SYNT-HP

High pressure oil for precision mechanics

MOEBIUS SYNT-HP is a group of high pressure oils available in 4 viscosities. They are based on synthetic components and a combination of specially selected high pressure additives. The excellent ageing stability ensures a constant viscosity over a long time.

The oils show an outstanding high pressure resistance and an excellent reduction of friction-caused wear and tear as well as a superior lubricating and adherence capacity. The friction coefficient remains stable at low and high humidities. The oils are compatible with non-ferrous metals and are non-toxic.

Technical Data	**HP-500**	**HP-750**	**HP-1000**	**HP-1300**
Viscosity at 0 °C/cSt	2300	3300	4700	5900
Viscosity at 20 °C/cSt	511	731	1013	1267
Viscosity at 40 °C/cSt	157	221	295	307
Viscosity at 80 °C/cSt	33.3	44.3	56.8	68
Coefficient of viscosity	136	143	144	167
10 000 cSt at °C	−16	−12	−8	−6
Surface tension at 25 °C: dyn/cm	33.2	33.6	34.1	34.8
Density at 20 °C	0.925	0.925	0.925	0.925
Pour point °C	−36	−36	−39	−41
Acidity in mg KOH/g	1.09	1.13	1.26	1.37
Saponification number in mg KOH/g	172	170	151	148
Test of evaporation: 10 g oil/100 °C/surface 19 cm^2 loss after 5 days	0.56%	0.59%	0.60%	0.59%
Baader ageing test: Change in viscosity after 50 days	+7%	+7%	+7%	+7%
Temperature range °C	−35 to +100	−35 to +100	−35 to +100	−35 to +100

SYNT-HP is used in precision mechanics where high pressures occur and where high standards are needed for ageing stability of the lubricant.
Range of application:

- mechanical watches (gear train, barrel-arbor, steel/steel friction-partners)
- board instruments
- micromotors
- mini-ballbearings, etc.

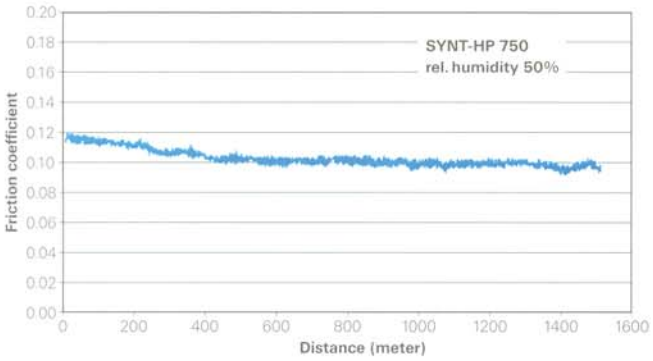
The viscosity is selected according the purpose of use and the power reserve of the mechanism.

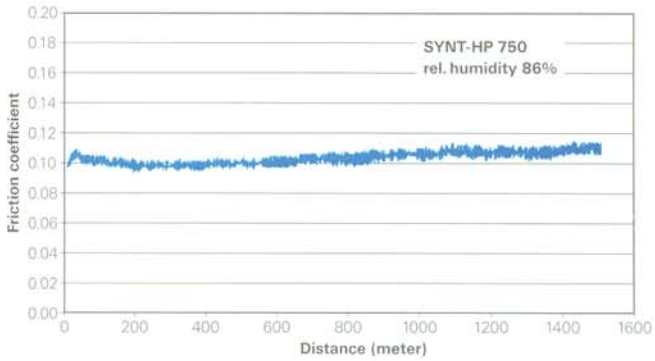
Tribometertest: *Ball/Disc*

Test parameter: F = 5N; v = 1 cm/s; steel-ball 100Cr6, ∅ 3 mm; steel-disc 100Cr6, ∅ 20 mm, high polish; rel. humidity 50% resp. 86%; oil-quantity 100 µl; friction distance L = 1500 m; friction-radius 3 mm.

Oil-Type	50% relative humidity			86% relative humidity		
	Friction coefficient		*Wear and tear in 10^{-17} m³/N.m*	*Friction coefficient*		*Wear and tear in 10^{-17} m³/N.m*
	Average value	*Maximum value*		*Average value*	*Maximum value*	
HP 500	0.112	0.117	4.2	0.074	0.114	2.0
HP 750	0.104	0.118	2.5	0.104	0.112	2.5
HP 1000	0.107	0.111	3.3	0.107	0.112	3.8
HP 1300	0.106	0.111	2.6	0.108	0.114	4.0
Microgliss D-5	0.103	0.112	3.3	0.094	0.102	4.4

Friction behaviour



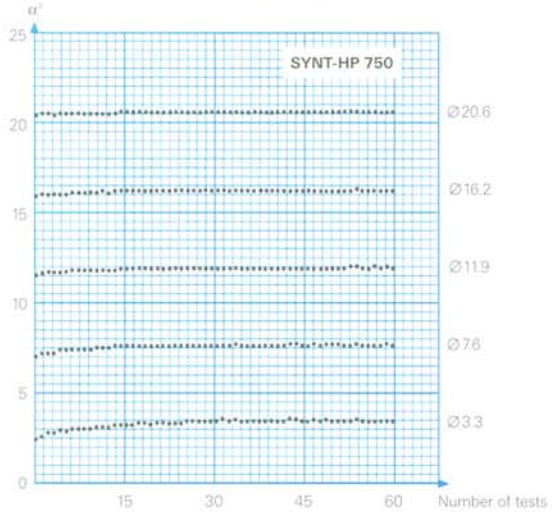


Spreading test: *Steel*

Diam. of the drops: nominal value 1.4 – 1.6 mm; temperature 25 – 28 °C

Oil-Type	*after 10 minutes*	*after 1 hour*	*after 6 hours*	*after 30 hours*
HP 500	1.44	1.44	1.44	1.49
HP 750	1.59	1.59	1.59	1.61
HP 1000	1.56	1.56	1.58	1.62
HP 1300	1.48	1.48	1.50	1.53

Friction pendulum: *Steel/Ruby*



Oil-Type	*Final point*
HP 500	17.3
HP 750	17.3
HP 1000	17.2
HP 1300	17.3
Microgliss D-5	17.2

The final point corresponds to the number of oscillations until the pendulum stops. The figure is calculated according to the damping curve. The higher the value the better the lubricating quality.

MOEBIUS

The Swatch Group R&D Ltd
Division Moebius
Hegenheimerstrasse 23
CH - 4123 Allschwil 2