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## Innovation in open gear lubrication.

The new Klübersynth OA 98-15000

Beige colour - improved adhesion - enhanced durability



## Lubrication of open gear drives

Excessive wear and flank damage can be avoided if the meshing tooth surfaces are completely separated by a lubricant film. This, however, is almost impossible in large open gear drives due to the relatively low peripheral speed, the very high flank pressure and the relatively high flank roughness.

To lubricate large gear drives reliably and protect them against damage, special types of base oil are selected that have the right viscosity, contain EP (extreme pressure) additives and sometimes also the right amount and type of solid lubricants.

## Current scenario

Greases that contain powdery graphite as solid lubricants are most frequently used for open gear lubrication. There are some challenges involved in the use of these traditional lubricants:

- Downtime due to automated spraying system blocked by graphite
- Pollution of working environment by black particles
- Difficult visual inspection of gears due to low contrast of traditional lubricant to gear surface
- Build-up of used lubricant at tooth roots
- Loss of excess lubricant due to low adhesion and cohesion properties

## Innovative Solid Lube Integrated Base Fluid (SLIBF) concept

Backed by the company's over 80 years of experience, researchers at Klüber Lubrication have developed Klübersynth OA 98-15000 to enhance the durability of open gears and improve productivity in customer applications.

Klüber Lubrication used an advanced Solid Lubricant Integrated Base Fluid (SLIBF) concept to develop an innovative product for open gear drives.

Klübersynth OA 98-15000 is significantly different from traditional open gear lubricants.

## Open gear lubricants

Klübersynth OA 98-15000 meets the lubrication requirements according to ANSI/AGMA 6014-B15 Annex D. The properties of the lubricant based on the Solid Lube Integrated Base Fluid (SLIBF) concept is compared with other open gear drive lubricant concepts.

## Benefits of Klübersynth OA 98-15000

- Enhanced visual inspection due to beige colour
- High operational reliability due to better sprayability and pumpability
- Enhanced durability of tooth flanks due to high wear protection
- High viscosity base fluid, a mixture of synthetic hydrocarbons and mineral oil
- The innovative formulation assists in reducing vibrations and gear tooth temperatures and provides enhanced wear protection of the gear teeth during operation
- Cleaner working environment because of colour and better adhesion
- Free from powder-based solid lubricant and thus pumpable without clogging nozzles
- The presence of integrated solid lubricant provides good load carrying ability by forming a sacrificial layer on the tooth flank surface
- Health and safety aspects improved as no asphaltic and volatile solvents are contained in the lubricant
- Application in open gear drives by immersion, paddle wheel, force-feed and spray lubrication methods



Beige coloured Klübersynth OA 98-15000

### Klübersynth OA 98-15000 compared with other open gear lubricant concepts

Property	Asphalt base	Graphite base	Klübersynth OA 98-15000 with SLIBF
Appearance	Dark	Dark	Beige
Wear protection	+	+	++
Adhesion	+	+	++
Pumpability	+	+	++

+ Standard rating ++ High rating



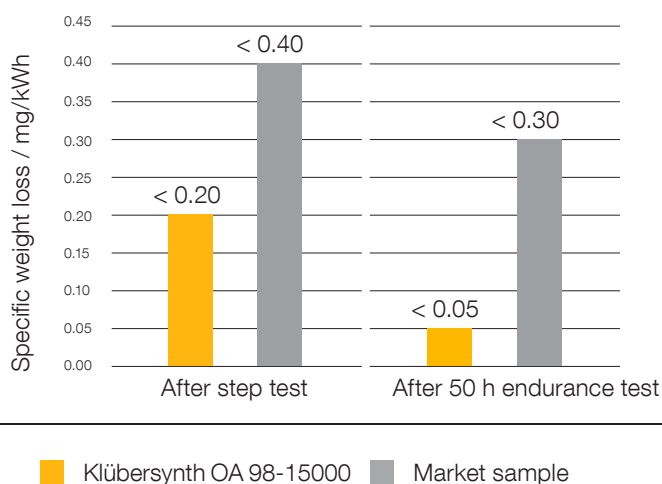
## Enhanced wear performance

Test standard: DIN ISO 14635-3

Klübersynth OA 98-15000 has proven to provide outstanding wear and scuffing protection by passing load stage 12 combined with a low specific weight loss in the FZG A/2.8/50 scuffing step test.

Furthermore, Klübersynth OA 98-15000 showed very low wear in the subsequent endurance test with a duration of 50 h at a peripheral speed of 2.8 m/s and load stage 10.

### FZG scuffing test, based on DIN ISO 14635-3, A/2.8/50



## Sprayability

The sprayability of Klübersynth OA 98-15000 was tested in a Lincoln pneumatically operated spray testing machine. The open gear lubricant showed excellent sprayability which provides safe operation with the correct amount and a homogeneous distribution of the lubricant.



Homogenous spray pattern of Klübersynth OA 98-15000

## Field trials

Klübersynth OA 98-15000 was tested on various open gears in the raw materials processing industry.



Open gear lubricated with Klübersynth OA 98-15000

The field trials showed the following benefits for the customer:

- Homogenous and adhesive lubricant film on tooth flanks
- Carefree operation
- Continuous lubricant supply by pumping and spraying system
- Easier flank inspection during operation due to beige colour
- Vibration and temperature reduction
- Reduced lubricant consumption

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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.