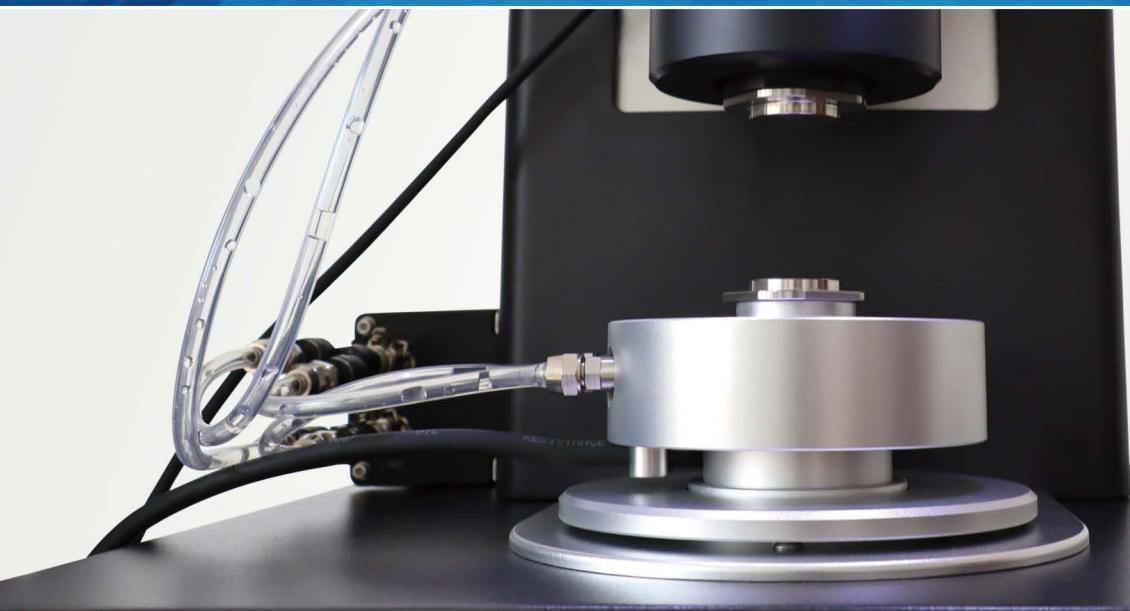


## DYNAMIC SHEAR RHEOMETER (DSR)

### STANDARD: ASTM P246, AASHTO T315, JTG E20-2011 T0628

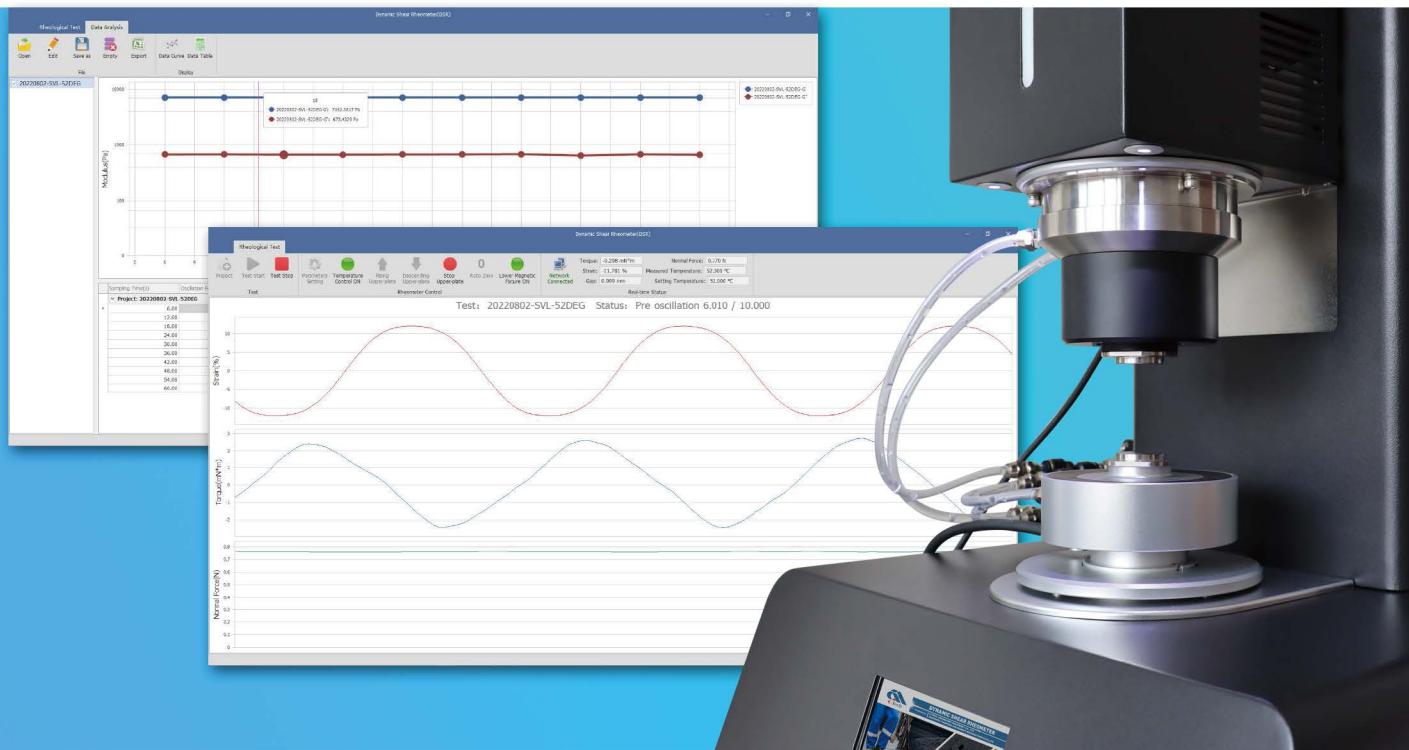
The dynamic shear rheometer (DSR) is used to evaluate the viscous (non-recoverable) and elastic (recoverable) properties of aged and unaged asphalt in the temperature range 5-85°C by measuring the dynamic shear modulus  $G^*$  and phase angle  $\delta$  of the bitumen to predict the ability to resist rutting and fatigue cracking.

The DSR test uses a thin asphalt binder sample sandwiched between two circular plates. The lower plate is fixed while the upper plate oscillates back and forth across the sample to create a shearing action.



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## FEATURES

- Ultra-low inertia servo motor technology
  - Smooth positioning and drive speed regulation are realized through toothless torque.
  - Ultra-low inertia hollow cup motor design, fast torque and speed response, and excellent dynamic characteristics.
  - Relative to the volume and weight of the motor itself, it can provide extremely high torque and power.
  - Absolute linear relationship between current and torque, voltage and speed.
- Ultra-high precision sensing and measuring system
  - Optical encoder, with a resolution of  $10^{-4}$  rad, can accurately measure the rotational angular displacement and angular velocity.
  - Ultra-high sensitivity normal force sensor design, fast transient response, accurate measurement and control of normal force.
  - Ultra sensitive torque sensor design, which can accurately measure rotor torque.
  - The ultra-high precision grating system accurately measures and controls the vertical running position, and the gap resolution is  $0.1 \mu\text{m}$ .
- Temperature control unit
  - Peltier temperature control system is adopted, and high-resolution temperature sensor is embedded to ensure fast and accurate sample temperature control.
  - One step plug-in design of power supply, communication and fluid connection, fast, convenient and firm.
- Integrated design
  - All mechanical, power supply, control, communication, display and other components are arranged in one machine body, with small volume, high integration and high requirements for design, processing and assembly.
- Intelligent software
  - Friendly interface to ensure the best rheological measurement operation.
  - Including the setting of fixture, temperature, test and other parameters required for all DSR tests.
  - Try to avoid the influence of operators.
  - Time temperature equivalent superposition (TTS) to generate the main curve

# DYNAMIC SHEAR RHEOMETER (DSR)

## TECHNICAL SPECIFICATIONS

Speed range	0.01 to 2850 r/min
Angular velocity range	0.01 to 300rad/s
Deflection angle resolution	$10^{-4}$ rad
Oscillation frequency	0.1 to 10 Hz
Torque range	0.001 to 150 mNm
Torque resolution	0.001 mNm
Normal force range	0.01 to 50N
Normal force resolution	1mN
Temperature range	5 to 85 °C (water bath working temperature 25 °C)
Temperature resolution	0.01 °C
Temperature control accuracy	+ / - 0.1 °C
Measuring system	1 pair of 25mm test plate and 1 pair of 8mm test plate
Water bath	6L, temperature fluctuation $\pm 0.05$ °C
Dimensions	400 x 415 x 670 mm
Weight	Approx. 30kg

## CONFIGURATION

No.	Item	Detail	Quantity
1	Test host	DSR Test host	1 set
2	Test plate	1 pair of 25mm test plate and 1 pair of 8mm test plate	1 set
3	Control host	Laptop	1 set
4	Software	DSREN V2.9.3	1 set
5	Water bath	Intelligent constant temperature water bath 8L	1 set
6	Accessories	25mm and 8mm Silica gel test mold Dismounting wrench for test plate Sample trimming scraper Supporting pipeline	1 set



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