



Tribology Cell for HAAKE Rheometers

For the rheometers HAAKE MARS, RheoStress 6000 and predecessor models identical in construction and equipped with a normal force sensor, a measuring cell has been developed for testing the tribological behaviour of bearing materials.

The tribology cell described here consists of a lower and an upper part. Both are made of stainless steel. The lower measuring geometry is designed as a reservoir. Measurement of the friction of bearing materials with and without lubricant can be performed. To measure the influence of a lubricant the reservoir can be filled with the lubricant to be tested.

The upper measuring geometry is equipped with a flexible shaft, which ensures the concentric position of a ball with a diameter of 1/2" in the measuring cell. Usually steel bearing balls are used but other materials like e.g. ceramic are also possible.

Replacing the ball is easily and quickly done, to perform every test with a fresh ball as recommended.

For temperature dependent tests between - 40 °C and 200 °C the lower measuring geometry can be adapted on a modified measuring plate cover for a Peltier temperature control unit. Also the measuring cell can be integrated into the Control Test Chamber by adapting the lower measuring geometry onto a suitable holder.

By using the HAAKE RheoWin software a fully automatic measuring procedure can be defined to measure the tribological behaviour of material combinations with or without lubrication. Usually a constant normal force F_n (typical values: 1, 3 and 6 N) is applied and the rotational speed is increased. Typically the result is given as the dimensionless friction coefficient f , which can be calculated as quotient of the measured friction force F_f divided by the normal force applied.

Key-words

- HAAKE MARS
- HAAKE RheoStress
- Tribology behaviour
- Friction coefficient and force
- Normal force

Ordering Information:

603-0347 Tribology cell made of stainless steel consisting of an upper holder with a flexible shaft and an adapter for bearing balls with a diameter of 1/2", (incl. 5 bearing balls) as well as a lower measuring cell

Required accessories:

Lower holder, e.g. measuring plate cover for usage with Peltier temperature control unit or lower holder for usage with Controlled Test Chamber



From left to right

Fig. 1: Tribology cell consisting of upper holder with adapter for exchangeable bearing balls and lower measuring geometry

Fig. 2: Lower measuring geometry adapted on a measuring plate cover and upper holder in measuring position

Fig. 3: Lower measuring geometry adapted on a lower holder for the Controlled Test Chamber



Fig. 4 – 6: Easy and user-friendly remove of a used bearing ball from the upper holder of the tribology cell

Dr. Cornelia Küchenmeister
Dr. Klaus Oldörp

Thermo Fisher Scientific
Process Instruments
Dieselstr. 4
76227 Karlsruhe
Tel: +49 (0) 721 4 09 44 44
Info.mc.de@thermofisher.com

www.thermo.com/mc