



The **BFGoodrich** Dynamic Stress Relaxometer represents a unique concept for process control in the rubber industry. The DSR™ was developed by BFGoodrich scientists in the 1970s for the quality and processability assessment of unfilled polymers and rubber compounds.

“Quality control of rubber manufacturing by fundamental viscoelastic properties.”

The DSR™ was originally conceived as a production tool and designed to be durable, simple to operate and, above all, provide meaningful data very rapidly. Recent advances in the treatment of DSR™ data have resulted in a production instrument that yields research quality viscoelastic information on virtually any elastomer.

BFGoodrich Dynamic Stress Relaxometer: Specifications

Electrical service:	110–120 VAC, 60 Hz, 1 PH
Compressed air:	5.5 Bar (80 psi-)
Ancillary equipment:	<ul style="list-style-type: none"> • Compaq computer • SVGA color monitor • HP color plotter • Epson printer
Shear Relaxation Modulus:	$1.4 \times 10^3 - 5.8 \times 10^6$ dynes/cm ²
Torque:	0.1 – 400 lb/in
Relaxation time:	0.04 – 400 s
Temperature range:	Ambient – 200 C°
Fixtures:	Serrated concentric cones
Rotor Displacement:	0.5, 1 or 2° (selectable)
Displacement time:	0.004 s
Sample thickness:	.01 or 0.25 in (selectable)
List Price:	Please Submit a Request for Quotation (RFQ)

BFGoodrich DSR™ Program 1 Data Output

- Tm : Maximum torque after deformation
- t : First time constant
- t₂ : Second time constant
- ti – (Tm / ei) : Time constant definition
- Sigma 2 : 2 s interval of relaxing torque
- Date / Time : Date and time of test
- Temperature : Test temperature
- Comments : Alpha–numeric comment field
- Average : Averages of data
- Standard Deviation : Standard Deviation of data
- Batches : Number of batches tested

Program 1 data can be archived, analyzed for trends, averages, standard deviation, specification limits, etc., or printed or plotted (software available).

BFGoodrich DSR™ Program 3 Plotted Data: G(t); G', G'' and η^*

G(t) (dyn/cm²) : Shear stress relaxation modulus v. time

G' : Shear storage modulus


G'' : Shear loss modulus

Complex viscosity : η^* (poise)

Data : Plotted (log – log) or tabular

 Program 3 data can be archived and compared with user selectable criteria (10 user defined parameters). Up to 10 plots can be constructed for comparative analysis.

BFGoodrich DSR™ Printout and Plots of Test Results

 [Program 1: Data Output](#)

 [Program 3: Frequency Dependent Viscoelastic Properties](#)

 [Program 3: Shear Stress Relaxation v. Time](#)

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