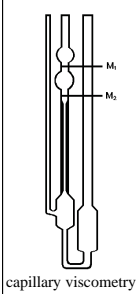


# Product Specifications

## Laboratory Data:

Kinematic Viscosity (DIN)		
 capillary viscometry	Temperature	$\nu$ (mm <sup>2</sup> /s)
	0°C [32°F]	340
	20°C [68°F]	100
40°C [104°F]	40	
	Viscosity Index (ISO)	150
Viscosity-Temperature-Behavior		good

**Permanent Low Temperature** -15 °C  
(72 hrs without crystallization) [5°F]

**Application Temperature** -10°C to +80°C  
[14°F to +176°F]

**Density** 20°C [68°F] (DIN) 0.21 g/cm<sup>3</sup>

**Surface Tension** 30 mN/m

**Color** yellow

**Evaporation Rate** 0.4 %  
(24 hrs/105°C [221°F]) low

**Drop Stability** good

**Durability** good

**Corrosion Resistance** brass: very good  
steel: very good

**Compatibility with Plastics** on request

**Chemical Name** partially synthetic oil  
on base of esters and hydrocarbons with additives

## Comments:

Partially synthetic clock and instrument oil on base of different synthetic ester oils, natural hydrocarbons and polyalphaolefines. Type 1-3 is equipped with an additive package for high ageing and oxidation stability as well as corrosion resistance, which ensures its application in the field of horology.

The partially synthetic clock and instrument oil Type 1-3 replaces the ancient classical watch and instrument oils Type 1, 2 and 3.

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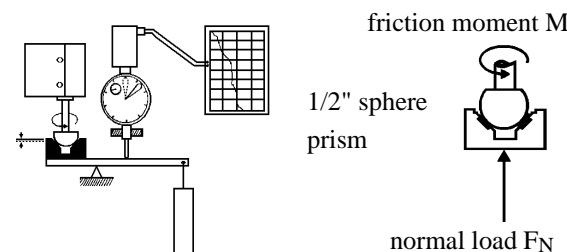
# Type 1-3

Article No.: TK2213

## Partially Synthetic Watch and Instrument Oil

## Tribological Data:

Test system: sphere on prism (ISO 7148/2)



Friction Behavior					
dependent on sliding speed					
$\nu$ (mm/s)	f	friction coefficient f			
		0.1	0.2	0.3	0.4
0	0.14	[Bar chart showing high friction]			
20	0.03	[Bar chart showing low friction]			
50	0.02	[Bar chart showing very low friction]			
200	0.01	[Bar chart showing minimal friction]			

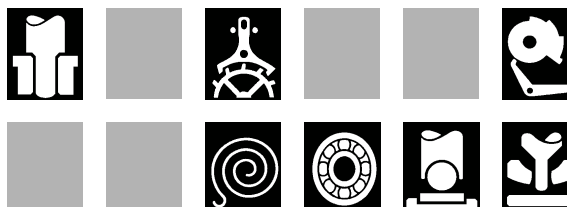
materials: steel/brass, load 3N, 25°C [77°F]  
lubricant: Type 1-3


Wear Behavior						
comparison: dry and lubricated with Type 1-3						
materials		wear (in mm)				
		0.01	0.03	0.1	0.3	1.0
St/bs:	Type 1-3	[Bar chart showing low wear]				
	dry	[Bar chart showing high wear]				
St/st:	Type 1-3	[Bar chart showing low wear]				
	dry	[Bar chart showing high wear]				


test parameters: load 30N, distance 10 km, 25°C [77°F],  $\nu$  = 28.1 mm/s

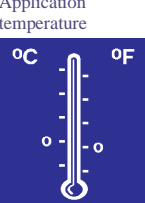
## Application:


Watch and instrument oil for metallic sliding combinations and jewel bearings in pocket and wrist watches, small or alarm clocks. For pivot bearings up to 3 mm diameter (0.12 inches), teeth of escape-wheels, cornet-screws, mainsprings.





Product 


Bearing material  METALL  
POLYMER  
MINERAL

Application temperature  °C °F

Bearing load 

Sliding speed 

Durability 

Viscosity 

Wetting 