of natural glass or polyamide materials. Other transparent plastics, e.g. Plexiglas, have a tendency to crack under stress. The suitability of materials used in contact with Klübersynth GH 6 oil should be tested, especially prior to series application.

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

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.

| Pack sizes | Klübersynth GH 6-22 | Klübersynth GH 6-32 | Klübersynth GH 6-46 | Klübersynth GH 6-80 |
|---------------|---------------------|---------------------|---------------------|---------------------|
| Canister 20 l | + | + | + | + |
| Drum 200 l | + | + | + | + |

| Pack sizes | Klübersynth GH 6-100 | Klübersynth GH 6-150 | Klübersynth GH 6-220 | Klübersynth GH 6-320 |
|---------------|----------------------|----------------------|----------------------|----------------------|
| Canister 20 l | + | + | + | + |

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| Pack sizes | Klübersynth GH 6-100 | Klübersynth GH 6-150 | Klübersynth GH 6-220 | Klübersynth GH 6-320 |
|------------|----------------------|----------------------|----------------------|----------------------|
| Drum 200 l | + | + | + | + |

| Pack sizes | Klübersynth GH 6-460 | Klübersynth GH 6-680 | Klübersynth GH 6-1000 | Klübersynth GH 6-1500 |
|---------------|----------------------|----------------------|-----------------------|-----------------------|
| Canister 20 l | + | + | + | + |
| Drum 200 l | + | + | + | + |

| Characteristics | Klübersynth GH 6-22 | Klübersynth GH 6-32 | Klübersynth GH 6-46 | Klübersynth GH 6-80 |
|---|--------------------------------|--------------------------------|--------------------------------|---------------------------------|
| Article number | 012287 | 012157 | 012009 | 012158 |
| Service temperature, lower limit | -55 °C | -45 °C | -40 °C | -40 °C |
| Service temperature, upper limit | 160 °C | 160 °C | 160 °C | 160 °C |
| Designation, DIN 51502 | - | CLP PG 32 | CLP PG 46 | CLP PG 68 |
| Designation, ISO 12925-1 | - | CKC 32 | CKC 46 | CKC 68 |
| Density, DIN 51757, 15°C | approx. 1025 kg/m ³ | approx. 984 kg/m ³ | approx. 1035 kg/m ³ | approx. 1040 kg/m ³ |
| Flash point, DIN EN ISO 2592, Cleveland open cup | ≥ 165 °C | ≥ 180 °C | ≥ 180 °C | ≥ 220 °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 | 22 | 32 | 46 | 68 |
| Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 100°C | approx. 5.1 mm ² /s | approx. 6.5 mm ² /s | approx. 9.7 mm ² /s | approx. 14.5 mm ² /s |
| Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 20°C | approx. 54 mm ² /s | approx. 88 mm ² /s | approx. 113 mm ² /s | approx. 205 mm ² /s |
| Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 40°C | approx. 22 mm ² /s | approx. 32 mm ² /s | approx. 46 mm ² /s | approx. 68 mm ² /s |
| Viscosity index, DIN ISO 2909 | ≥ 150 | ≥ 140 | ≥ 190 | ≥ 190 |
| Copper corrosion, DIN EN ISO 2160, 24 h, 100°C | 1 - 100 - 24 corrosion degree | 1 - 100 - 24 corrosion degree | 1 - 100 - 24 corrosion degree | 1 - 100 - 24 corrosion degree |
| Steel corrosion, DIN ISO 7120 / ASTM D665, method A, 24 h, 60°C | rust-free | rust-free | rust-free | rust-free |

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| Characteristics | Klübersynth GH 6-22 | Klübersynth GH 6-32 | Klübersynth GH 6-46 | Klübersynth GH 6-80 |
|--|---------------------|---------------------|---------------------|---------------------|
| Pour point, DIN ISO 3016, ASTM D97, ASTM D5950, ASTM D7346 | ≤ -55 °C | ≤ -45 °C | ≤ -40 °C | ≤ -40 °C |
| Ageing behaviour, DIN EN ISO 4263-4 / ASTM D2893, 312 h, 95°C, increase in viscosity at 100°C | ≤ 6 % | ≤ 6 % | ≤ 6 % | ≤ 6 % |
| API scuffing load capacity | - | - | - | - |
| 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 | < 5 mg | < 5 mg | < 5 mg | < 5 mg |
| FZG scuffing test, DIN ISO 14635-1, based on standard, A / 16.6 / 90, failure load stage | ≥ 12 | ≥ 12 | ≥ 12 | ≥ 12 |
| FZG scuffing test, DIN ISO 14635-1, A / 8.3 / 90, failure load stage | ≥ 14 | ≥ 14 | ≥ 14 | ≥ 14 |
| Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx. | 36 months | 36 months | 36 months | 36 months |

| Characteristics | Klübersynth GH 6-100 | Klübersynth GH 6-150 | Klübersynth GH 6-220 | Klübersynth GH 6-320 |
|---|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Article number | 012159 | 012160 | 012161 | 012162 |
| Service temperature, lower limit | -35 °C | -35 °C | -35 °C | -30 °C |
| Service temperature, upper limit | 160 °C | 160 °C | 160 °C | 160 °C |
| Designation, DIN 51502 | CLP PG 100 | CLP PG 150 | CLP PG 220 | CLP PG 320 |
| Designation, ISO 12925-1 | CKC 100 | CKC 150 | CKC 220 | CKC 320 |
| Density, DIN 51757, 15°C | approx. 1043 kg/m ³ | approx. 1050 kg/m ³ | approx. 1060 kg/m ³ | approx. 1067 kg/m ³ |
| Flash point, DIN EN ISO 2592, Cleveland open cup | ≥ 250 °C | ≥ 250 °C | ≥ 250 °C | ≥ 250 °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 | 100 | 150 | 220 | 320 |
| Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 100°C | approx. 19 mm ² /s | approx. 28 mm ² /s | approx. 39 mm ² /s | approx. 56 mm ² /s |
| Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 20°C | approx. 270 mm ² /s | approx. 400 mm ² /s | approx. 630 mm ² /s | approx. 880 mm ² /s |

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| Characteristics | Klübersynth GH 6-100 | Klübersynth GH 6-150 | Klübersynth GH 6-220 | Klübersynth GH 6-320 |
|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 40°C | approx. 100 mm ² /s | approx. 150 mm ² /s | approx. 220 mm ² /s | approx. 320 mm ² /s |
| Viscosity index, DIN ISO 2909 | ≥ 190 | ≥ 210 | ≥ 220 | ≥ 230 |
| Copper corrosion, DIN EN ISO 2160, 24 h, 100°C | 1 - 100 - 24 corrosion degree | 1 - 100 - 24 corrosion degree | 1 - 100 - 24 corrosion degree | 1 - 100 - 24 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 | ≤ -40 °C | ≤ -35 °C | ≤ -35 °C | ≤ -30 °C |
| Ageing behaviour, DIN EN ISO 4263-4 / ASTM D2893, 312 h, 95°C, increase in viscosity at 100°C | ≤ 6 % | ≤ 6 % | ≤ 6 % | ≤ 6 % |
| API scuffing load capacity | - | - | API GL 5 | API GL 5 |
| 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 | < 5 mg | < 5 mg | < 5 mg | < 5 mg |
| FZG scuffing test, DIN ISO 14635-1, based on standard, A / 16.6 / 90, failure load stage | ≥ 12 | ≥ 12 | ≥ 12 | ≥ 12 |
| FZG scuffing test, DIN ISO 14635-1, A / 8.3 / 90, failure load stage | ≥ 14 | ≥ 14 | ≥ 14 | ≥ 14 |
| Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx. | 36 months | 36 months | 36 months | 36 months |

| Characteristics | Klübersynth GH 6-460 | Klübersynth GH 6-680 | Klübersynth GH 6-1000 | Klübersynth GH 6-1500 |
|---|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Article number | 012163 | 012164 | 012165 | 012281 |
| Service temperature, lower limit | -25 °C | -25 °C | -25 °C | -10 °C |
| Service temperature, upper limit | 160 °C | 160 °C | 160 °C | 160 °C |
| Designation, DIN 51502 | CLP PG 460 | CLP PG 680 | CLP PG 1000 | CLP PG 1500 |
| Designation, ISO 12925-1 | CKC 460 | CKC 680 | CKC 1000 | CKC 1500 |
| Density, DIN 51757, 15°C | approx. 1074 kg/m ³ | approx. 1075 kg/m ³ | approx. 1075 kg/m ³ | approx. 1080 kg/m ³ |
| Flash point, DIN EN ISO 2592, Cleveland open cup | ≥ 250 °C | ≥ 250 °C | ≥ 250 °C | ≥ 250 °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 |

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| Characteristics | Klübersynth GH 6-460 | Klübersynth GH 6-680 | Klübersynth GH 6-1000 | Klübersynth GH 6-1500 |
|--|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| 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 | 460 | 680 | 1000 | 1500 |
| Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 100°C | approx. 76 mm ² /s | approx. 110 mm ² /s | approx. 161 mm ² /s | approx. 237 mm ² /s |
| Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 20°C | approx. 1240 mm ² /s | approx. 1900 mm ² /s | approx. 3000 mm ² /s | approx. 4300 mm ² /s |
| Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 40°C | approx. 460 mm ² /s | approx. 680 mm ² /s | approx. 1000 mm ² /s | approx. 1500 mm ² /s |
| Viscosity index, DIN ISO 2909 | ≥ 230 | ≥ 250 | ≥ 260 | ≥ 270 |
| Copper corrosion, DIN EN ISO 2160, 24 h, 100°C | 1 - 100 - 24 corrosion degree | 1 - 100 - 24 corrosion degree | 1 - 100 - 24 corrosion degree | 1 - 100 - 24 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 | ≤ -25 °C | ≤ -25 °C | ≤ -25 °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 % |
| API scuffing load capacity | API GL 5 | API GL 5 | API GL 5 | - |
| 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 | < 5 mg | < 5 mg | < 5 mg | < 5 mg |
| FZG scuffing test, DIN ISO 14635-1, based on standard, A / 16.6 / 90, failure load stage | ≥ 12 | ≥ 12 | ≥ 12 | ≥ 12 |
| FZG scuffing test, DIN ISO 14635-1, A / 8.3 / 90, failure load stage | ≥ 14 | ≥ 14 | ≥ 14 | ≥ 14 |
| Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx. | 36 months | 36 months | 36 months | 36 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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The data in this document is based on our general experience and knowledge at the time of publication and is intended to give information of possible applications to a reader with technical experience. It constitutes neither an assurance of product properties nor does it release the user from the obligation of performing preliminary field tests with the product selected for a specific application. All data are guide values which depend on the lubricant's composition, the intended use and the application method. The technical values of lubricants change depending on the mechanical, dynamical, chemical and thermal loads, time and pressure. These changes may affect the function of a component. We recommend contacting us to discuss your specific application. If possible we will be pleased to provide a sample for testing on request. Klüber products are continually improved. Therefore, Klüber Lubrication reserves the right to change all the technical data in this document at any time without notice.

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