



ADVANCED PAVEMENTS TESTING SYSTEMS

DSR

Automatic Dynamic Shear Rheometer

Rheological properties of asphalt binders

Standards AASHTO T315, T316, T350, M320, M332, R29, ASTM D7175, D4402, D7405, EN 13302, EN 13702-1, EN 13702-2, EN 14770, EN 14896

Dynamic Shear Rheometers (DSR) performs the critical rheological characterization analysis required for SuperPave Performance Grade (PG) classification of asphalt binders.

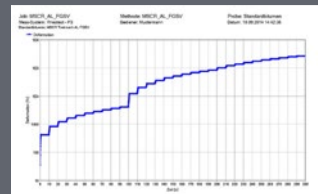
The behavior of the binder under various temperature and loading conditions is measured to predict the performance of binders at anticipated climatic conditions.

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. DSR tests are conducted on unaged, RTFO aged and PAV aged asphalt binder samples. The test is largely software controlled.

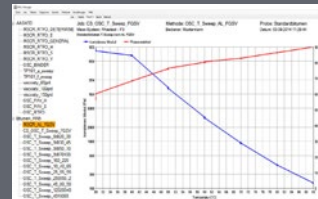
81-PV6202 is able to perform SuperPave performance grading according to AASHTO T315 and ASTM D7175, Viscosity determination of asphalt binder according to AASHTO T316 and ASTM D4402 and determine Multi Stress Creep Recovery (MSCR) according to AASHTO T350 and ASTM D7405.

Main Features

- Performance Grade (PG) determination test
- Determination of deformation properties of bitumen with Multiple Stress Creep Recovery test (MSCR – Test)



- Determination of complex shear modulus G^* and phase angle δ of road bitumen at different temperatures



- Normal force measurement
- All side, precise and stable, dry temperature control unit (Peltier unit)
- Two-zone temperature control for faster and even more precise sample temperature control
- Meet and exceed AASHTO, ASTM and EN Standards
- Automatic gap setting
- Simple to use

Manual DSR
gap setting
shown here



Technical Specification

RHEOMETER

Torque range	0,1 to 150 mNm
Torque resolution	0,001 mNm
Speed range	0 to 2000 rpm
Speed resolution	0,015 rpm
Viscosity range, RN general	1 to 1×10^{10} mPas
Viscosity range, plate P3	1×10^2 to 1×10^8 mPas
Viscosity range, plate P4	1×10^3 to 1×10^{10} mPas
Complex Shear Modulus, plate P3	0,1 to 2×10^4 kPa
Complex Shear Modulus, plate P4	20 to 4×10^6 kPa
Phase angle range	0 to 90°
Normal force range	-30 to 30 N
Normal force resolution	0,01 N
Automatic gap setting	yes
Gap resolution	1 μ m
Rotation angle range	-50° to 300°
Angle resolution	0.001 $^\circ$

TEMPERATURE CONTROL UNIT (Peltier unit)

Dry temperature control by Peltier technique	All side
Maximum temperature	+180 $^\circ$ C
Minimum temperature	-15 $^\circ$ C
Temperature accuracy	≤ 0.1 K, range 5 $^\circ$ C to 90 $^\circ$ C
Interface	USB 2.0

SOFTWARE MANAGER

Prepared jobs for automatic and fast execution of all bitumen tests

Automated evaluation and analysis of measuring results in accordance with AASHTO with estimation of Performance Grade

Different test types for original binders, RTFO and PAV

Grade Determination and PASS/FAIL conditions

Bitumen Wizard

Ordering Information

81-PV6202

DSR — Automatic Dynamic Shear Rheometer.
110-230V/50-60Hz/1Ph.



Configuration

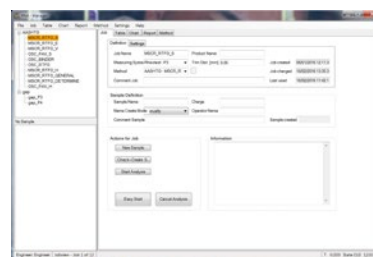
- 1 Basic instrument Rheometer: measuring head, stand, control unit



- 2 Peltier unit: Peltier control unit, peltier tempered basic plate, basic plate support, adapter, exchange grip, two exchangeable plates ($\varnothing$ 25mm and $\varnothing$ 8mm), measuring plate P3 ($\varnothing$ 25mm), measuring plate P4 ($\varnothing$ 8mm)



- 3 Software Manager for Bitumen tests



- 4 Set of trimming tools, set of rubber moulds, interface cables, USB adapter and user manual



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IPC Global

E ipcglobalsales@controls-group.com www.controls-group.com/ipcglobal



Controls Group USA

2521 Technology Drive, Suite 203, Elgin, IL 60124, USA T +1 847 551 5775 E info@controls-usa.com www.controls-usa.com

www.controls-group.com/ipcglobal



CONTROLS Group

T +39 02 92184 1

F +39 02 92103 333

E sales@controls-group.com

www.controls-group.com

Italy (HEAD OFFICE)

www.controls-group.com/ita

Mexico

www.controls.com.mx

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