

your global specialist

Industrial sector

## Lubrication solutions for a hot environment.

Speciality lubricants for the bakery industry





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# Lubrication solutions for a hot environment

There are many challenges facing you as a baker: food safety, reliable manufacturing processes, for example the cooling of ovens, and – just as important – the reduction of operational and maintenance costs.

When production is running non-stop, any breakdown due to lubrication failures can be very expensive for you. Just imagine the loss of production due to a lubrication failure in an oven bearing or in the cooling tunnel of a freezer. Key components requiring specialized lubrication in the bakery industry are transport chains, as the environment can be challenging due to elevated temperatures and high humidity. Improper chain lubrication here can lead to residue build-up, wear and eventually the loss of articulation in these chains. All the above could ultimately result in a breakdown, bringing production and output to a complete halt.

## Increase food safety

The selection of the right lubricant can play a major role in food safety. Product recalls can cost the manufacturer enormous time and money – if not their reputation. Even a minor contamination of a food product with lubricant, which cannot always be technically avoided, can have severe consequences. Innumerable regulations have to be observed in the production of food: on hygiene, regarding the machines or the materials used. Maintenance technicians, production and quality managers have to take all these regulations into account for the selection of lubricants. As a manufacturer of food products, you will not be content just to have lubricants that comply with legal regulations. You also expect them to be physiologically safe, neutral in taste and odour; they should reduce friction and wear, remove heat and seal components. As a global leader in speciality lubricants, Klüber Lubrication offers a comprehensive line of NSF H1 registered lubricants designed to meet the extreme demands of the bakery industry.

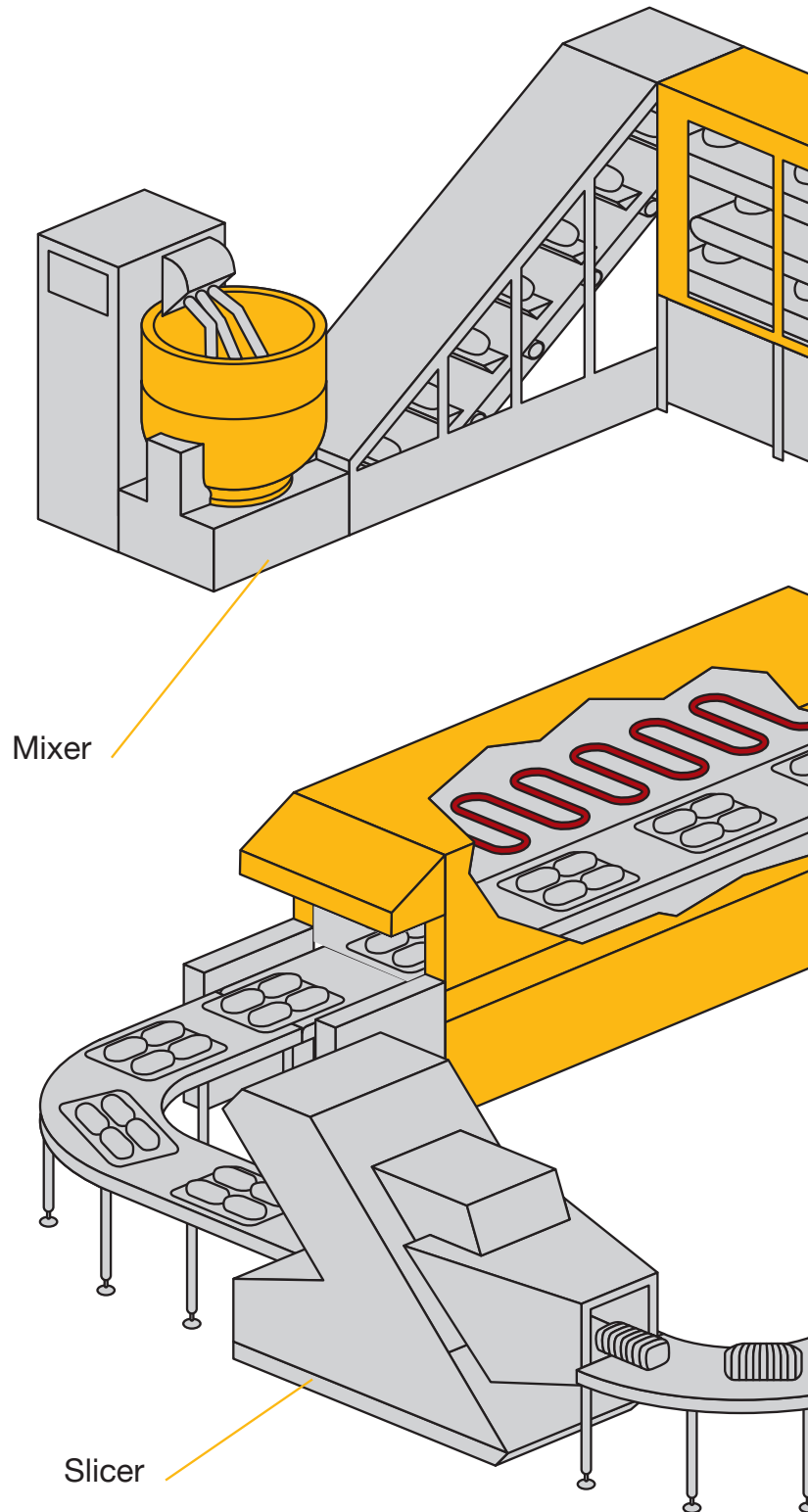
## Certified hygiene for the entire process

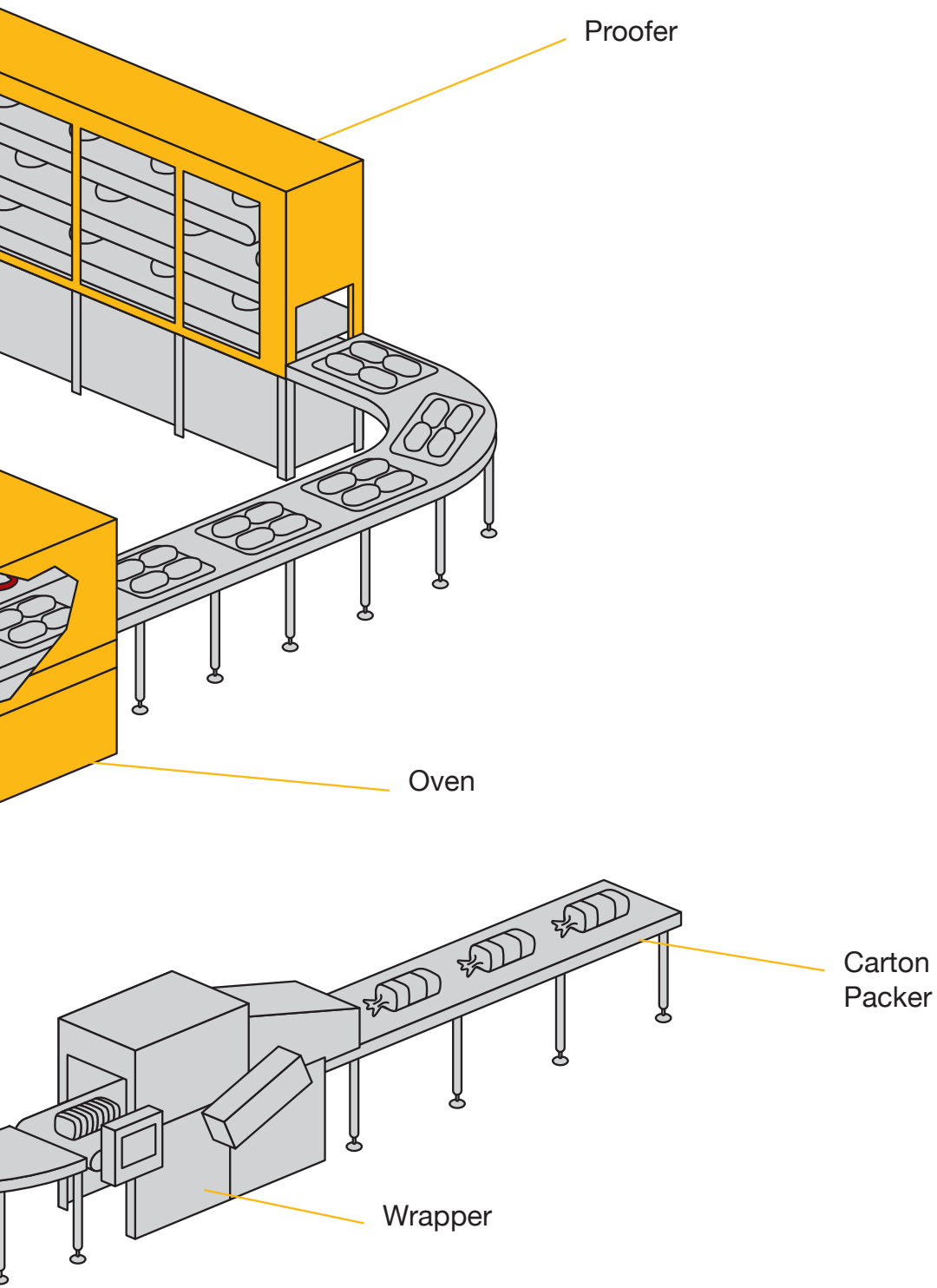
ISO 21469 is the international hygienic standard for the formulation, manufacture and use of H1 lubricants used in the food-processing and pharmaceutical industries. The NSF developed a certification procedure on the basis of ISO 21469, which includes annual inspection of the lubricants-producing plant by a National Sanitation Foundation (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 to be certified under the stringent requirements of this standard.

**What does this mean for you? It means that not only our products are certified, but the whole manufacturing process of our H1 lubricants as well. This ensures complete protection against contamination during lubricant manufacturing.**



Optimally equipped with  
our speciality lubricants





# Mixer

Application points / machine components	Product characteristics	Klüber Lubrication speciality lubricant	Certifications / registrations	Base oil / thickener
Bearings	Universal lubricating grease	Klübersynth UH1 14-151	NSF H1 ISO 21469	synthetic hydrocarbon oil / aluminium complex soap
Gearboxes	Synthetic gear oils for normal temperatures	Klüberoil 4 UH1-220 N	NSF H1 ISO 21469	synthetic hydrocarbon oil
		Klüberoil 4 UH1-320 N		synthetic hydrocarbon oil
		Klüberoil 4 UH1-460 N		synthetic hydrocarbon oil
		Klüberoil 4 UH1-680 N		synthetic hydrocarbon oil
		Klübersynth UH1 6-220	NSF H1 ISO 21469	polyglycol
		Klübersynth UH1 6-320		polyglycol
		Klübersynth UH1 6-460		polyglycol
		Klübersynth UH1 6-680		polyglycol





Service temperature range [°C]	ISO VG	Kinematic viscosity DIN 51562-1 [mm <sup>2</sup> /s] at 40 °C	Kinematic viscosity DIN 51562-1 [mm <sup>2</sup> /s] at 100 °C	Description and benefits
-45 to 120	n.a.	150	22	<ul style="list-style-type: none"> <li>– Applicable through centralised lubrication systems</li> <li>– Also available in NLGI 2 grade as Klübersynth UH1 14-222</li> <li>– Good water resistance and corrosion protection, which reduces the risk of premature bearing failure</li> <li>– Usable for wide service temperature range due to its soft consistency</li> <li>– Suitable for application in rolling and plain bearings, lifting cylinders, joints, cam discs, etc.</li> </ul>
-30 to 120	220	220	26	<ul style="list-style-type: none"> <li>– Wide service temperature range, can be used for a wide range of applications in the food industry</li> </ul>
-30 to 120	320	320	35	<ul style="list-style-type: none"> <li>– Good ageing and oxidation stability for longer oil life</li> <li>– Good wear protection and load-carrying capacity – attains scuffing load stage ≥ 14 in the FZG test</li> </ul>
-30 to 120	460	460	47	<ul style="list-style-type: none"> <li>– Good corrosion protection, neutral towards sealing materials and paints</li> <li>– For the lubrication of spur, bevel and worm gears</li> </ul>
-25 to 120	680	680	65	
-30 to 160	220	220	41	<ul style="list-style-type: none"> <li>– High micropitting resistance offers sufficient protection to highly loaded gears</li> </ul>
-30 to 160	320	320	56	<ul style="list-style-type: none"> <li>– The good CLP-rated rolling bearing wear protection prevents premature bearing failure</li> </ul>
-30 to 160	460	460	78	<ul style="list-style-type: none"> <li>– 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</li> </ul>
-25 to 160	680	680	115	<ul style="list-style-type: none"> <li>– The reduced friction of the polyglycol base oil reduces power losses and improves efficiency – reducing energy bills</li> </ul>

# Dough Divider, Proofer, Chiller/Freezer

## Dough Divider

Application points / machine components	Product characteristics	Klüber Lubrication speciality lubricant	Certifications / registrations	Base oil
High-speed & regular divider knives	Release agent	PARALIQ P 12	NSF H1 NSF 3H ISO 21469	paraffinic mineral oil
	Release agent	PARALIQ 91	NSF H1 NSF 3H ISO 21469	ester oil

## Proofer

Application points / machine components	Product characteristics	Klüber Lubrication speciality lubricant	Certifications / registrations	Base oil
Bearings	Heavy duty grease for wet environment	Klüberfood NH1 94-402	NSF H1 ISO 21469	synthetic hydrocarbon oil / calcium complex soap
Chains	Special chain oil for chains in highly humid areas	Klüberfood NH1 C 8-80	NSF H1 ISO 21469	semi-synthetic

## Chiller/Freezer

Application points / machine components	Product characteristics	Klüber Lubrication speciality lubricant	Certifications / registrations	Base oil / thickener
Bearings	Synthetic grease for low temperatures	Klübersynth UH1 14-31	NSF H1 ISO 21469	synthetic hydrocarbon oil / aluminium complex soap
Chains	Synthetic oil suitable for low temperatures	Klüber Summit HySyn FG 32	NSF H1 ISO 21469	synthetic hydrocarbon oil
Chains	Synthetic spray oil for small chains	Klüberoil 4 UH1-15 Spray	NSF H1 ISO 21469	synthetic hydrocarbon oil
Gears	Synthetic gear oil for low temperatures	Klüberoil 4 UH1-32 N	NSF H1 ISO 21469	synthetic hydrocarbon oil





Service temperature range [°C]	Kinematic viscosity DIN 51562-1 [mm <sup>2</sup> /s] at 40 °C	Kinematic viscosity DIN 51562-1 [mm <sup>2</sup> /s] at 100 °C	Description and benefits
-10 to 60	21	3,7	<ul style="list-style-type: none"> <li>– Based on medically pure oils</li> <li>– Neutral in odour &amp; taste</li> </ul>
n.a.	14	3,6	<ul style="list-style-type: none"> <li>– Neutral in taste and colour</li> </ul>

Service temperature range [°C]	Kinematic viscosity DIN 51562-1 [mm <sup>2</sup> /s] at 40 °C	Kinematic viscosity DIN 51562-1 [mm <sup>2</sup> /s] at 100 °C	Description and benefits
-30 to 160	400	40	<ul style="list-style-type: none"> <li>– Excellent load carrying capacity</li> <li>– Very good corrosion protection and water resistance.</li> <li>– Applicable through centralised lubrication system for rolling bearings subject to high loads</li> <li>– Excellent flow properties to ensure the lubrication point is reliably supplied with lubricant; extended component life</li> </ul>
-30 to 120	80	10	<ul style="list-style-type: none"> <li>– Good stability in highly humid environments</li> <li>– Provides protection against wear and fretting corrosion, thereby optimising the life of drive chains</li> </ul>

Service temperature range [°C]	Description and benefits
-45 to 120	<ul style="list-style-type: none"> <li>– Reliable operation at low temperatures due to soft consistency and low base oil viscosity</li> <li>– Reduced risk of premature component failure due to good adhesion and anticorrosive behaviour</li> <li>– Very good pumpability in centralised lubricating systems prevents lubricant starvation</li> </ul>
-45 to 135	<ul style="list-style-type: none"> <li>– Offers good stability at low temperatures and protection against wear</li> </ul>
-45 to 110	<ul style="list-style-type: none"> <li>– Good penetrative properties facilitating both quick disassembly of component parts and reduced down-time</li> <li>– Corrosion protection properties to maximise component life</li> </ul>
-35 to 120	<ul style="list-style-type: none"> <li>– Good ageing and oxidation stability for longer oil life</li> <li>– Good corrosion protection, neutral towards sealing materials and paints</li> <li>– For the lubrication of spur, bevel and worm gears</li> </ul>

# Ovens

e.g. pizza, tortilla, or wafer ovens and rack, spiral, serpentine or tunnel ovens

## Greases

Application points / machine components	Product characteristics	Klüber Lubrication speciality lubricant	Certifications / registrations	Base oil / thickener
Bearings operating at ambient temperatures	Heavy-duty grease for temperatures <b>below 160 °C</b>	Klüberfood NH1 94-402	NSF H1 ISO 21469	synthetic hydrocarbon oil / calcium complex soap
Bearings operating at high temperatures	Long-term grease for high temperatures <b>above 160 °C</b>	BARRIERTA L 55/2	NSF H1 ISO 21469	PFPE/PTFE

## Oils

Application points / machine components	Product characteristics	Klüber Lubrication speciality lubricant	Certifications / registrations	Base oil
Transport and drive chains	High-temperature chain oil	Klüberfood NH1 CH 2-220 Plus	NSF H1 ISO 21469	ester
Gearboxes	Synthetic gear oils for normal temperatures	Klüberoil 4 UH1-220 N	NSF H1 ISO 21469	synthetic hydrocarbon oil
		Klüberoil 4 UH1-320 N	NSF H1 ISO 21469	synthetic hydrocarbon oil
		Klüberoil 4 UH1-460 N	NSF H1 ISO 21469	synthetic hydrocarbon oil
		Klüberoil 4 UH1-680 N	NSF H1 ISO 21469	synthetic hydrocarbon oil
	Synthetic gear oils for higher temperatures (up to 160 °C)	Klübersynth UH1 6-220	NSF H1 ISO 21469	polyglycol
		Klübersynth UH1 6-320	NSF H1 ISO 21469	polyglycol
		Klübersynth UH1 6-460	NSF H1 ISO 21469	polyglycol
		Klübersynth UH1 6-680	NSF H1 ISO 21469	polyglycol



Service temperature range [°C]	Base oil viscosity DIN 51562-1 [mm <sup>2</sup> /s] at 40°C	Base oil viscosity DIN 51562-1 [mm <sup>2</sup> /s] at 100°C	Colour	Speed factor n · dm [mm · min <sup>-1</sup> ]	Consistency NLGI class DIN 51 81	Description and benefits
-30 to 160	400	40	beige	300,000	2	<ul style="list-style-type: none"> <li>– Excellent load carrying capacity</li> <li>– Very good corrosion protection and water resistance</li> <li>– Applicable through centralised lubrication system for rolling bearings subject to high loads</li> <li>– Excellent flow properties to ensure the lubrication point is reliably supplied with lubricant; extended component life</li> </ul>
-40 to 260	420	40	white	300,000	2	<ul style="list-style-type: none"> <li>– Proven high-temperature stability</li> <li>– Very good resistance to aggressive media</li> <li>– Good compatibility with plastics and elastomers</li> <li>– For the lubrication of rolling and plain bearings and guide rails at high temperatures, e.g. wafer baking machines</li> </ul>

Service temperature range [°C]	ISO VG	Base oil viscosity DIN 51562-1 [mm <sup>2</sup> /s] at 40°C	Base oil viscosity DIN 51562-1 [mm <sup>2</sup> /s] at 100°C	Description and benefits
-20 to 250	220	220	21	<ul style="list-style-type: none"> <li>– Low oil evaporation rate resulting in low residue formation and reduced oil consumption</li> </ul>
-30 to 120	220	220	26	<ul style="list-style-type: none"> <li>– Wide service temperature range, can be used for a wide range of applications in the food industry</li> </ul>
-30 to 120	320	320	35	<ul style="list-style-type: none"> <li>– Good ageing and oxidation stability for longer oil life</li> <li>– Good wear protection and load-carrying capacity – attains scuffing load stage &gt; 12 in the FZG test</li> </ul>
-30 to 120	460	460	47	<ul style="list-style-type: none"> <li>– Good corrosion protection, neutral towards sealing materials and paints</li> <li>– For the lubrication of spur, bevel and worm gears</li> </ul>
-25 to 120	680	680	65	
-30 to 160	220	220	41	<ul style="list-style-type: none"> <li>– High micropitting resistance offers sufficient protection to highly loaded gears and excellent performance in worm gear boxes</li> </ul>
-30 to 160	320	320	56	<ul style="list-style-type: none"> <li>– The good CLP-rated rolling bearing wear protection prevents premature bearing failure</li> </ul>
-30 to 160	460	460	78	<ul style="list-style-type: none"> <li>– 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</li> </ul>
-25 to 160	680	680	115	<ul style="list-style-type: none"> <li>– The reduced friction of the polyglycol base oil reduces power losses and improves efficiency – reducing power bills</li> </ul>

## Other equipment

Application	Application points/ machine components	Klüber Lubrication speciality lubricant	Certifications/ registrations
Chains under wide operating temperature	Chains	Klüberoil 4 UH1-1500 N Spray	NSF H1 ISO 21469
		Klüberfood NH1 4-220 N Spray	NSF H1 ISO 21469
		Klüberfood NH1 CH2-220 Spray	NSF H1 ISO 21469
Chains under normal temperature but special conditions	Chains operating in a sugar bath	Klüberfood NH1 1-17	NSF H1
		Klüberfood NH1 6-10/6-180	NSF H1 ISO 21469
Screw threads	Screw threads	Klüberoil 4 UH1-15 Spray	NSF H1
	Screw threads and slides	Klüberpaste UH1 96-402	NSF H1 ISO 21469



	Base oil	Thickener	Service temperature range [°C]	Description and benefits
	synthetic hydrocarbon oil/ester	none	-25 to 120	<ul style="list-style-type: none"> <li>– Drive and conveyor chain lubrication where maximum adhesion is required, for example in high-speed applications</li> </ul>
	synthetic hydrocarbon oil/ester	none	-30 to 120	<ul style="list-style-type: none"> <li>– Good wear protection to optimise chain life</li> <li>– Maximum penetration to main friction points of the chain</li> </ul>
	synthetic hydrocarbon oil/ester	none	0 to 250	<ul style="list-style-type: none"> <li>– Klüberfood NH1 CH2 220 Spray is suitable for high temperatures with lower evaporation rate</li> </ul>
	white oil	none	n.a.	<ul style="list-style-type: none"> <li>– A contributor to reduced wear and component costs resulting from good penetrative and corrosion protection properties</li> </ul>
	polyglycol oil	none	n.a.	<ul style="list-style-type: none"> <li>– Potential reduction in contamination levels with a greater resistance to sugar build-up</li> </ul>
	synthetic hydrocarbon oil/ester oil	none	-45 to 110	<ul style="list-style-type: none"> <li>– Light penetrating oil to aid disassembly and reduce downtime</li> </ul>
	polyalkylene glycol oil	silicate	-30 to 1200	<ul style="list-style-type: none"> <li>– Reliable dry lubrication at temperatures from 200 °C to 1200 °C</li> <li>– Good adhesion to the friction point, also when subject to humidity</li> </ul>

## Other equipment

Application	Application points/ machine components	Klüber Lubrication speciality lubricant	Certifications / registrations
Compressors	Air screw compressors & pneumatics	Klüber Summit FG 100	NSF H1 ISO 21469
		Klüber Summit FG 200	NSF H1 ISO 21469
	Air reciprocating compressors	Klüber Summit FG 250 or 300	NSF H1 ISO 21469
	Air rotary vane compressors	Klüber Summit FG 300	NSF H1 ISO 21469
	Hydraulics	Klüberfood 4 NH1-32	NSF H1 ISO 21469
		Klüberfood 4 NH1-46	NSF H1 ISO 21469
	Refrigeration compressors	Klüber Summit R 200	NSF H1 ISO 21469
		Klüber Summit RHT 68	NSF H2
		Klüber Summit RPS 52	NSF H1



Base oil	Thickener	Service temperature range [°C]	Description and benefits
synthetic hydrocarbon oil	none	-40 to 135	<ul style="list-style-type: none"> <li>– Synthetic base oil with low volatility ensuring minimum carry-over, minimising contamination risks and consumption, providing typically increased oil life and reduced operating costs</li> <li>– KlüberMonitor analysis scheme recommended to determine the optimum duration of oil use. Please ask your Klüber consultant for advice</li> </ul>
synthetic hydrocarbon oil	none	-40 to 135	<ul style="list-style-type: none"> <li>– Synthetic base oil with low volatility ensuring minimum carry-over, minimising contamination risks and consumption, providing typically increased oil life and reduced operating costs</li> <li>– KlüberMonitor analysis scheme recommended to determine the optimum duration of oil use. Please ask your Klüber consultant for advice</li> </ul>
synthetic hydrocarbon oil	none	-40 to 135	<ul style="list-style-type: none"> <li>– Synthetic oil with low volatility ensuring minimum carry-over, minimising contamination risks</li> <li>– 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</li> </ul>
synthetic hydrocarbon oil	none	-35 to 135	<ul style="list-style-type: none"> <li>– Synthetic base oil with low volatility ensuring minimum carry-over, minimising contamination risks</li> <li>– Increased efficiency resulting from low residue formation to reduce contamination of vanes to prevent sticking and loss of compression</li> <li>– KlüberMonitor analysis scheme recommended to determine optimum duration of oil use. Please ask your Klüber Lubrication consultant for advice</li> </ul>
synthetic hydrocarbon oil	none	-45 to 135	<ul style="list-style-type: none"> <li>– Synthetic base oil with low volatility ensuring minimum carry-over, minimising contamination risks and consumption, providing typically increased oil life and reduced operating costs</li> <li>– KlüberMonitor analysis scheme recommended to determine the optimum duration of oil use. Please ask your Klüber Lubrication consultant for advice</li> </ul>
synthetic hydrocarbon oil	none	-40 to 135	<ul style="list-style-type: none"> <li>– Synthetic base oil with low volatility ensuring minimum carry-over, minimising contamination risks and consumption, providing typically increased oil life and reduced operating costs</li> <li>– KlüberMonitor analysis scheme recommended to determine the optimum duration of oil use. Please ask your Klüber Lubrication consultant for advice</li> </ul>
synthetic hydrocarbon oil	none	down to -50	<ul style="list-style-type: none"> <li>– 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</li> <li>– Pourpoint ≤ -51 °C</li> </ul>
paraffin-based mineral oil	none	down to -39	<ul style="list-style-type: none"> <li>– Low maintenance costs due to extended oil change intervals and reduced oil consumption</li> <li>– Easy compressor oil conversion due to neutral behaviour towards seals</li> <li>– High efficiency of the refrigerating plant due to reduced oil deposits</li> <li>– Low operating costs due to long service life of filters and oil separators</li> <li>– Low oil carry-over and consumption compared to naphthene-based mineral oils</li> </ul>
polyglycol	none	down to -40	<ul style="list-style-type: none"> <li>– Reliable operation of the compressor due to stable viscosity under the influence of refrigerants</li> <li>– High efficiency of the refrigerating plants due to reduced oil deposits</li> <li>– Low operating costs due to long service life of filters and oil separators</li> <li>– Simplified system configuration as the product can be used with dry evaporation</li> </ul>



## Other equipment

Application	Application points/ machine components	Klüber Lubrication speciality lubricant	Certifications/ registrations	
General applications	Water displacement	Klüberfood NH1 4-002 Spray	NSF H1 ISO 21469	
	Cleaner/degreaser	Klüberfood NK1 Z 8-001 Spray	NSF H1 NSF K1 and NSF K3	
	Heat transfer fluid	Klüberfood NHT1 1-16	NSF HT1	
	Motor bearings		Klübersynth UH1 14-222	NSF H1 ISO 21469
			Klübertemp RHB 83-202	NSF H1 ISO 21469
	Corrosion protection		Klüberfood NH1 K 32	NSF H1 ISO 21469



	<b>Base oil</b>	<b>Thickener</b>	<b>Service temperature range [°C]</b>	<b>Description and benefits</b>
	synthetic hydrocarbon oil	none	n.a.	– Good penetrating and water displacement properties
	organic solvent	none	n.a.	– Rapid and thorough removal of oils, greases, waxes and resin residues
	mineral oil	n.a.	0 to 300	– Good thermal stability and efficient heat transfer properties – Low viscosity for faster start-ups – Less maintenance due to highly refined base oil
	synthetic hydrocarbon oil	aluminium complex soap	-25 to 120	– Facilitates product streamlining owing to its wide range of applications – Offers improved surface protection through good adhesion and its particular consistency
	perfluorinated polyether oil	PTFE	-45 to 240	– Long maintenance intervals in applications with high thermal loads - Due to remarkable thermal stability - Due to good corrosion-inhibiting characteristics
	not applicable	n.a.	0 to 80	– Transparent "grease-like" anticorrosive film for the protection of ferrous metals – Provides good anti-corrosion protection for wet areas subject to frequent wash down – Also available as a spray

# Our specialty lubricants for the bakery industry

	Mixer		Dough divider	Proofer		Chiller/Freezer	
	Bearings	Gear-boxes	High-speed & regular divider knives	Bearings	Chains	Bearings	Chains
BARRIERTA L 55/2							
Klüber Summit FG 100, 200, 250, 300							
Klüber Summit HySyn FG 32							X
Klüber Summit R 200							
Klüber Summit RHT 68							
Klüber Summit RPS 52							
Klüberfood 4 NH1-32, -46							
Klüberfood NH1 1-17							
Klüberfood NH1 4-002 Spray							
Klüberfood NH1 4-220 N Spray							
Klüberfood NH1 6-10, 6-180							
Klüberfood NH1 94-402				X			
Klüberfood NH1 C 8-80					X		
Klüberfood NH1 CH 2 Spray							
Klüberfood NH1 CH 2-260 Plus							
Klüberfood NHT1 1-16							
Klüberfood NK1 Z 8-001 Spray							
Klüberoil 4 UH1-220, -320, -460, -680 N		X					
Klüberoil 4 UH1-32 N							
Klüberoil 4 UH1-15 Spray							X
Klüberoil 4 UH1-1500 N Spray							
Klüberpaste UH1 96-402							
Klübersynth UH1 14-151	X						
Klübersynth UH1 14-222	X						
Klübersynth UH1 14-31						X	
Klübersynth UH1 6-220, -320, -460, -680		X					
Klübertemp RHB 83-202							
PARALIQ 91			X				
PARALIQ P 12			X				



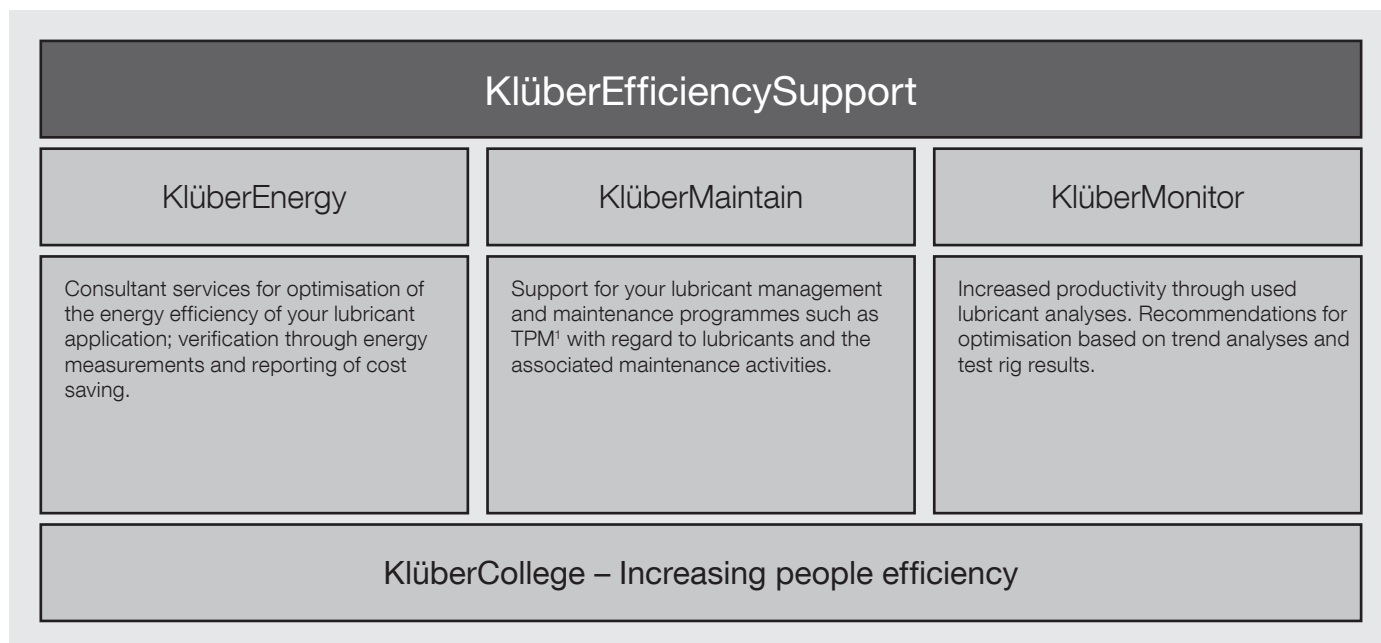
		Oven			Other equipment					
	Gears	Bearings	Chains	Gear-boxes	Chains	Chains, sugar	Screw threads	Compressors	Hydraulics	General applications
		X								
								X		
								X		
								X		
								X		
									X	
						X				
					X					X
					X					
		X				X				
					X					
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	X			X						
							X			
					X					
							X			
										X
				X						
										X

# 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.



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.

<sup>1</sup>) TPM: Total Productive Maintenance

# The right lubricant at the right place at the right time

## Systems for automatic lubrication

We in Klüber Lubrication understand ourselves as a solution provider. We not only supply high-performance oils and greases, but also “intelligent packages” for automatic lubrication of your machines and components. Selected lubricants covering a wide range of typical applications are available in automatic lubricant dispensers for single-point lubrication. These tried-and-tested systems based on electromechanical or electrochemical

technology are available with standard, long-term or high-pressure greases, standard or high-temperature chain oils and special oils and greases for the food-processing industry. We are also able to supply other lubricants in automatic dispensers on request and for higher order volumes, provided they have been tested and approved for use – please contact your Klüber Lubrication consultant for details.

## Your benefits at a glance

### Profitability

Continuous production processes and predictable maintenance intervals reduce production losses to a minimum. Consistently high lubricant quality ensures continuous, maintenance-free long-term lubrication for high plant availability. Continuous supply of fresh lubricant to the lubrication points keeps friction low and reduces energy costs.

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Lubrication with Klübermatic can reduce costs by up to 25 %.

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### Safety

Longer lubrication intervals reduce the frequency of maintenance work and the need for your staff to work in danger zones. Lubrication systems from Klüber Lubrication can therefore considerably reduce occupational safety risks in work areas that are difficult to access.

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Lubrication with Klübermatic can decrease the risk of accidents by up to 90 %.

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### Reliability

Automatic lubrication systems from Klüber Lubrication ensure reliable, clean and precise lubrication around the clock. Plant availability is ensured by continuous relubrication of the application.

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Lubrication with Klübermatic may help to prevent up to 55 % of rolling bearing failures.

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## From low-cost to high-tech – automatic systems for all requirements

Klüber Lubrication offers you the following technological solutions:

- Freely adjustable lubrication increments between 1 and 12 months
- Range of speciality lubricants
- Self-contained or machine-controlled lubrication systems (time control with programmable controller)
- Combination of tried-and-tested Klüber Lubrication lubricants with proven automatic lubricant dispensers

Klübermatic FLEX	Klübermatic NOVA	Klübermatic STAR VARIO	Klübermatic STAR CONTROL
			
<p>Flexible use – and for lubrication points with high requirements.</p>	<p>For applications subject to wide temperature fluctuations.</p>	<p>Precise and adjustable lubricant metering.</p>	<p>Externally controlled single-point relubrication.</p>





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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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