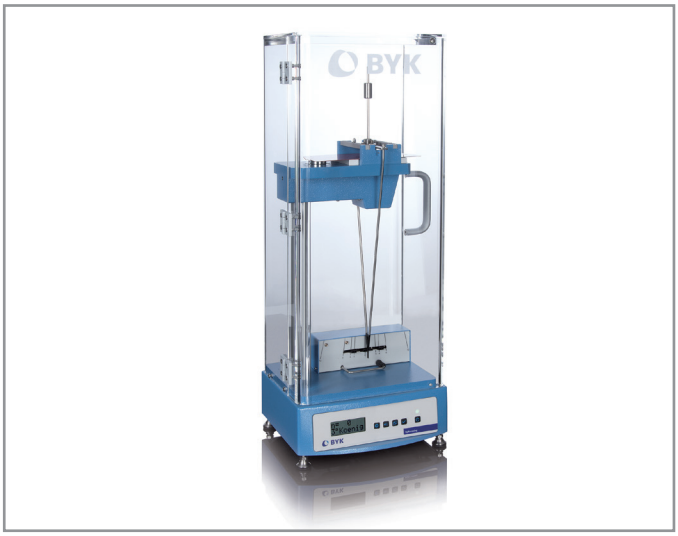
byko-swing Pendulum Hardness Tester

Measurement Principle

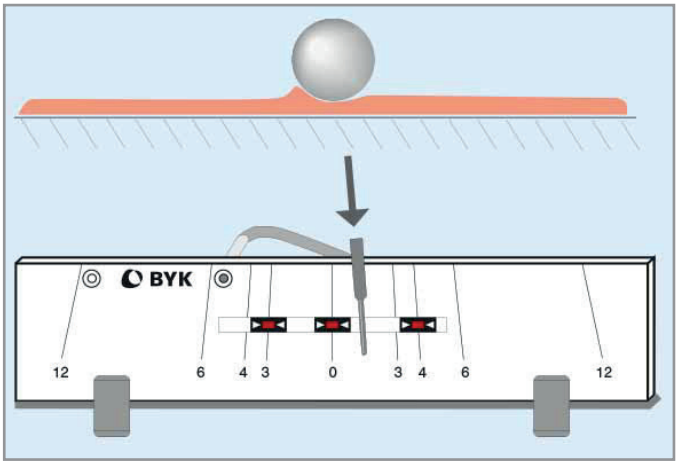
This instrument evaluates hardness by measuring the damping time of an oscillating pendulum. The pendulum rests with 2 stainless steel balls on the coating surface. A physical relationship exists between oscillation time, amplitude and the geometric dimensions of the pendulum. The viscoelastic behavior of the coating determines its hardness. When the pendulum is set into motion, the balls roll on the surface and put pressure on the coating. Depending on the elasticity, the damping will be stronger or weaker. If there are no elastic forces, the pendulum will damp stronger. High elasticity will cause weak damping.



Pendulum Hardness Tester

Simple laboratory measuring instrument for hardness measurements in accordance with the König and Persoz method.

- Automatic counter with acoustic signal when the deflection is below 3° (König) or 4° (Persoz) respectively
- Registration of pendulum deflection by means of 2 light barriers
- Digital counter
- Changeable from König to Persoz by means of a third light barrier
- Selector switch for display in seconds or number of oscillations



Measurement principle of Pendulum Damping Test

Two types of pendulums

Two types of pendulums, König and Persoz, were standardized for this test method. The Konig test is intended for hard coatings. It measures the time taken for the amplitude to decrease from 6° to 3°. The Konig pendulum is triangular with an adjustable counterpoise. It sits ontop of the substrate with two tungsten carbide balls with a diameter of 5mm. The Persoz test is intended for softer coatings. It measures the time taken for the amplitude to decrease from 12° to 4°. It is a square frame that is is supported on tungsten carbide ball bearings with a diameter of 8mm. It is heavier than the König pendulum and will roughly take twice the amount for the amplitude to decrease as its König counterpart.

Standards

ASTM D4366
ISO 1522

Catalog Number	5865	5866	5867
Short Description	byko-swing König	byko-swing Persoz	byko-swing König/Persoz
Weight	200 g ± 0.2	500 g ± 0.1	200 / 500 g ± 0.1
Ball Diameter	5 mm	8 mm	5 mm / 8 mm
Deflection Start/End	6° / 3°	12° / 4°	6°/3° or 12°/4°
Period of Oscillation	1.4 s	1 s	1.4 s / 1 s
Damping Time on Glass	250 s ± 10 s	430 s ± 10 s, according to ISO	
Power supply	100 - 240 V, 50/60 Hz, max. 1 A		
Weight	18.4 kg		
	40.6 lb		
Dimensions: L x W x H	25 x 28 x 77 cm		
	10 x 11 x 30.3 in		

Delivery Content

Pendulum hardness tester
Protective cover
Pendulum König (5856) and / or Persoz (5857)
Glass calibration standard
Power supply
Calibration certificate
Manual

Catalog Number	Short Description
5856	König Pendulum
5857	Persoz Pendulum