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Detailed information

## Keeping machines well lubricated

Speciality lubricants for the beverage industry





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# NSF H1 lubricants across the line

There are three aspects which are of particular importance for beverage production: consumer protection, reliable manufacturing processes and energy efficiency.

Klüber's synthetic high-performance lubricants with NSF H1 registration help you obtain these objectives, as they are capable of a lot more than friction reduction, lowering operating temperatures and increasing components' service life. Depending on the application conditions, lubricants meeting a wide range of requirements from hygienic filling in aseptic areas to high resistance to water washdown can be selected from this brochure.

The lubricants we developed especially for the production of beverages are the result of our long-standing and close cooperation with both machine manufacturers and end-users in the beverage industry. Designers of machines and installations can build on this experience right from the very start of machine development. Beverage manufacturers can trust in our experience on every step of the beverage production process. The combination of consultation and a comprehensive lubricant range is Klüber's particular strength.

## **Optimising manufacturing processes: KlüberAssetSupport**

Klüber is more than just a manufacturer of speciality lubricants. It is important for us to offer our customers the best advice regarding the proper lubrication of their application, whether machine manufacturers or operators. We take a holistic view of all processes in your plant and offer help and advice regarding optimum lubricant application. We even suggest measures to improve your manufacturing processes. We offer services combined with the right lubricants and show you ways to cut costs. In short: we work in close cooperation with you to improve lubrication processes in your plant systematically, allowing you to benefit from your machines and your staff's know-how to the maximum. Production volumes can be increased while simultaneously reducing operating costs.

Please contact our KlüberAssetSupport specialists, who will introduce you to interesting and often surprising solutions to save costs.

## **Protecting the consumer: NSF H1 lubricants across the line**

To prevent the misuse of non-NSF H1 lubricants in the wrong point on your production line, we recommend using H1 lubricants exclusively in your plant. Many of our customers already do this and benefit from streamlined plant lubrication management. Some customers were even able to reduce the number of lubricants to be used by one third. We offer you a comprehensive range of NSF H1-registered speciality lubricants for all lubrication points in your plant, across the entire production line. These H1 lubricants are designed for incidental, technically unavoidable contact with the food product.

Additionally, most of our production sites producing H1 lubricants have already been certified according to ISO 21469, a standard which defines hygiene requirements for the formulation, manufacture and use of lubricants that could have unintentional product contact. To obtain the certification, lubricant manufacturers must develop a hygiene strategy taking all chemical, physical and biological hazards of lubricant application into account. We also offer more than 100 different lubricants with Halal and Kosher certification that are H1-registered, enabling Klüber to support compliance with these requirements across the complete production line.

Hence, our lubricants are a valuable contribution towards food safety.

| Application                                   | Application points/<br>machine components    | Klüber speciality lubricant  | NLGI grade     | Base oil                                      | Thickener              |
|---|--|--|----------------|---|------------------------|
| Conveyor systems                              | Palletisers, drives and conveyor chains      | Klüberoil 4 UH1 1500 N Spray   | Not applicable | Synthetic hydrocarbon oil/ester <sup>1)</sup> | None                   |
|   | Dry lifetime lubrication of chains           | Klüberplus SK 02-295/<br>Klüberoil 4 UH1 1500 N Dispersion   | Not applicable | Wax   | None                   |
|   | Conveyor bearings                            | Klübersynth UH1 14-222   | 2              | Synthetic hydrocarbon oil                     | Aluminium complex soap |
|   | Steel/plastic slatted conveyors              | KlüberTP TP 38-901   | Not applicable | Not applicable                                | PTFE                   |
| Enclosed gears (spur-, bevel- and worm gears) | High-performance gear oils                   | Klüberoil 4 UH1 100 N...1500 N-series <sup>4)</sup><br><br>Available in ISO VG 32, 46, 68, 100, 220, 320, 460, 680, 1500 viscosity grades<br>The selection of the viscosity grade depends on the gear type and the application | Not applicable | Synthetic hydrocarbon oil/ester               |                        |
|   | High-performance gear oils for extended life | Klübersynth UH1 6-100...680 <sup>4)</sup><br><br>Available in ISO VG 100, 150, 220, 320, 460, 680 viscosity grades<br>The selection of the viscosity grade depends on the gear type and the application                        | Not applicable | Polyglycol                                    |                        |

1) of the active component

2) Due to the many different elastomer and plastics compositions we recommend checking compatibility prior to series application.

3) Please contact your local Klüber representative for information on applications for chains lubricated with Klüberplus SK 02-295/Klüberoil 4 UH1 1500 N dispersion.

4) On oil viscosity selection please refer to the equipment manufacturer's manual or ask for advice.



| Upper service temperature approx.                            | Lower service temperature approx.                             | Application notes and benefits  |
|--|---|---|
| 120 <sup>1)</sup> [°C]<br>248 [°F]                           | -20 [°C]<br>-4 [°F]   | <ul style="list-style-type: none"> <li>- Drive and conveyor chain lubrication where maximum adhesion is required in for example high speed applications</li> <li>- Good wear protection to optimise chain life</li> <li>- Low foaming of spray to ensure maximum penetration to main friction points of the chain</li> </ul>  |
| 60 [°C]<br>140 [°F]  | -30 [°C]<br>-22 [°F]  | <ul style="list-style-type: none"> <li>- Typically 60 % of Klüberplus SK 02-295 dispersed by 40 weight % of Klüberoil 4 UH 1 1500 N</li> <li>- Applied by hot bath dip to provide lubrication for life of slow to medium speed chains<sup>9)</sup></li> </ul>   |
| 120 [°C]<br>248 [°F]   | -25 [°C]<br>-13 [°F]  | <ul style="list-style-type: none"> <li>- Good wear protection</li> <li>- Good resistance against hot and cold water</li> <li>- High corrosion protection</li> <li>- ISO 21469 certified</li> </ul>  |
| 200 [°C]<br>392 [°F]   | -40 [°C]<br>-40 [°F]  | <ul style="list-style-type: none"> <li>- For steel/plastic filling conveyor system</li> <li>- To reduce risk of bottles toppling over and to remove floor slip hazard</li> <li>- Not to be used in areas where there is open food product</li> </ul>  |
| 120 [°C]<br>248 [°F]<br>or lower<br>(depending on viscosity) | -35 [°C]<br>-31 [°F]<br>or higher<br>(depending on viscosity) | <ul style="list-style-type: none"> <li>- Improved wear protection and load-carrying capacity to maximise component life</li> <li>- Oil series complies with CLP requirements DIN 51 517 part 3</li> <li>- Scuffing load stage <math>\geq 12</math> in the FZG test, DIN ISO 14635-1 A/8.3/90</li> <li>- Good ageing and oxidation stability for increased oil life in comparison with industrial mineral oils</li> <li>- Good corrosion protection</li> <li>- Neutral towards sealing materials and paints<sup>2)</sup></li> <li>- ISO 21469 certified</li> </ul>   |
| 160 [°C]<br>320 [°F]<br>or lower<br>(depending on viscosity) | -35 [°C]<br>-31 [°F]<br>or higher<br>(depending on viscosity) | <ul style="list-style-type: none"> <li>- Improved wear protection and load-carrying capacity to maximise component life in comparison with industrial mineral oils and synthetic hydrocarbon oils</li> <li>- Oil series complies with CLP requirements DIN 51 517 part 3</li> <li>- Scuffing load stage <math>\geq 12</math> in the FZG test, DIN ISO 14635-1 A/8.3/90</li> <li>- Good ageing and oxidation stability for increased oil life</li> <li>- The low friction behaviour of the polyglycol base oil reduces power losses and improves efficiency</li> <li>- Good corrosion protection</li> <li>- ISO 21469 certified</li> </ul> |



| Application                             | Application points / machine components                | Klüber speciality lubricant | NLGI grade     | Base oil   | Thickener                            |
|---|--|-----------------------------|----------------|--|--------------------------------------|
| Filling, capping and labelling machines | Lifting rods and guides in filling machines            | PARALIQ P40 Spray           | Not applicable | Paraffinic mineral oil <sup>1)</sup>               | None                                 |
|   |  | Klüberfood NH1 6-10         | Not applicable | Polyglycol   | None                                 |
|   | Open drive gears in filling machines                   | Klüberfood NH1 14-222 Spray | 2              | Synthetic hydrocarbon oil <sup>1)</sup>            | Aluminium complex soap <sup>1)</sup> |
|   | Can seamers  | Klüberfood NH1 14-261       | 1              | Paraffinic mineral oil                             | Aluminium complex soap <sup>1)</sup> |
|   | Centralised grease systems in filling machines         | Klübersynth UH1 14-151      | 1              | Synthetic hydrocarbon oil                          | Aluminium complex soap               |
|   | Copper bearings and sliding shafts                     | PARALIQ GA 343              | 2              | Paraffinic mineral oil / synthetic hydrocarbon oil | Aluminium complex soap               |
|   | High-temperature bearings in labelling machines        | BARRIERTA L55/2             | 2              | PFPE   | PTFE                                 |
| Seals                                   | Seals and filling taps (EPDM)                          | PARALIQ GTE 703             | 3              | Silicone oil                                       | PTFE                                 |
|   | Seals and filling taps (EPDM) for aseptic cold filling | Klüberfood NH1 87-703 Hyg   | 3              | Silicone oil                                       | PTFE                                 |
|   | Seals and filling taps (non EPDM)                      | Klübersynth UH1 64-2403     | 3              | Synthetic hydrocarbon oil                          | Silicate                             |

1) of the active component

2) Due to the many different elastomer and plastics compositions we recommend checking compatibility prior to series application.

| Upper service temperature approx.  | Lower service temperature approx. | Application notes and benefits  |
|------------------------------------|-----------------------------------|---|
| 60 <sup>1)</sup> [°C]<br>140 [°F]  | -10 [°C]<br>14 [°F]               | <ul style="list-style-type: none"> <li>- Light oil to reduce friction and optimise sliding actions, e.g. in capping heads</li> </ul>  |
| 60 [°C]<br>140 [°F]                | 0 [°C]<br>32 [°F]                 | <ul style="list-style-type: none"> <li>- Good wear and corrosion protection</li> <li>- Particularly suitable for friction points subject to sugar, such as rocking levers, chain links, sensors, to reduce sugar adhesion</li> <li>- ISO 21469 certified</li> </ul>   |
| 120 <sup>1)</sup> [°C]<br>248 [°F] | -25 [°C]<br>-13 [°F]              | <ul style="list-style-type: none"> <li>- Sprayable grease for ease of application on open gears &amp; slideways</li> <li>- Good wear and corrosion protection.</li> <li>- Good hot and cold water resistance</li> </ul>   |
| 120 <sup>1)</sup> [°C]<br>248 [°F] | -30 [°C]<br>-2 [°F]               | <ul style="list-style-type: none"> <li>- Applicable through central lubrication systems</li> <li>- Good water resistance</li> <li>- Good wear and corrosion protection</li> </ul>   |
| 120 [°C]<br>248 [°F]               | -45 [°C]<br>-49 [°F]              | <ul style="list-style-type: none"> <li>- Applicable through central lubrication systems</li> <li>- Suitable for the lubrication of gears, lifting cylinders, guide bars, cam plates</li> <li>- Good water resistance</li> <li>- Good wear and corrosion protection</li> <li>- ISO 21469 certified</li> </ul>  |
| 120 [°C]<br>248 [°F]               | -30 [°C]<br>-22 [°F]              | <ul style="list-style-type: none"> <li>- Good resistance against hot and cold water</li> <li>- Good corrosion protection</li> <li>- Recommended by leading capper manufacturers</li> </ul>  |
| 260 [°C]<br>500 [°F]               | -40 [°C]<br>-40 [°F]              | <ul style="list-style-type: none"> <li>- Good wear protection and thermal stability for extended relubrication intervals</li> <li>- Please note that friction points should be cleaned before initial lubrication</li> <li>- ISO 21469 certified</li> </ul>   |
| 150 [°C]<br>302 [°F]               | -50 [°C]<br>-58 [°F]              | <ul style="list-style-type: none"> <li>- For use in low-loaded bearings and EPDM<sup>2)</sup> seals in filling machines without aseptic cold filling</li> <li>- ISO 21469 certified</li> </ul>  |
| 150 [°C]<br>302 [°F]               | -45 [°C]<br>-49 [°F]              | <ul style="list-style-type: none"> <li>- For use in low-loaded bearings and EPDM<sup>2)</sup> seals in aseptic cold filling machines to improve hygiene levels</li> <li>- The lubricant contains an antimicrobial additive allowing extended maintenance intervals.</li> <li>- ISO 21469 certified</li> </ul> |
| 140 [°C]<br>284 [°F]               | -10 [°C]<br>14 [°F]               | <ul style="list-style-type: none"> <li>- Sealing grease suitable for beer taps, barrel fillers, filters, stuffing boxes, rubber diaphragms and seals<sup>2)</sup></li> <li>- ISO 21469 certified</li> </ul>   |

| Application         | Application points/machine components                | Klüber speciality lubricant                    | Base oil  | Thickener            | Upper service temperature approx.  | Lower service temperature approx. |
|---------------------|--|--|---|----------------------|------------------------------------|-----------------------------------|
| Shrink wrap tunnels | Transport and drive chains                           | Klüberfood NH1 CH2-220                         | Ester   | None                 | 250 [°C]<br>482 [°F]               | 0 [°C]<br>32 [°F]                 |
| Screw threads       | Screw threads  | Klüberoil 4 UH1-15 Spray                       | Synthetic hydrocarbon oil/ester oil <sup>1)</sup> | None                 | 110 <sup>1)</sup> [°C]<br>230 [°F] | -45 [°C]<br>-49 [°F]              |
|                     | Screw threads and slides                             | Klüberpaste UH1 84-201                         | Synthetic hydrocarbon oil                         | Solid lubricant/PTFE | 120 [°C]<br>248 [°F]               | -45 [°C]<br>-49 [°F]              |
| Compressors         | Air screw compressors, pneumatics and hydraulics     | Klüber Summit Hysyn FG 32 <sup>2)</sup>        | Synthetic hydrocarbon oil                         | None                 | 135 [°C]<br>275 [°F]               | -45 [°C]<br>-49 [°F]              |
|                     | Air screw compressors and hydraulics                 | Klüber Summit Hysyn FG 46 <sup>2)</sup>        | Synthetic hydrocarbon oil                         | None                 | 135 [°C]<br>275 [°F]               | -40 [°C]<br>-40 [°F]              |
|                     | Air reciprocating compressors                        | Klüber Summit Hysyn FG 68 or 100 <sup>2)</sup> | Synthetic hydrocarbon oil                         | None                 | 135 [°C]<br>275 [°F]               | -40 [°C]<br>-40 [°F]              |
|                     | Air rotary vane compressors vacuum pumps/can seamers | Klüber Summit Hysyn FG 100 <sup>2)</sup>       | Synthetic hydrocarbon oil                         | None                 | 135 [°C]<br>275 [°F]               | -35 [°C]<br>-31 [°F]              |
|                     | Refrigeration compressors                            | Klüber Summit R 200 <sup>2)</sup>              | Synthetic hydrocarbon oil                         | None                 | Not applicable                     | Not applicable                    |

1) of the active component

2) On oil viscosity selection please refer to the equipment manufacturer's manual or ask for advice.





### Application notes and benefits

- Low oil evaporation rate resulting in low residue formation and reduced oil consumption
- ISO 21469 certified

- Light penetrating oil to aid disassembly and reduce downtime

- Universal white assembly and thread paste
- Excellent low-temperature behaviour; good load-carrying capacity, good corrosion protection
- Neutral towards alloyed steels
- Also suitable for low-speed plain bearings, for guide rails, hinges, rollers etc.

- Synthetic base oil with low volatility ensuring minimum carry-over, minimising contamination risks and consumption, providing typically increased oil life and operating cost reduction
- KlüberMonitor analysis scheme recommended to determine the optimum duration of oil use
- Alternative lubricant according to application/specification: Klüberfood 4 NH 1-32
- Please ask your Klüber consultant for advice
- ISO 21469 certified

- Synthetic base oil with low volatility ensuring minimum carry-over, minimising contamination risks and consumption, providing typically increased oil life and operating cost reduction
- KlüberMonitor analysis scheme recommended to determine the optimum duration of oil use
- Alternative lubricant according to application/specification: Klüberfood 4 NH1-46
- Please ask your Klüber consultant for advice
- ISO 21469 certified

- Synthetic oil with low volatility ensuring minimum carry-over, minimising contamination risks
- Low residue formation reducing contamination of valves to reduce the risk of sticking and loss of compression, resulting in increased efficiency and reduced energy consumption.
- ISO 21469 certified

- Synthetic base oil with low volatility ensuring minimum carry-over, minimising contamination risks
- Increased efficiency resulting from low residue formation to reduce contamination of vanes to prevent sticking and loss of compression
- KlüberMonitor analysis scheme recommended to determine optimum duration of oil use
- ISO 21469 certified

- Synthetic compressor oil for refrigerating compressors operating with ammonia (R717), CO<sub>2</sub> (R744), propane (R290), propylene (R1270) or butane (R600) as refrigerant to minimise carry-over and sludge build up, supporting a reduction in oil consumption and operating costs
- Pourpoint ≤ -45 [°C] (-49 [°F])
- ISO 21469 certified

## On the intention of this lubricant selection brochure



The intention of this lubricant selection is to provide a logical guide through the Klüber Lubrication specialised product range. The structure of the brochure considers firstly the various application requirements and then leads you toward selection of the appropriate lubricant solution.

Whenever products appear to have similar properties, we highlight the differences in grey in the respective fields to assist with the final product selection. Should you not find a lubricant “tailored” exactly to your requirements we recommend contact with your local Klüber Lubrication representative, who will be able to offer additional assistance with product selection from our extensive lubricant portfolio.

We generally recommend to consult our lubrication experts prior to selecting a lubricant.



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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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