

# Klübersynth FB 4-32, 4-46, 4-68

Clean synthetic machine tool spindle oil for high-speed bearings, purity class in production stage 15/13/10 according to ISO 4406



## Your benefits at a glance

- Longer oil life due to good resistance to ageing and oxidation
- Reliable bearing operation across the speed range and at high speed factors
- High machine availability due to reduced maintenance requirement
- High degree of oil cleanliness
- High VI index - low influence of temperature fluctuations on viscosity

## Your requirements - our solution

Do you want your high-speed oil-lubricated machine tool spindle bearings to work reliably and meet your high-level operational requirements?

Do you also want to achieve the expected service for the design life of your spindle?

With these critical operational requirements in mind Klüber Lubrication have developed Klübersynth FB 4 oils to fulfil the extreme operational requirements of modern machine tools.

Klübersynth FB 4 is a finely filtered speciality lubricant made on the basis of a PAO and shows a high degree of purity.

Klübersynth FB 4 contributes to high tool spindle availability and reduces friction and wear in the bearings.

The performance capacity of Klübersynth FB 4-68 was tested and confirmed by Werkzeugmaschinenlabor WZL at RWTH Aachen (Germany).

## Application

The Klübersynth FB 4 series is applied to rolling bearings in high-speed tool spindles using oil-air lubrication systems.

## Application notes

Please apply the oil directly into the lubrication system reservoir from the original package to ensure that the high purity of the oil is maintained without external contamination.

In the production stage, the oil shows a degree of purity of 15/13/10. During filling, the degree of purity may be affected by influences originating from the containers.

Ensure clean filling and that reservoirs and lubrication systems are fully closed following filling.

## Material safety data sheets

Material safety data sheets can be requested via our website [www.klueber.com](http://www.klueber.com). You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klübersynth FB 4-32	Klübersynth FB 4-46	Klübersynth FB 4-68
Canister 3,8 l	+	+	
Canister 5 l			+
Bucket 19 l	+	+	+
Drum 208 l	+		+

# Klübersynth FB 4-32, 4-46, 4-68

Clean synthetic machine tool spindle oil for high-speed bearings, purity class in production stage 15/13/10 according to ISO 4406



Characteristics	Klübersynth FB 4-32	Klübersynth FB 4-46	Klübersynth FB 4-68
Article number	012317	012318	012319
Appearance	clear	clear	clear
Colour space	yellow	yellow	yellow
Service temperature, lower limit	-40 °C	-30 °C	-30 °C
Service temperature, upper limit	140 °C	140 °C	140 °C
Density, DIN 51757, 20°C	approx. 0.85 g/cm <sup>3</sup>	approx. 0.86 g/cm <sup>3</sup>	approx. 0.86 g/cm <sup>3</sup>
Flash point, DIN EN ISO 2592, Cleveland open cup	≥ 240 °C	≥ 260 °C	≥ 250 °C
Purity level, ISO 4406	15-13-10	15-13-10	15-13-10
ISO viscosity grade, DIN ISO 3448, ISO VG	32	46	68
Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 100°C	approx. 6 mm <sup>2</sup> /s	approx. 7.6 mm <sup>2</sup> /s	approx. 9.6 mm <sup>2</sup> /s
Kinematic viscosity, DIN EN ISO 3104 / DIN 53000-1, based on standard / ASTM D445 / ASTM D7042, 40°C	approx. 32 mm <sup>2</sup> /s	approx. 46 mm <sup>2</sup> /s	approx. 68 mm <sup>2</sup> /s
Viscosity index, DIN ISO 2909	≥ 125	≥ 125	≥ 125
Pour point, DIN ISO 3016, ASTM D97, ASTM D5950, ASTM D7346	≤ -48 °C	≤ -36 °C	≤ -36 °C
Speed factor (n x dm)	-	-	approx. 2500000 mm/min
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	36 months	36 months	36 months

## 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 95 years.

Klüber Lubrication München GmbH & Co. KG /  
Geisenhausenerstraße 7 / 81379 München / Germany /  
phone +49 89 7876-0 / fax +49 89 7876-333.

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. Klüber products are continually improved. Therefore, Klüber Lubrication reserves the right to change all the technical data in this document at any time without notice.

Publisher and Copyright: Klüber Lubrication München GmbH & Co. KG. Reprints, total or in part, are permitted only prior consultation with Klüber Lubrication München GmbH & Co. KG and if source is indicated and voucher copy is forwarded.