Detailed information

The recipe for your success.
Lubricant selection for applications in the food-processing industry
Manufacturers of food products know that a good recipe is key to a good product. This applies both to the ingredients used for meat, bakery or dairy products and beverages and the operating materials used in the plant. Choosing the right lubricant based on a proven recipe pays off. Klüber Lubrication offers NSF H1 lubricants meeting your requirements.

Clean production ...

Day after day, one challenge is to avoid contamination of food products during manufacturing while making production processes as efficient as possible. Klüber Lubrication is able to support you with a wide range of lubricants especially designed to meet the requirements of the food-processing industry. It is best practice to use specially registered and certified lubricants to keep contamination risks in the plant as low as possible and to ensure that the long-standing good reputation of your company is not jeopardised. This control of contamination risks is the key focus area in the HACCP guidelines. There are many applications in the food industry such as agitators, blowers, mixers, fillers, ovens, compressed air and packing machines, where the lubricant used in components could come into contact with food products. There is also the risk of using the wrong lubricant for the application and to bring lubricants unsuitable for food applications in contact with the food product.

We therefore recommend using NSF H1 lubricants exclusively for the entire production process.

... with high-performance NSF H1 lubricants made by Klüber Lubrication

Based on the specified raw material lists, NSF registration is made in two categories: NSF H1 lubricants are suitable for incidental contact with the food product. Lubricants according to NSF H2 are suitable for use where any contact between the food product and the lubricant is absolutely impossible. In addition to the above, there are also other categories like NSF 3H, NSF K1, NSF HT1 for products used for different applications like release agents, cleaners and heat-transfer fluids respectively.

The US-based National Sanitation Foundation (NSF) is in charge of registering lubricants for use in the food-processing industry. Klüber Lubrication can provide the entire range of products for the food-processing industry with the necessary NSF registration.

Speciality lubricants for the food-processing industry

Product overview

Rolling bearings
Gears
Chains
Plain bearings
Compressors
Vacuum pumps
Pneumatics
Hydraulics
Valves
Mechanical seals
Screws
Corrosion protection

Manufacturers of food products know that a good recipe is key to a good product. This applies both to the ingredients used for meat, bakery or dairy products and beverages and the operating materials used in the plant. Choosing the right lubricant based on a proven recipe pays off. Klüber Lubrication offers NSF H1 lubricants meeting your requirements.

Clean production ...

Day after day, one challenge is to avoid contamination of food products during manufacturing while making production processes as efficient as possible. Klüber Lubrication is able to support you with a wide range of lubricants especially designed to meet the requirements of the food-processing industry. It is best practice to use specially registered and certified lubricants to keep contamination risks in the plant as low as possible and to ensure that the long-standing good reputation of your company is not jeopardised. This control of contamination risks is the key focus area in the HACCP guidelines. There are many applications in the food industry such as agitators, blowers, mixers, fillers, ovens, compressed air and packing machines, where the lubricant used in components could come into contact with food products. There is also the risk of using the wrong lubricant for the application and to bring lubricants unsuitable for food applications in contact with the food product.

We therefore recommend using NSF H1 lubricants exclusively for the entire production process.

... with high-performance NSF H1 lubricants made by Klüber Lubrication

Based on the specified raw material lists, NSF registration is made in two categories: NSF H1 lubricants are suitable for incidental contact with the food product. Lubricants according to NSF H2 are suitable for use where any contact between the food product and the lubricant is absolutely impossible. In addition to the above, there are also other categories like NSF 3H, NSF K1, NSF HT1 for products used for different applications like release agents, cleaners and heat-transfer fluids respectively.

The US-based National Sanitation Foundation (NSF) is in charge of registering lubricants for use in the food-processing industry. Klüber Lubrication can provide the entire range of products for the food-processing industry with the necessary NSF registration.

Speciality lubricants for the food-processing industry

Product overview

Rolling bearings
Gears
Chains
Plain bearings
Compressors
Vacuum pumps
Pneumatics
Hydraulics
Valves
Mechanical seals
Screws
Corrosion protection

Manufacturers of food products know that a good recipe is key to a good product. This applies both to the ingredients used for meat, bakery or dairy products and beverages and the operating materials used in the plant. Choosing the right lubricant based on a proven recipe pays off. Klüber Lubrication offers NSF H1 lubricants meeting your requirements.

Clean production ...

Day after day, one challenge is to avoid contamination of food products during manufacturing while making production processes as efficient as possible. Klüber Lubrication is able to support you with a wide range of lubricants especially designed to meet the requirements of the food-processing industry. It is best practice to use specially registered and certified lubricants to keep contamination risks in the plant as low as possible and to ensure that the long-standing good reputation of your company is not jeopardised. This control of contamination risks is the key focus area in the HACCP guidelines. There are many applications in the food industry such as agitators, blowers, mixers, fillers, ovens, compressed air and packing machines, where the lubricant used in components could come into contact with food products. There is also the risk of using the wrong lubricant for the application and to bring lubricants unsuitable for food applications in contact with the food product.

We therefore recommend using NSF H1 lubricants exclusively for the entire production process.

... with high-performance NSF H1 lubricants made by Klüber Lubrication

Based on the specified raw material lists, NSF registration is made in two categories: NSF H1 lubricants are suitable for incidental contact with the food product. Lubricants according to NSF H2 are suitable for use where any contact between the food product and the lubricant is absolutely impossible. In addition to the above, there are also other categories like NSF 3H, NSF K1, NSF HT1 for products used for different applications like release agents, cleaners and heat-transfer fluids respectively.

The US-based National Sanitation Foundation (NSF) is in charge of registering lubricants for use in the food-processing industry. Klüber Lubrication can provide the entire range of products for the food-processing industry with the necessary NSF registration.

Speciality lubricants for the food-processing industry

Product overview

Rolling bearings
Gears
Chains
Plain bearings
Compressors
Vacuum pumps
Pneumatics
Hydraulics
Valves
Mechanical seals
Screws
Corrosion protection

Manufacturers of food products know that a good recipe is key to a good product. This applies both to the ingredients used for meat, bakery or dairy products and beverages and the operating materials used in the plant. Choosing the right lubricant based on a proven recipe pays off. Klüber Lubrication offers NSF H1 lubricants meeting your requirements.

Clean production ...

Day after day, one challenge is to avoid contamination of food products during manufacturing while making production processes as efficient as possible. Klüber Lubrication is able to support you with a wide range of lubricants especially designed to meet the requirements of the food-processing industry. It is best practice to use specially registered and certified lubricants to keep contamination risks in the plant as low as possible and to ensure that the long-standing good reputation of your company is not jeopardised. This control of contamination risks is the key focus area in the HACCP guidelines. There are many applications in the food industry such as agitators, blowers, mixers, fillers, ovens, compressed air and packing machines, where the lubricant used in components could come into contact with food products. There is also the risk of using the wrong lubricant for the application and to bring lubricants unsuitable for food applications in contact with the food product.

We therefore recommend using NSF H1 lubricants exclusively for the entire production process.

... with high-performance NSF H1 lubricants made by Klüber Lubrication

Based on the specified raw material lists, NSF registration is made in two categories: NSF H1 lubricants are suitable for incidental contact with the food product. Lubricants according to NSF H2 are suitable for use where any contact between the food product and the lubricant is absolutely impossible. In addition to the above, there are also other categories like NSF 3H, NSF K1, NSF HT1 for products used for different applications like release agents, cleaners and heat-transfer fluids respectively.

The US-based National Sanitation Foundation (NSF) is in charge of registering lubricants for use in the food-processing industry. Klüber Lubrication can provide the entire range of products for the food-processing industry with the necessary NSF registration.
ISO 21469 is the international standard for the hygiene requirements for the formulation, manufacture and use of H1 lubricants used in the food-processing and pharmaceutical industries. The NSF developed a certification procedure on the basis of ISO 21469, which includes annual inspection of the lubricants-producing plant by an NSF auditor to check strict adherence to hygiene requirements, preventing contamination during the manufacture of H1 lubricants. Product samples are taken on an annual basis and analysed for contamination, and also lubricant packing, storage and use are evaluated during the audit. In order to get a plant certified under ISO 21469:2006, it may be necessary to make some changes in the manufacturing process calling for heavy investments to enable compliance. Klüber Lubrication was amongst the first few companies which were able to comply with the stringent requirements of this standard.

What this means to you, our customer, is that not only our products but the whole manufacturing process of our NSF H1 lubricants is certified. The whole process ensures complete protection against contamination during lubricant manufacturing.

High-performance lubricants pay off

Lubricants for the food-processing industry are subject to a multitude of requirements: on the one hand, they have to comply with food regulations, be physiologically inert, neutral in taste and odour and internationally approved. On the other, they also have to reduce friction and wear, protect against corrosion, dissipate heat and have a sealing effect. Selecting the right lubricant is therefore crucial when it comes to improving reliability and the service life of parts and components. The investment in high-quality lubricants pays off by reducing maintenance and operating costs in the long run.

In this brochure, you will find a selection of our food machinery lubricants, grouped according to their usual applications. These lubricants have proven their worth over the decades and have been further developed to adapt them for today’s operating conditions and parameters. We have the right solution for almost all applications. If there is a part or component that you don’t find in this brochure, just contact one of our specialists for advice.

Certified hygiene for the entire process

ISO 21469 is the international standard for the hygiene requirements for the formulation, manufacture and use of H1 lubricants used in the food-processing and pharmaceutical industries. The NSF developed a certification procedure on the basis of ISO 21469, which includes annual inspection of the lubricants-producing plant by an NSF auditor to check strict adherence to hygiene requirements, preventing contamination during the manufacture of H1 lubricants. Product samples are taken on an annual basis and analysed for contamination, and also lubricant packing, storage and use are evaluated during the audit. In order to get a plant certified under ISO 21469:2006, it may be necessary to make some changes in the manufacturing process calling for heavy investments to enable compliance. Klüber Lubrication was amongst the first few companies which were able to comply with the stringent requirements of this standard.

What this means to you, our customer, is that not only our products but the whole manufacturing process of our NSF H1 lubricants is certified. The whole process ensures complete protection against contamination during lubricant manufacturing.

KlüberEfficiencySupport

Services by Klüber Lubrication - your success from one tool box

Every manufacturer and operator in every industry wants his machinery to run reliably and efficiently to its design life and beyond. The right lubricants carry considerable potential to reduce the energy costs, spare parts and labour while increasing productivity. Companies from many industries have been using Klüber Lubrication’s professional services in addition to its high-quality lubricants to benefit from considerable added value and the optimum solution for their needs. Our consulting and other services are put together under the umbrella of KlüberEfficiencySupport.

- KlüberEnergy: consultant services for optimisation of the energy efficiency of your lubricant application; verification through energy measurements and reporting of cost saving
- Klüber Maintain: support for your lubricant management and maintenance programmes such as TPM with regard to lubricants and the associated maintenance activities
- KlüberMonitor: increased productivity through used lubricant analyses. Recommendations for optimisation based on trend analyses and test rig results
- Klüber Renew: services for extending the life of your costly wear parts in large gear drives or chains supported by associated training

The methodology was developed by Klüber Lubrication, is tried-and-tested and consists of a multi-stage, systematic approach. We identify your requirements together with you at an early stage to discover potential for optimisation. From that we develop solutions together with you to improve the energy efficiency of your machinery or the efficiency of your maintenance and production processes, machines or components, going well beyond a simple lubricant recommendation. We also verify the effects our measures have in practice. This provides you with everything you need to multiply improvements and develop your success.

We are where you are

It is our aim to offer you high-quality specialty lubricants and services around the globe along with the high technical competence Klüber Lubrication is known for. We meet this aim through our worldwide network of production and sales companies, competent dealers and last, but not least, through our highly specialised experts ready to respond to your individual requirements. We have compiled a selection of specialty lubricants and listed them according to modules and components. These lubricants have proven effective in the food-processing industry, some of them for decades.
## Rolling bearings

<table>
<thead>
<tr>
<th>Service temperature range °C</th>
<th>Speed factor n × dm × mm x min⁻¹</th>
<th>Product characteristics</th>
<th>Klüber Lubrication Product</th>
<th>Certifications / registrations</th>
<th>Base oil / thickener</th>
<th>Base oil viscosity DIN 51 562 T1 [mm²/s] at 40 °C</th>
<th>Base oil viscosity DIN 51 562 T1 [mm²/s] at 100 °C</th>
<th>Colour</th>
<th>Consistency NLGI class DIN 51 818</th>
<th>Description and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>-45 to 120</td>
<td>700 000</td>
<td>Smooth running grease with good low-temperature behaviour</td>
<td>Klübersynth UH1 14-31</td>
<td>ISO 21469 NSF H1</td>
<td>synthetic hydrocarbon oil, ester oil / aluminium complex soap</td>
<td>30</td>
<td>6</td>
<td>White 1</td>
<td>Excellent low-temperature behaviour.</td>
<td>Good water resistance.</td>
</tr>
<tr>
<td>-40 to 140</td>
<td>500 000</td>
<td>Lubricating grease with wide temperature range</td>
<td>Klübersynth UH1 64-62</td>
<td>ISO 21469 NSF H1</td>
<td>synthetic hydrocarbon oil, ester oil, silicone</td>
<td>65</td>
<td>10</td>
<td>Beige 2</td>
<td>Good water resistance.</td>
<td>Good corrosion and wear protection.</td>
</tr>
<tr>
<td>-45 to 120</td>
<td>500 000</td>
<td>Universal lubricating grease</td>
<td>Klübersynth UH1 14-151</td>
<td>ISO 21469 NSF H1</td>
<td>synthetic hydrocarbon oil / aluminium complex soap</td>
<td>150</td>
<td>22</td>
<td>Beige 1</td>
<td>Applicable through centralised lubrication systems.</td>
<td>Also available in NLGI 2 grade as Klübersynth UH1 14-222.</td>
</tr>
<tr>
<td>-35 to 120</td>
<td>400 000</td>
<td>Fully synthetic grease for applications subject to high loads</td>
<td>Klüberfood NH1 94-301</td>
<td>ISO 21469 NSF H1</td>
<td>synthetic hydrocarbon oil / calcium sulfonate soap</td>
<td>300</td>
<td>30</td>
<td>Beige 1</td>
<td>Good wear and corrosion protection which results in extended maintenance intervals and increased component life.</td>
<td>Good pumpability behaviour when used in centralised lubrication systems.</td>
</tr>
<tr>
<td>-40 to 260</td>
<td>300 000</td>
<td>Long-term grease for high temperatures</td>
<td>BARBIERTA L 55/2</td>
<td>ISO 21469 NSF H1</td>
<td>PFPE / PTFE</td>
<td>420</td>
<td>40</td>
<td>White 2</td>
<td>Proven high-temperature stability.</td>
<td>Very good resistance to aggressive media.</td>
</tr>
<tr>
<td>-30 to 160</td>
<td>300 000</td>
<td>Heavy duty grease</td>
<td>Klüberfood NH1 94-402</td>
<td>NSF H1</td>
<td>synthetic hydrocarbon oil / calcium complex soap</td>
<td>400</td>
<td>40</td>
<td>Beige 2</td>
<td>Excellent load-carrying capacity.</td>
<td>Very good corrosion protection and water resistance.</td>
</tr>
<tr>
<td>-10 to 140</td>
<td>50 000</td>
<td>Special grease for low speed and high loads</td>
<td>Klübersynth UH1 64-1302</td>
<td>ISO 21469 NSF H1</td>
<td>synthetic hydrocarbon oil / silicate</td>
<td>1 300</td>
<td>100</td>
<td>Beige 2</td>
<td>Very ahesive.</td>
<td>Good water protection.</td>
</tr>
</tbody>
</table>
## Gear oils

### Synthetic gear oil for low temperatures
- **Klüber Summit HySyn FG 32**
  - ISO VG: 32
  - Temperature range: -45 to 135 °C
  - Base oil: Synthetic hydrocarbon oil
  - Certifications: NSF H1

### Synthetic gear oils for normal temperatures
- **Klüberoil 4 UH1 150 N**
  - ISO VG: 150
  - Temperature range: -30 to 120 °C
  - Base oil: Synthetic hydrocarbon oil, ester oil
- **Klüberoil 4 UH1 460 N**
  - ISO VG: 460
  - Temperature range: -30 to 120 °C
  - Base oil: Synthetic hydrocarbon oil, ester oil
- **Klübersynth UH1 6-150**
  - ISO VG: 150
  - Temperature range: -35 to 160 °C
  - Base oil: Polyglycol oil

### Synthetic long-term gear oils for high temperatures
- **Klübersynth UH1 6-320**
  - ISO VG: 320
  - Temperature range: -30 to 160 °C
  - Base oil: Polyglycol oil

### Description and benefits
- **Synthetic gear oil for low temperatures**
  - Good oxidation stability due to the synthetic base oil, thus minimizing oxidation residues and extending oil change intervals.
  - Suitable for the lubrication of low-temperature gear boxes e.g.: freezers, chillers.
  - Wide service temperature range, can be used for a wide range of applications in the food industry.
  - Good ageing and oxidation stability for longer oil life.
  - Good wear protection and load-carrying capacity – attains scuffing load stage > 12 in the FZG test.
  - Good corrosion protection, neutral towards sealing materials and paints.
  - For the lubrication of spur, bevel and worm gears.

- **Synthetic gear oils for normal temperatures**
  - High micropitting resistance offers sufficient protection to highly-loaded gears.
  - The good CLP-rated rolling bearing wear protection prevents premature bearing failure.
  - Much longer service life than mineral oils due to the excellent ageing and oxidation resistance of the base oil such that maintenance intervals can be extended and even lifetime lubrication is possible.
  - Load stage >12 in the FZG special test.
  - Good low-temperature characteristics enable use in refrigerated environments.

## Gear greases

### Synthetic fluid gear grease
- **Klübersynth UH1 14-1600**
  - Consistency: 00
  - Temperature range: -45 to 120 °C
  - Base oil: Synthetic hydrocarbon oil, ester oil, aluminium complex soap

### Synthetic fluid gear grease
- **Klüberfood NH 94-6000**
  - Consistency: 000
  - Temperature range: -45 to 120 °C
  - Base oil: Synthetic hydrocarbon oil, ester oil, calcium complex soap

### Description and benefits
- **Synthetic fluid gear grease**
  - Suitable for application via centralised lubrication systems.
  - Good wear protection; attains scuffing load stage 11 in the FZG special test.
  - Good corrosion protection.
  - For splash lubrication of toothed and worm gears.

- **Synthetic fluid gear grease**
  - Good pumpability in long or narrow bore central lubrication pipework due to its very soft consistency.
  - Reduced wear and extended maintenance intervals due to good load-carrying capacity and good corrosion protection.
  - Load stage >12 in the FZG special test.
  - Good low-temperature characteristics enable use in refrigerated environments.
<table>
<thead>
<tr>
<th>Service temperature range (°C)</th>
<th>Product characteristics</th>
<th>Klüber Lubrication Product</th>
<th>ISO VG DIN 51 519</th>
<th>Certifications / registrations</th>
<th>Base oil</th>
<th>Kinematic viscosity DIN 51 562 part 1 [mm²/s] at 40 °C</th>
<th>100 °C</th>
<th>Description and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>-45 to 135</td>
<td>Low-temperature oil</td>
<td>Klüber Summit HySyn FG 32</td>
<td>32</td>
<td>ISO 21469 NSF H1</td>
<td>synthetic hydrocarbon oil, ester oil</td>
<td>32 5.5</td>
<td>– Specially recommended for operating in lower temperature chains, e.g. freezers, chillers.</td>
<td></td>
</tr>
<tr>
<td>-35 to 120</td>
<td>Low-temperature oil</td>
<td>Klüberol 4 UH 68 N</td>
<td>68</td>
<td>ISO 21469 NSF H1</td>
<td>synthetic hydrocarbon oil, ester oil</td>
<td>98 11</td>
<td>– Good wear protection, high load-carrying capacity. – Suitable for lifting, drive and transport chains.</td>
<td></td>
</tr>
<tr>
<td>-30 to 120</td>
<td>Lubricating oil for normal temperatures</td>
<td>Klüberol 4 UH 1 460 N</td>
<td>460</td>
<td>ISO 21469 NSF H1</td>
<td>synthetic hydrocarbon oil, ester oil</td>
<td>460 47</td>
<td>– Good wear protection, load-carrying capacity and corrosion protection. – For lifting, drive and transport chains, spindles and joints.</td>
<td></td>
</tr>
<tr>
<td>-20 to 250</td>
<td>High-temperature chain oil</td>
<td>Klüberfood NH1 CH 2-75 Plus</td>
<td>75</td>
<td>NSF H1</td>
<td>ester oil</td>
<td>75 11</td>
<td>– Special base oils ensure reliable lubrication at high temperatures. – Good corrosion protection due to special base oil and additive package for high temperatures. – Low evaporation rate compared to many other ester oils used in the food industry.</td>
<td></td>
</tr>
<tr>
<td>-15 to 260</td>
<td>High-temperature chain oil</td>
<td>Klüberfood NH1 CH 2-260 Plus</td>
<td>260</td>
<td></td>
<td>ester oil</td>
<td>260 21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-30 to 120</td>
<td>Special chain oil for chains in high humid areas</td>
<td>Klüberfood NH1 C 8-80</td>
<td>80</td>
<td>ISO 21469 NSF H1</td>
<td>semi-synthetic</td>
<td>80 10</td>
<td>– Good stability in high humidity environments to support optimum chain life for conveyor and drive chains.</td>
<td></td>
</tr>
<tr>
<td>-20 to 120</td>
<td>Highly viscous lubricating oil</td>
<td>Klüberol 4 UH 1 1500 N lpray</td>
<td>1 500</td>
<td>ISO 21469 NSF H1</td>
<td>synthetic hydrocarbon oil, ester oil</td>
<td>1 500 125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-40 to 135</td>
<td>Special oil for conveyor chains in beverage industry</td>
<td>Klüberfood NH1 C 4-58</td>
<td>46</td>
<td>ISO 21469 NSF H1</td>
<td>synthetic hydrocarbons</td>
<td>46 7.7</td>
<td>– Good wear protection and high load-carrying capacity. – Good corrosion protection properties. – High ageing and oxidation stability, leading to longer life of the oil. – Suitable for lifting, drive and transport chains.</td>
<td></td>
</tr>
<tr>
<td>-40 to 135</td>
<td>Special oil for the confectionery industry</td>
<td>Klüberfood NH1 1-17</td>
<td>–</td>
<td>ISO 21469 NSF H1</td>
<td>mineral oil</td>
<td>– –</td>
<td>– Sugar dissolving oil without taste or odour. – Reduces sugar build-up on chains for increased life, allowing oil penetration to the friction points.</td>
<td></td>
</tr>
<tr>
<td>0 to 60</td>
<td>Special synthetic sugar-dissolving oil for the confectionery industry</td>
<td>Klüberfood NH1 6-10</td>
<td>12</td>
<td>ISO 21469 NSF H1</td>
<td>PAG</td>
<td>12 –</td>
<td>– Ready to use, stable aqueous solution of special synthetic lubricating fluid for applications in the food-processing industry, especially in confectionery. – Good penetrative and corrosion protection properties contribute to reduced wear and component costs. – Reduces sugar build-up on chains for increased life, owing to increased oil penetration to the friction points. Helps to reduce contaminational leaks due to over-lubrication.</td>
<td></td>
</tr>
<tr>
<td>-15 to 80</td>
<td>Special synthetic sugar-dissolving oil for the confectionery industry</td>
<td>Klüberfood NH1 6-180</td>
<td>170</td>
<td>ISO 21469 NSF H1</td>
<td>PAG</td>
<td>170 –</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Plain bearings

<table>
<thead>
<tr>
<th>Service temperature range (°C)</th>
<th>Product characteristics</th>
<th>Klüber Lubrication Product</th>
<th>Certifications / registrations</th>
<th>Base oil viscosity DIN 51 562 part 1 [mm²/s] at</th>
<th>Consistency NLGI-Klasse DIN 51 818</th>
<th>Base oil/thickener</th>
<th>Description and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>–45 to 120</td>
<td>Lubricating grease for universal application</td>
<td>Klübersynth UH1 14-151</td>
<td>ISO 21469 NSF H1</td>
<td>150 22</td>
<td>1</td>
<td>Synthetic hydrocarbon oil, ester oil / aluminium complex soap</td>
<td>– Good corrosion protection reducing the risk of premature bearing failure. – Usable for wide service temperature range due to its soft consistency. – Applicable through centralised lubrication systems. – Suitable for application in rolling and plain bearings, lifting cylinders, joints, cam discs etc.</td>
</tr>
<tr>
<td>–45 to 120</td>
<td>White lubricating paste</td>
<td>Klüberpaste UH1 84-201</td>
<td>ISO 21469 NSF H1</td>
<td>200 75</td>
<td>1</td>
<td>Synthetic hydrocarbon oil / PTFE</td>
<td>– Universal white assembly and screw paste, free of metals, neutral towards alloyed steels. – Excellent low-temperature behaviour. – Good load-carrying capacity, good corrosion protection. – Suitable for low-speed plain bearings, guide rails, hinges, rollers etc.</td>
</tr>
<tr>
<td>0 to 60</td>
<td>Sugar-dissolving oil</td>
<td>Klüberfood NH1 6-10</td>
<td>ISO 21469 NSF H1</td>
<td>12 –</td>
<td>–</td>
<td>Polyalkylene glycol oil</td>
<td>– Suitable for friction points subject to sugar, such as rocking levers, chain links, sensors, levers, etc. – Good penetrative and corrosion protection properties contribute to reduced wear and component costs. – Reduces sugar build-up around bearings for increased lifetime owing to increased oil penetration to the friction points. Helps to reduce contamination levels due to over-lubrication.</td>
</tr>
</tbody>
</table>
Compressors

<table>
<thead>
<tr>
<th>Application</th>
<th>Klüber Lubrication Product</th>
<th>ISO VG DIN 51 519</th>
<th>Certifications/registrations</th>
<th>Service temperature range [°C]</th>
<th>Base oil</th>
<th>Kinematic viscosity DIN 51 562 part 1 [mm²/s] at 40 °C, 100 °C</th>
<th>Description and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air compressors</td>
<td>Klüber Summit FG-series</td>
<td>32</td>
<td>ISO 21469 NSF H1</td>
<td>-50 to 120</td>
<td>synthetic oil</td>
<td>32 5.8</td>
<td>– Special compressor oils developed for the food-processing industry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Low tendency to evaporate which results in low impact of oil vapour on the compressed air.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Available in ISO VG 32, 46,68,100 and 150.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– To be used for oil-injected screw-type compressors, reciprocating piston compressors and rotary vane compressors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Also suitable for gear lubrication in oil-free screw-type compressors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Specially designed for highly loaded screw-type and reciprocating piston compressors with ammonia (R717) or CO₂ (R744) refrigerant.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Can also be used with natural hydrocarbon refrigerants like propane (R290), propylene (R1270) or butane (R600A).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Offer extended oil change intervals, reducing maintenance and lubrication costs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Available in ISO VG 46,68,100,220 and special 400 viscosity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Klüber Summit R 200 is recommended for CO₂ refrigerant screw compressors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>– Klüber Summit R 300 is recommended for ammonia reciprocating compressors.</td>
</tr>
<tr>
<td>Refrigeration compressors</td>
<td>Klüber Summit R-series</td>
<td>32</td>
<td>ISO 21469 NSF H1</td>
<td>-35 to 120</td>
<td>synthetic hydrocarbon oil</td>
<td>32 5.9</td>
<td>– Good oxidation stability, minimising oxidation residues and extending oil change intervals.</td>
</tr>
</tbody>
</table>

Vacuum pumps

<table>
<thead>
<tr>
<th>Application</th>
<th>Klüber Lubrication Product</th>
<th>ISO VG DIN 51 519</th>
<th>Certifications/registrations</th>
<th>Service temperature range [°C]</th>
<th>Base oil</th>
<th>Kinematic viscosity DIN 51 562 part 1 [mm²/s] at 40 °C, 100 °C</th>
<th>Description and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuum pumps</td>
<td>Klüber Summit FG</td>
<td>100</td>
<td>ISO 21469 NSF H1</td>
<td>-50 to 120</td>
<td>synthetic hydrocarbon oil</td>
<td>100 13</td>
<td>– Good oxidation stability, minimising oxidation residues and extending oil change intervals.</td>
</tr>
</tbody>
</table>
## Pneumatics

<table>
<thead>
<tr>
<th>ISO VG 51519</th>
<th>Product characteristics</th>
<th>Klüber Lubrication Product</th>
<th>Certifications / registrations</th>
<th>Service temperature range (°C)</th>
<th>Base oil</th>
<th>Kinematic viscosity DIN 51562 part 1 [mm²/s] at 40 °C</th>
<th>Description and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Special oil for pneumatic components</td>
<td>Klüber Summit HySyn FG 15</td>
<td>ISO 21469 NSF H1</td>
<td>-45 to 100</td>
<td>synthetic hydrocarbon oil</td>
<td>15</td>
<td>3.5</td>
</tr>
<tr>
<td>32</td>
<td>Special oil for pneumatic components</td>
<td>Klüberfood 4 NH1 32</td>
<td>ISO 21469 NSF H1</td>
<td>-46 to 135</td>
<td>synthetic hydrocarbon oil</td>
<td>32</td>
<td>5.9</td>
</tr>
<tr>
<td>-</td>
<td>Special grease for pneumatic drives and sealing elements</td>
<td>Klübersynth AR 34-401</td>
<td>ISO 21469 NSF H1</td>
<td>-30 to 140</td>
<td>synthetic oil / calcium soap</td>
<td>400</td>
<td>40</td>
</tr>
</tbody>
</table>

## Hydraulics

<table>
<thead>
<tr>
<th>ISO VG 51519</th>
<th>Product characteristics</th>
<th>Klüber Lubrication Product</th>
<th>Certifications / registrations</th>
<th>Service temperature range (°C)</th>
<th>Base oil</th>
<th>Kinematic viscosity DIN 51562 part 1 [mm²/s] at 40 °C</th>
<th>Description and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>46</td>
<td>Hydraulic oil</td>
<td>Klüberfood 4 NH1 46</td>
<td>ISO 21469 NSF H1</td>
<td>-40 to 135</td>
<td>synthetic hydrocarbon oil</td>
<td>46</td>
<td>7.7</td>
</tr>
</tbody>
</table>
### Valves

<table>
<thead>
<tr>
<th>Sealing grease for valves and fittings</th>
<th>PARALIQ GTE 703</th>
<th>ISO 21469 NSF H1</th>
<th>–50 to 150</th>
<th>silicone oil / PTFE</th>
<th>EPDM/FPM/NBR</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sealing grease for valves and fittings</td>
<td>Klüberynth UH-64-2403</td>
<td>ISO 21469 NSF H1</td>
<td>–10 to 140</td>
<td>synthetic hydrocarbon oil / silicates</td>
<td>NBR</td>
<td>3</td>
</tr>
<tr>
<td>Sealing grease for valves and fittings in sterile environments</td>
<td>Klüberfood NH-87-703 Hyg</td>
<td>ISO 21469 NSF H1</td>
<td>–45 to 150</td>
<td>synthetic hydrocarbon oil / silicates</td>
<td>EPDM/FPM/NBR</td>
<td>3</td>
</tr>
<tr>
<td>Special lubricating grease for drinking water, beverage and heating valves</td>
<td>UNISILKON L 250 L</td>
<td>ISO 21469 NSF H1</td>
<td>–45 to 160</td>
<td>silicone oil / PTFE</td>
<td>EPDM/FPM/NBR</td>
<td>3</td>
</tr>
<tr>
<td>Special soft grease for sanitary beverage, and heating valves</td>
<td>Klüberbeta VR-67-3500</td>
<td>ISO 21469 NSF H1</td>
<td>–40 to 140</td>
<td>silicone oil / silcone</td>
<td>EPDM/FPM/NBR</td>
<td>00</td>
</tr>
</tbody>
</table>

**Description and benefits:**
- For use in bottling machine seals. Resistant to disinfectants and cleaning agents.
- Does not affect beer froth formation, resistant to hot and cold water.
- Neutral in colour and taste.
- Allows reliable operation of beverage taps. Neutral to taste and beer froth.
- Offers very good resistance to hot and cold water and steam, extending maintenance intervals.
- Special lubricating grease based on high viscosity silicone oils and PTFE solid lubricants.
- Antimicrobial additive protects the grease against microbial degradation allowing extended service intervals.
- Special lubricant based on silicone oil and PTFE with high thermal stability.
- Supports long-term protection of seals and bearings owing to its good resistance to numerous media like disinfectants, cleaning agents, water and steam.
- The soft consistency of Klüberbeta VR-67-3500 and the use of special silicone oils ensure reliable operation over a wide temperature range for sanitary, beverage and heating valves and taps.

### Mechanical seals

<table>
<thead>
<tr>
<th>Application</th>
<th>Certifications / registrations</th>
<th>Klüber Lubrication Product</th>
<th>Base oil</th>
<th>Service temperature range (°C)</th>
<th>Description and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSF H1</td>
<td>Klüberflud NH-4-005</td>
<td>synthetic hydrocarbon oil</td>
<td>–40 to 150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical Seals</td>
<td>NSF H1</td>
<td>Klüberol 4 UH-1 - 15 AF</td>
<td>synthetic hydrocarbon oil</td>
<td>–40 to 110</td>
<td>The suitable viscosity for mechanical seals depends on the speed (normal speeds range between 1500 and 3000 rpm). Neutral towards many NBR and FKM elastomer types.</td>
</tr>
<tr>
<td>NSF H1</td>
<td>PARALIQ P 12</td>
<td>medical white oil acc. to the European Pharmacopoeia</td>
<td>–10 to 120</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Screws

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Klüber Lubrication Product</th>
<th>Certifications / registrations</th>
<th>Service temperature range (°C)</th>
<th>Base oil / thickener</th>
<th>Base oil viscosity DIN 51 562 part 1 [mm²/s] at 40 °C</th>
<th>Four-ball tester welding load DIN 51 350 [N]</th>
<th>Description and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubricating and assembly paste for normal and low temperatures</td>
<td>Klüberpaste UH1 84-201</td>
<td>ISO 21469 NSF H1</td>
<td>-45 to 120</td>
<td>synthetic hydrocarbon oil / PTFE</td>
<td>200</td>
<td>&gt; 3 000</td>
<td>– Universal white assembly and screw paste, free of metals, neutral towards alloyed steels. – Excellent low-temperature behaviour. – Good load-carrying capacity, good corrosion protection. – Assembly and screw paste suitable for low-speed plain bearings, for guide rails, hinges, rollers, etc.</td>
</tr>
<tr>
<td>High-temperature lubricating and assembly paste</td>
<td>Klüberpaste UH1 96-402</td>
<td>ISO 21469 NSF H1</td>
<td>-30 to 1 200</td>
<td>polyalkylene glycol oil/ silicate</td>
<td>360</td>
<td>&gt; 2 500</td>
<td>– Lubricating paste for guide rails, hinges etc. and for use as assembly paste for bolts, pins, bushings etc. – Good high-temperature properties. – Good corrosion protection: Free of metals, neutral towards alloyed steels.</td>
</tr>
</tbody>
</table>

## Corrosion protection

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Klüber Lubrication Product</th>
<th>Certifications / registrations</th>
<th>Description and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-corrosion lubricant for the food-processing industry</td>
<td>Klüberfood NH1 K 32</td>
<td>ISO 21469 NSF H1</td>
<td>– Transparent “grease-like” anticorrosive film for the protection of ferrous metals. – Provides good anti-corrosion protection for wet areas subject to frequent wash down. – Operating temperature range 0 to 80 °C. – Also available as spray.</td>
</tr>
<tr>
<td>Cleaner &amp; degreaser for the food-processing industry</td>
<td>Klüberfood NK1 8-001 Spray</td>
<td>ISO 21469 NSF K1 &amp; NSF K3</td>
<td>– Organic solvent cleaning agent. – Oil, grease, wax and resin residue remover compatible with plastics and metals. – Particularly suitable for degreasing tools and components.</td>
</tr>
<tr>
<td>Water displacement product for the food-processing industry</td>
<td>Klüberfood NH1 4-002 Spray</td>
<td>ISO 21469 NSF H1</td>
<td>– Special oil spray neutral in odour and taste. – Good penetrating and water displacement properties, not for use on live electrics.</td>
</tr>
</tbody>
</table>
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. Products from Klüber Lubrication are continually improved. Therefore, Klüber Lubrication reserves the right to change all the technical data in this document at any time without notice.

Klüber Lubrication München SE & Co. KG

All the products in this brochure are NSF H1 registered and therefore comply with FDA 21 CFR § 178.3570. The lubricants are developed for incidental contact with products and packaging materials in the food-processing, cosmetics, pharmaceutical or animal feed industries. The use of all the lubricants can contribute to increased reliability of your production processes. We nevertheless recommend conducting an additional risk analysis, e.g. HACCP.

Klüber Lubrication München SE & Co. KG
Geisenhausenstraße 7
81379 München
Deutschland

Local first-instance court Munich, Germany
Certificate of registration 844883
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.