

Cone-and-plate Viscometer

Paints or inks often are in different shear rates status from manufacturing to application. As a typical Non-newtonian fluid, paints or inks always show different viscosity characteristics at different shear rates.

Generally speaking, paints are in a low shear rate state when it is stored, transported, levelling and sagging. But they are in the medium shear rate when being pumped, dipped and mixed at a low speed. And at high-speed dispersion, roll, spray and brush coating, they are in a high shear state, and the shear rate is generally 9000S^{-1} to 12000S^{-1} . Therefore, understanding the rheological characteristics of paints or inks at such high shear rates requires the use of cone-plate viscometer to measure.

BGD 182 Cone-and-plate Viscometer uses a special angle conical spindle, which generates a very high shear rate on the measured sample under the high-speed drive of a stepper motor. It conforms to ISO 2884-1 *Paints and varnishes — Determination of viscosity using rotary viscometers — Part 1: Cone-and-plate viscometer operated at a high rate of shear.*



Scan for video



Features:

- ◆ 7-inch touch screen, menu operation, rich display content (measurement values, spindle No., speed, shear rate, etc.), simple and convenient to operate.
- ◆ Beautiful and durable metal shell, Use a handle to lift up and down, precise and fast positioning, high reliability.
- ◆ The electrical part of the whole machine has been carefully designed, with high reliability, precision, stability, and ease of use.
- ◆ ARM chip processor, with faster data processing speed.
- ◆ High precision linear calibration before leaving the factory, capable of interpolating multiple points to ensure higher measurement accuracy.
- ◆ Measure the sample viscosity by stepless speed, convenient for operators to choose different shear rates based on the actual application conditions of the sample.
- ◆ The measured viscosity values vary continuously, and many viscosity units can be freely interchanged.
- ◆ The instrument automatically alarms when the measurement exceeds the range.
- ◆ High speed data transmission interface ensures a fast and stable communication connection between the instrument and the computer.



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- ◆ Data storage and exporting data by an external USB function.
- ◆ Built in high-precision PT100 temperature sensor, with high temperature control accuracy and good stability.
- ◆ With calibration function to temperature, ensures precise and reliable temperature for controlling.
- ◆ Powerful and simple calibration function: Users only need one bottle of standard oil and can quickly calibrate the instrument through its built-in calibration menu.
- ◆ Can choose the data collection and programmed analysis software to analyze the rheological features of the sample thoroughly.

Main Technical Parameters:

- ★ Adjustable Speed Range: 5rpm ~ 1000rpm (continuously viable, @1rpm)
- ★ Measurement error: < 2% of full scale
- ★ Sample Volume: < 2ml (See the table below for details)
- ★ Two built-in temperature control for option: 5°C–75°C (L type / Low temperature) ; 50°C–235°C (H type / High temperature)
- ★ Temperature resolution: 0.1°C
- ★ Temperature control accuracy: $\pm 0.5^{\circ}\text{C}$ (L type) ; $\pm 1^{\circ}\text{C}$ (H type and the set temperature is less than 150°C) or $\pm 2^{\circ}\text{C}$ (H type and the set temperature is higher than 150°C)
- ★ Rotors: 10 types for option (corresponding shear rates and measurement ranges are shown in the table below)
- ★ Power Supply: AC 220V, 50Hz/60Hz, the max. current is about 1.5A
- ★ Size: 275mm $\times$ 210mm $\times$ 460mm (L $\times$ W $\times$ H)
- ★ Net weight: 12KG

★ Ordering information:

BGD 182/1L---Cone-and-plate Viscometer (Low temperature and Low Torque)

BGD 182/1H---Cone-and-plate Viscometer (High temperature and Low Torque)

BGD 182/2L---Cone-and-plate Viscometer (Low temperature and High Torque)

BGD 182/2H---Cone-and-plate Viscometer (High temperature and High Torque)

BGD 182/Z-004---Data Acquisition and Programmable Analysis Software

CAP-01 ~ CAP-10---Spindle for Cone-and-plate Viscometer

Spindle type	CAP-01	CAP-02	CAP-03	CAP-04	CAP-05	CAP-06	CAP-07	CAP-08	CAP-09	CAP-10
Sample size	67 μL	38 μL	24 μL	134 μL	67 μL	30 μL	1,700 μL	400 μL	100 μL	170 μL
Shear rate range (S^{-1})	66.5~13,300	66.5~13,300	66.5~13,300	16.5~3,300	16.5~3,300	16.5~3,300	10~2,000	10~2,000	10~2,000	25~5,000
BGD 182/1 Measurement range (mPa.s)	20~1,600	20~3,200	20~6,600	20~13,000	20~26,000	20~66,000	20~2,600	20~10,800	20~44,000	20~4,400
BGD 182/2 Measurement range (mPa.s)	20~37,500	40~75,000	80~150,000	100~300,000	300~600,000	800~1,500,000	78~62,500	313~250,000	125~1,000,000	100~100,000

Note: Calculating the shear rate: $13.33 \times$ the current speed (For CAP-01 to CAP-03) ;
 $3.33 \times$ the current speed (For CAP-04 to CAP-06) ;
 $2 \times$ the current speed (For CAP-07 to CAP-09) ;
 $5 \times$ the current speed (For CAP-10)