



Control box

## No.2204

## KRK high shear viscosimeter

Along with the progress in coating technology, especially with diversification of coating types, high speed processing and upgrading of quality, coating material needs to meet severe requirements in flowability, leveling and stability to various outer factors. Consequently, flowability tests for coating materials in the range of high speeds are indispensable to monitor problems at the high speed blade coater and roll coater. With the KRK high shearing viscosimeter, it is possible to faithfully reproduce the operation of a practical machine in the laboratory, and to grasp behaviors at speeds of  $1 \times 10^5$ /second, encompassing a wide range of elemental researches, such as solving troubles and development of new coating materials. This machine is designed to test not only the materials in the category of high speed and high shearing, as well as those of low speed and high viscosity, with a special function (optional) of low revolutions, 1/10 speed of the standard high speed (a range of 0 to 220rpm) which enables to test various kinds of materials in speed and shearing. The measurement ranges up to 4,000mPa·s liquids. This machine features an electronically controlled stepless speed change, allowing linear deceleration and acceleration up to the maximum speed of 8,800rpm. The machine body is installed on a stable base, with almost no vibrations. This is a viscosimeter having an inner rotating cylinder, with a bob and a cup of high precision. Viscosity torque is detected by a strain gauge, and graphically displayed by the PO via an amplifier. The system with a computer is able to calculate viscosity coefficient and shearing speed that are continually changing to display plastic viscosity and leveling index.

**Specimen:** Newtonian liquid, Non-Newtonian liquid (plasticity, pseudo plasticity, thixotropy, dilatancy)

**Maximum shearing speed:**  $1.8 \times 10^5$ /second-1

**Maximum viscosity:** 2,000mPa·s (cps) (4,000 option)

**Rotation speeds:**

**1st stage:** low speed 0 to 220rpm, high speed 0 to 2,200rpm

**2nd stage:** low speed 0 to 440rpm, high speed 0 to 4,400rpm

**3rd stage:** low speed 0 to 660rpm, high speed 0 to 6,600rpm

**4th stage:** low speed 0 to 880rpm, high speed 0 to 8,800rpm

**Cup:** inner diameter 40mm, effective depth 80.5mm, material: stainless steel (SUS304)

**Torque range:** shifting in four stages 5, 10, 20, 50 x 104 dyn-cm/cm 10, 20, 40, 100 x 104 (optional)

**Strain gauge protector:** overload prevention with a rotation angle limiter.

**Torque detecting procedure:** full scaling with a check box and calibration weight

**Heating and cooling:** with jacket (optional)

**Power source:** single-phase 200/220VAC 50/60Hz 10 A

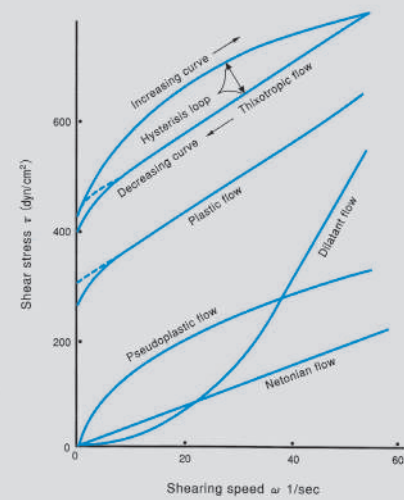
**Outer dimensions:** Viscosimeter 500 x 500 x 860mm  
Control panel 600 x 610 x 920mm

**Instrument weight:** Viscosimeter 120kg  
Control panel 85kg

## &lt;Features&gt;

1. Measurement ranging from low shearing/high viscosity to high shearing/low viscosity
2. A strain gauge is provided to detect adhesion torque to enable calibration with the standard weight.
3. Each machine is tested with the specified olive oil to draw a flowability diagram for comparison with the standard diagram.
4. The viscosimeter is equipped with a special drawer able to draw flow graphs correctly.
5. The speed change system with a static Leonard is used with a smooth and linear acceleration and deceleration ranging from 0 to 8,800rpm for the bob shaft by the use of one stage acceleration transmission with a timing belt.
6. The rigid structure of the viscosimeter and the high precision bob/cup bearings minimize vibration during acceleration or deceleration.
7. The heating jacket controls the temperature of a specimen by letting hot water or cooled water flow in the outer circumference of the cup.
8. Since the viscosity coefficient of a specimen may be affected by changes in shearing speed along with time, this instrument has a function to control the shearing speed variation rate to achieve four kinds of uniform acceleration (selection of sweep times: 10, 20, 30, 40 seconds).

Type	Diameter (mm)	Effective length (mm)	Interval (mm)	Shape coefficient S	Max. circumferential speed (m/min)
A	39.0	50	0.5	0.0002	1078
B	φ	25	φ	0.0004	φ
C	φ	10	φ	0.00097	φ
D	30.0	25	5.0	0.0052	829
E	39.6	50	0.2	0.00008	1095
F	39.8	25	0.1	0.00008	1100



Theoretical graphs of Newtonian and Non-Newtonian flows

