

# Lubricants and operating fluids from Liebherr



**LIEBHERR**

# Lubricants and operating fluids from Liebherr



## Quality products for your Liebherr machine

You expect reliable performance from your Liebherr machine now and in the future. The Liebherr lubricants are precisely tailored to these requirements.

# Developed and tested for your Liebherr machine

## **Quality and reliability**

To be able to meet the growing demands of lubricants in the future, Liebherr continuously invests in research and development of specifically tailored products for Liebherr machines. The lubricants correspond to Liebherr's high standards of quality.

Liebherr lubricants thus enable trouble-free machine performance, short machine response times, good cold start behavior and a reduced warm-up phase. This also includes particularly precise and sensitive controllability of the machines.

Liebherr lubricants are distinguished by a long service life and offer the best possible protection from corrosion and wear for all components.

Take advantage of many years of experience, expertise and original parts from Liebherr. In this way, you can be certain that all components and lubricants are optimally matched and your machines return maximum performance.

# Environmental protection

## **Use of environmentally friendly hydraulic oils**

Biodegradable hydraulic fluids are an environmentally friendly alternative to conventional hydraulic oils on mineral oil basis and are especially recommendable for use in environmentally sensitive areas such as water protection areas.

Liebherr machines can either be filled with environmentally friendly hydraulic oil ex works or retrofitted at a later point in time. When selecting the right environmentally-friendly hydraulic oil, ecological aspects as well as technical aspects should be taken into account. Hydrolysis and oxidation stability, elastomer compatibility, temperature behavior and other properties of the oils used will influence the useful life of the filling and the service life of the components. This means: The total product life cycle from production through use up to disposal has to be taken into account when looking at environmental impact.

With Liebherr Hydraulic Plus and Liebherr Hydraulic Plus Arctic, Liebherr offers two environmentally-friendly hydraulic oils based on polyalphaolefins (PAO). These have outstanding easy glide properties that can positively influence fuel consumption. If the oil is maintained and monitored properly, the oil change intervals can be significantly extended with these oils. The compatibility with elastomers and hoses as well as hydrolysis-stability are comparable with mineral hydraulic fluids.

# The Liebherr Lubricants Service



## Everything from one source

Profit from the many years of experience and the high quality lubricants and operating fluids from Liebherr. Take advantage of the comprehensive lubricants service from your Liebherr Service partner.

### Expert advice and competent service

With Liebherr lubricants, you are on the safe side. Your Liebherr service partner will assist you in all questions regarding the use of lubricants and operating fluids and, together with you, find the optimal product for your individual needs. In addition, he will be happy to provide you with information about the properties of the respective lubricant, about proper and safe use, storage and disposal. The Liebherr service partner will also gladly assist you in preparing your lubrication schedules.

Liebherr lubricants are available in the same high quality worldwide and can be delivered to the right location at any time as needed thanks to a perfectly coordinated logistics system.

From Liebherr, you can obtain all of the lubricants and operating fluids for your Liebherr machine from a single source.

### Oil care

To preserve the quality and service life of an oil as long as possible and to ensure economic use, it all comes down to three factors: the selection of the right filter, a minimum degree of contamination of the oil by foreign substances and careful handling.

### Original filters from Liebherr

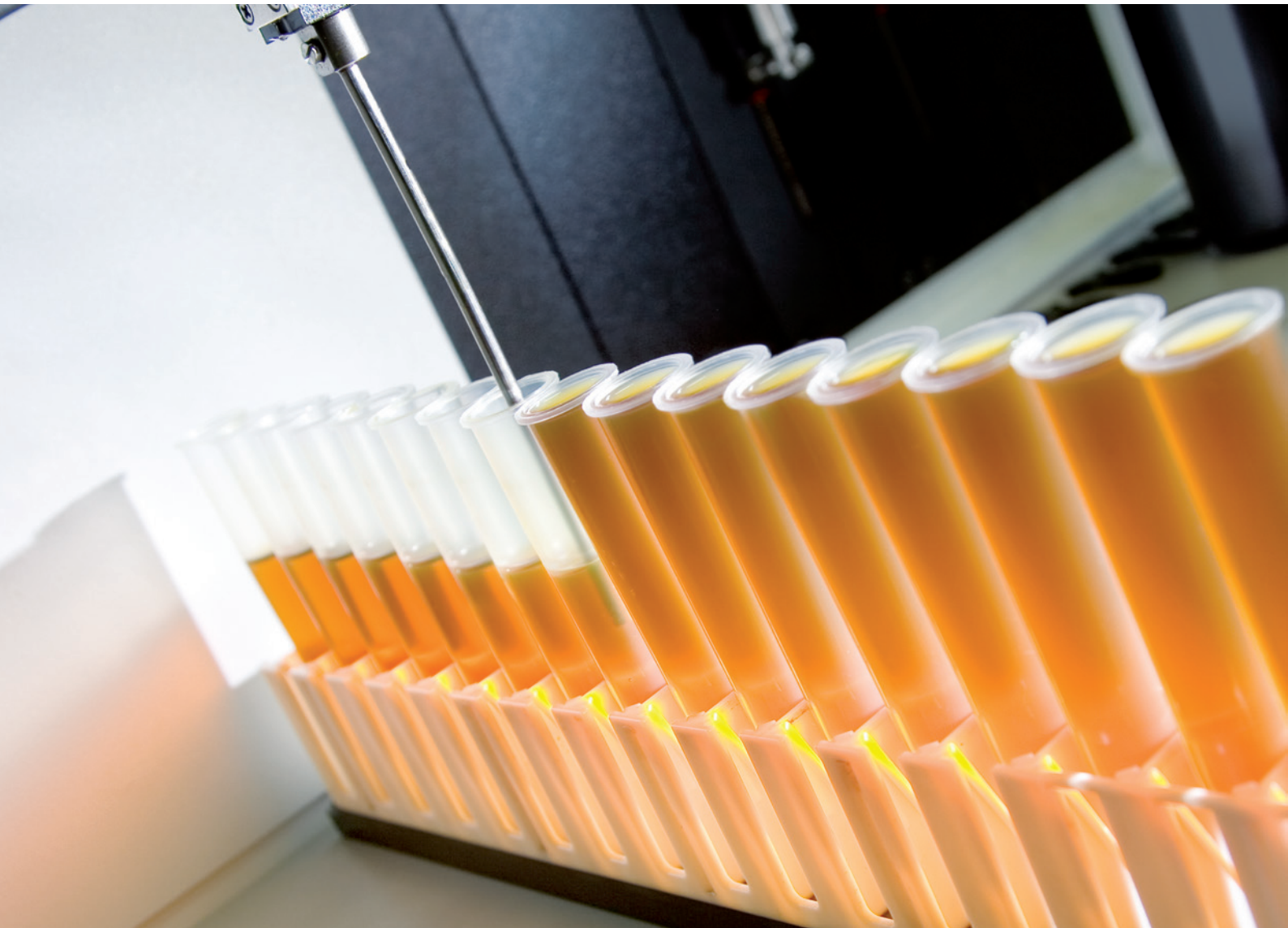
The quality of the oil has a decisive impact on the total life of the engine, transmission and complex hydraulic systems. Long-standing experience from the use of construction machines shows that a large part of all component failures as well as early wear are caused by contamination of the hydraulic system by solid particles. Poorly filtered oil or insufficient lubrication may cause serious and expensive engine damage.

Therefore, Liebherr uses only high-quality original filters in all of its machines. In this way, the risk of expensive component damage and machine downtimes is kept to a minimum.

The difference between an original Liebherr filter and an imitation filter is often indiscernible from the outside. The Liebherr filters are subject to comprehensive tests. This ensures optimum processing and filtering performance. They are adapted optimally to the machine and the Liebherr lubricants and, as a result, they minimize the risk of poor filtration or leakages. Another contributory factor is the outstanding pressure stability of the Liebherr filters. Liebherr therefore recommends that only original filters from Liebherr are used and Liebherr servicing is relied upon.



# Oil analyses



## The cost effective alternative

Ever-increasing demands are being placed on modern hydraulics systems in terms of performance and precision, demands that the operating medium used in the system also has to fulfill. To safeguard the oil quality during consumption and thereby determine the oil change intervals optimally, Liebherr recommends that used oil analyses are carried out at regular intervals.

## Oil change at the right point in time

### **The condition of the oil is decisive**

During their use, hydraulic fluids are exposed in some cases to extreme conditions, environmental influences and risks. This can result in hazardous contamination and shortened effective lifespans of the oil.

### **Oil changes in Liebherr machines according to the maintenance guideline**

The necessity of an oil change depends essentially on the condition of the oil, which is influenced in no small way by the machine application.

For normal use, change intervals for Liebherr oils are recommended in the operator's manual.

Determining the condition of the oil is more precise by means of an oil analysis.

### **Oil changes with lubricant analyses are a cost effective alternative**

With the use of lubricant analyses in conjunction with respective care and maintenance, the oil change intervals during normal deployment can be significantly extended.

### **Easy and efficient sample taking**

With the prepared oil analysis sets, oil sampling can be carried out easily and efficiently. Clearly structured analysis reports provide information about the condition of the machine at a glance.



## Convenient diagnosis to protect your machine

### **Protection and optimization**

With oil analyses:

- Targeted oil change at the optimum point in time
- Find out about the condition of the lubricant inspected
- Discover potential damage at an early stage
- Reduce the burden on the environment with less used oil

### **Ready-to-use analysis sets and online laboratory reports**


With the practical analysis sets, samples can be taken quickly, cleanly and easily. The costs of a complete analysis are included in the price. For samples received in the laboratory by 12 noon with all of the requisite details, the lab reports will be returned by the next day at the latest and comprehensible comments provided by e-mail, post or fax.


### **Advice from your Liebherr service partner**
















Your Liebherr service partner will assist you in all questions regarding the use of lubricants and operating fluids and, together with you, find the optimal product for your individual needs.



# Product range

Product group	Product name	Viscosity/ Labeling	Ambient temperature
 <b>Motor oil</b> With Liebherr engine oil, you can maintain the properties of the engines fitted in Liebherr machines for as long as possible.	Liebherr 10W-40 motor oil	SAE 10W-40 ACEA E4	-25°C to +40°C
	Liebherr 10W-40 low ash motor oil	SAE 10W-40 ACEA E6	-25°C to +40°C
	Liebherr 5W-30 motor oil	SAE 5W-30 ACEA E4	-30°C to +35°C
	Liebherr 5W-30 low ash motor oil	SAE 5W-30 ACEA E6	-30°C to +35°C
	Liebherr Gas Engine Oil 40	SAE 40	0°C to + 40°C

 <b>Hydraulic fluid</b> Precise control and optimum efficiency, even under extreme operating conditions, are expected from hydraulic systems these days. Liebherr hydraulic oils were especially designed for high pressure, high temperature, high wear resistance and good elastomer compatibility, corrosion protection and minimization of wear. Furthermore, they allow long oil change intervals and reduce stick-slip.	Liebherr Hydraulic Basic 68	ISO VG 68	-10°C (cold start) to +45°C
	Liebherr Hydraulic Basic 100	ISO VG 100	0°C (cold start) to +55°C
	Liebherr Hydraulic HVI	ISO VG 46	-20°C (cold start) to +40°C
	Liebherr Hydraulic 37	VG 37	-25°C (cold start) to +50°C

Key				
 Construction cranes	 Mobile harbor cranes	 Wheeled excavators	 Offshore cranes	 Crawler excavators
 Dump trucks	 Duty-cycle crawler cranes	 Mobile construction cranes	 Crawler tractors	 Crawler cranes
 Truck mixers	 Crawler loaders	 Mobile cranes	 Wheel loaders	 Telescopic handlers



## Use

## Properties and special features\*



- Long oil change intervals for diesel engines in Liebherr machines
- High wear and corrosion protection as well as aging stability



- Low-ash oil for diesel engine technology with exhaust gas treatment
- Long oil change intervals
- High wear and corrosion protection as well as aging stability



- Easy glide oil
- Long oil change intervals
- High wear and corrosion protection as well as aging stability



- Easy glide oil
- Low-ash oil for diesel engine technology with exhaust gas treatment
- Long oil change intervals



- Suitable for gas engines operated with natural gas or special low emission gases as well as pretreated special gases such as biogas or sewage and landfill gases
- Excellent neutralization capacity for long oil change intervals

pecially developed to meet these requirements and contribute significantly to the performance and efficiency of your machines. They are characterized by high thermal and elastic hysteresis of the hydraulic system.



- Outstanding detergent and dispersant behavior
- Very good corrosion protection



- Especially for hot climate zones
- Outstanding detergent and dispersant behavior
- Very good corrosion protection




- High-quality multi-grade hydraulic oil
- Optimized fine control with reduced warm-up phase
- Increased aging stability for long service intervals and low maintenance costs




- High-quality multi-grade hydraulic oil
- Optimized fine control with reduced warm-up phase

\* For further information about the properties, application possibilities and product numbers of the Liebherr lubricants, refer to the latest technical data sheets of the respective products, which can be viewed at [www.liebherr.com](http://www.liebherr.com). The Liebherr lubricant hotline (Tel.:+49 7354/80 6060; email: [lubricants@liebherr.com](mailto:lubricants@liebherr.com)) is happy to provide assistance should you have any queries. It can be reached by phone from Monday to Friday (apart from national holidays in Germany) from 8am to 4pm. We reserve the right to change data due to further development and conversion of products.
















# Product range

Product group	Product name	Viscosity/ Labeling	Ambient temperature
 <b>Environmentally-friendly hydraulic oils</b> The two high-performance oils Liebherr Hydraulic Plus and Liebherr Hydraulic Plus Arctic based on polyalphaolefins (PAO) are biodegradable (biodegradation (21 d) directly the disappearance of the oil up to the degradation level of water solubility.	Liebherr Hydraulic Plus	ISO VG 46	-25°C (cold start) to +45°C

Liebherr Hydraulic Plus Arctic	VG 25	gen. -40°C (cold start) to +30°C for use in Liebherr cranes: -40°C (cold start) to +50°C
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 <b>Axle and transmission oils</b> Axle and transmission oils from Liebherr were especially developed for components where high friction values and shearing forces occur. The use of high-grade base conditions.			
Liebherr Gear Basic 90LS	SAE 85W-90	For Liebherr earth-moving machines: -30°C to +50°C in gearboxes, axles and splitter boxes without oil cooler -5°C to +50°C in splitter boxes with oil cooler For Liebherr cranes: The use temperatures are specific to the machine and are listed in the operator's manual.	
Liebherr Gear MF 80W	ISO VG 68	For Liebherr earthmoving machines: -30°C to +50°C in gearboxes, axles	

## Key

 Construction cranes	 Mobile harbor cranes	 Wheeled excavators	 Offshore cranes	 Crawler excavators
 Dump trucks	 Duty-cycle crawler cranes	 Mobile construction cranes	 Crawler tractors	 Crawler cranes
 Truck mixers	 Crawler loaders	 Mobile cranes	 Wheel loaders	 Telescopic handlers

## Use

## Properties and special features\*

ays, so-called primary degradation) according to CEC-L-103-12  $\geq 60\%$ ) and are suitable for applications in environmentally sensitive areas. The test method examines



- Biodegradable
- Outstanding high and low temperature behavior with heavily reduced warm-up phase
- Significantly extended oil change intervals with respective oil care and monitoring through oil analyses
- Low air intake and good air separation properties
- Elastomer compatibility comparable with mineral oils
- Hydrolysis stability comparable with mineral oils



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- Hydrolysis stability comparable to mineral oils

asic oils and matched additives helps achieve optimum friction and wear behavior. This ensures a long service life of the components, even under demanding operating




- Limited slip additives (LS additives)
- Good aging stability
- Developed for axle transmissions with limited slip differentials in Liebherr earthmoving machines and material handlers
- Optimized wear and corrosion protection


















- Outstanding wear protection
- High shear stability
- Good response even at low temperatures
- Especially developed for new axle generation with LS additives
- Particularly suitable for very high thermal and mechanical loads with wet brake/limited slip differential systems

\* For further information about the properties, application possibilities and product numbers of the Liebherr lubricants, refer to the latest technical data sheets of the respective products, which can be viewed at [www.liebherr.com](http://www.liebherr.com). The Liebherr lubricant hotline (Tel.:+49 7354/80 6060; email: [lubricants@liebherr.com](mailto:lubricants@liebherr.com)) is happy to provide assistance should you have any queries. It can be reached by phone from Monday to Friday (apart from national holidays in Germany) from 8am to 4pm. We reserve the right to change data due to further development and conversion of products.

# Product range

Product group	Product name	Viscosity/ Labeling	Ambient temperature
 <b>Axle and transmission oils</b> Axle and transmission oils from Liebherr were especially developed for components where high friction values and shearing forces occur. The use of high-grade ba- conditions.	Liebherr Gear Hypoid 90EP	SAE 85W-90EP	For Liebherr earth-moving machines: -30°C to +50°C in gearboxes, axles and splitter boxes without oil cooler -5°C to +50°C in splitter boxes with oil cooler For Liebherr cranes: The operating temperatures are specific to the ma- chine and are listed in the operator's manual.
	Liebherr Hypoid 85W-140 EP	SAE 85W-140	For Liebherr earth-moving machines: -25°C to +50°C in gearboxes and splitter boxes without oil cooler +5°C to +50°C in splitter boxes with oil cooler For Liebherr cranes: The operating temperatures are specific to the ma- chine and are listed in the operator's manual.
	Liebherr Hydraulic-Gear ATF	SAE 5W-20	For Liebherr earth-moving machines: -25°C to +50°C in gearboxes and splitter boxes without oil cooler +5°C to +50°C in splitter boxes with oil cooler For Liebherr cranes: The operating temperatures are specific to the ma- chine and are listed in the operator's manual.
	Liebherr Syntogear Plus 75W-90	SAE 75W-90	For Liebherr earth-moving machines: -40°C to +50°C in gearboxes, axles and splitter boxes without oil cooler -20°C to +50°C in splitter boxes with oil cooler For Liebherr cranes: The operating temperatures are specific to the ma- chine and are listed in the operator's manual.

## Key

 Construction cranes	 Mobile harbor cranes	 Wheeled excavators	 Offshore cranes	 Crawler excavators
 Dump trucks	 Duty-cycle crawler cranes	 Mobile construction cranes	 Crawler tractors	 Crawler cranes
 Truck mixers	 Crawler loaders	 Mobile cranes	 Wheel loaders	 Telescopic handlers

## Use

## Properties and special features\*

Basic oils and matched additives help achieve optimum friction and wear behavior. This ensures a long service life of the units, even under demanding operating



- Excellent corrosion protection
- High-pressure gearbox oil for axle gearboxes (with EP additives)
- Good aging stability



- Especially for final drives in Liebherr crawler tractors and crawler loaders
- High-pressure gearbox oil




- Excellent corrosion protection
- Special-alloy power transmission oil for automatic transmissions and special hydraulics in cranes.
- Reduction of wear and friction



















- Fully synthetic transmission oil with outstanding aging stability
- Reduction in fuel consumption
- Especially developed for low temperature use
- Long oil change intervals of up to 1000 Bh\*

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# Product range

Product group	Product name	Viscosity/ Labeling	Ambient temperature
 Greases	Liebherr universal grease 9900	KPF 2 N-25	-25°C to +150°C
	Liebherr arctic universal grease	KPFHC 1 N-60	-60°C to +140°C
	Liebherr Telescopic Grease 9613 Plus KP 2 K-30		-30°C to +120°C
	Liebherr spray paste	MPF 00 G-40	-40°C to +100°C, briefly to +120°C
	Liebherr chisel paste	MF 2-3 P-20	-20°C to +150°C

Special lubricants	Liebherr offers special lubricants for special applications such as the lubrication of screws or plug tools and wear bushings in hydraulic and pneumatic hammers, w		
	Liebherr Gear PG 150	ISO VG 150	See technical product information
	Liebherr Gear PG 220	ISO VG 220	See technical product information
	Liebherr special bolt paste		See technical product information
	Liebherr Gear Multi HDC-B		See technical product information
	Liebherr WR-Lube SC		See technical product information

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## Use



## Properties and special features\*

- VKA welding force > 6000 N
- Highly effective special corrosion protection
- Lubrication of swing ring, roller bearing, pins, gear rings, axles, bolts and much more.
- Pumpable and transportable in central lubrication systems at temperatures down to -20°C
- Pumpable and transportable in central lubrication systems at temperatures down to -55°C
- Lubrication of swing rings, roller bearing, pins, gear rings, axles, bolts and much more.
- Very strong adhesive properties, flex-stable, non-aging and water-resistant
- Special jib grease for telescopic applications in Liebherr machines
- Very low coefficient of friction
- Anti-stick-slip properties to prevent stick-slip motions, even under wet conditions
- High adhesive properties on plastic
- Sprayable, cold-flexible paste with finest graphite for engagement of tooth flanks
- Increased corrosion protection
- Emergency running properties
- Water-resistant
- Sprayable from -25 to 100°C
- Special paste for lubricating insert tools and wear sleeves in hydraulic and pneumatic hammers
- Very resistant to flexure and oxidation as well as thermal loads
- Fill level can be checked easily through inspection window in cartridge


which are designed to exactly meet these requirements.



















- Fully synthetic high performance gear oil
- Optimized resistance to aging for extended oil change intervals
- Fully synthetic high performance gear oil
- Optimized aging resistance for extended oil change intervals
- Optimized for high tensile, preloaded (HV) threaded connections
- Solid lubricants do not react with the screw material
- Enables consistent and reproducible friction conditions for requisite preload in threaded connections
- Good wear protection
- High safety reserves with regard to deposits in engine
- Re-conservation of cables
- Excellent corrosion protection
- Excellent adhesive properties and outstanding creeping properties

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# Product range

Product group	Product name	Viscosity/ Labeling	Ambient temperature
 <b>Special lubricants</b> Liebherr offers special lubricants for special applications, such as the lubrication of screws or insert tools and wear sleeves in hydraulic and pneumatic hammers, v	Liebherr Fluid X-1	ISO VG 46	-40 to +50°C
	Liebherr Syntogear Plus	ISO VG 150/220/320/460	See technical product information
	Liebherr special grease 9610 Plus	KP 2 K-20	See technical product information

Product group	Product name	Ambient temperature
 <b>Coolants</b> Liquid-cooled engines need an effective coolant in order to sustain their performance on an ongoing basis. Liebherr antifreeze was tested to strict standards and, v	Liebherr concentrated antifreeze	See technical product information
	Liebherr Antifreeze Mix	See technical product information
	Liebherr Antifreeze OS Concentrate	See technical product information
	Liebherr Antifreeze OS Mix	See technical product information

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## Use

which are designed to exactly meet these requirements.



## Properties and special features\*

- For use in Liebherr energy storage cylinder
- Low air intake, good air separation properties and low foaming
- Good elastomer compatibility
- Outstanding high-temperature and low-temperature behavior
- Designed for assemblies exposed to high loads
- Good resistance to aging for long oil change intervals
- Highly effective corrosion protection
- Strong adhesive properties, squeeze-stable, non-aging and water-resistant

When used in Liebherr machines, meets the highest demands on function, quality, safety and environmental protection.



- Concentrate for mixing with water
- Contains silicate
- Free of nitrate, amine and phosphate
- Effectively prevents corrosion and deposits in the cooling system
- Protection against cavitation and erosion damage
- Change intervals of up to 3,000 Bh



- Ready-to-use mix
- Contains silicate
- Free of nitrate, amine and phosphate
- Effectively prevents corrosion and deposits in the cooling system
- Protection against cavitation and erosion damage
- Change intervals of up to 3,000 Bh



- Concentrate with extended change intervals for mixing with water
- Contains silicate
- Free of nitrate, phosphate and borate
- Effectively prevents corrosion and deposits in the cooling system
- Protection against cavitation and erosion damage
- Change interval of up to 6,000 Bh



- Ready-to-use mix with extended change intervals
- Contains silicate
- Free of nitrate, phosphate and borate
- Effectively prevents corrosion and deposits in the cooling system
- Protection against cavitation and erosion damage
- Change interval of up to 6,000 Bh

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# The Liebherr Group of Companies



## Wide Product Range

The Liebherr Group is one of the largest construction equipment manufacturers in the world. Liebherr's high-value products and services enjoy a high reputation in many other fields. The wide range includes domestic appliances, aerospace and transportation systems, machine tools and maritime cranes.

## Exceptional Customer Benefit

Every product line provides a complete range of models in many different versions. With both their technical excellence and acknowledged quality, Liebherr products offer a maximum of customer benefits in practical application.

## State-of-the-art Technology

To provide consistent, top quality products, Liebherr attaches great importance to each product area, its components and core technologies. Important modules and components are developed and manufactured in-house, for instance the entire drive and control technology for construction equipment.

## Worldwide and Independent

Hans Liebherr founded the Liebherr family company in 1949. Since that time, the enterprise has steadily grown to a group of more than 130 companies with over 41,000 employees located on all continents. The corporate headquarters of the Group is Liebherr-International AG in Bulle, Switzerland. The Liebherr family is the sole owner of the company.

[www.liebherr.com](http://www.liebherr.com)

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