Strainoptics

Bulletin GES-0921

GES-100 EDGE POLARIMETERS

For Measuring Edge Stress in Glass

The GES-100 Portable Edge Stress Meter is available in two basic models:

GES-100 - for measuring stress at the glass edge, per ASTM Test Method C1279, Procedure B (Double Wedge).
GES-100-MWA – for measuring edge stress and near-edge tension, per ASTM Test Method C1279, Procedure B (Sinle Wedge). The standard model can measure 0-50 mm in from the edge; 0-100 mm available.

Either of these models can be ordered with a high-sensitivity (HS) measuring wedge/compensator for low-stress glass or with ac instead of battery power (optional).

Strainoptics' GES-100 Edge Stress Meters are portable instruments for non-destructive, precision measurement of edge stress in annealed or heat-treated glass. They are ideal for applications with flat or slightly curved glass when edge stresses are critical, such as in automotive glazing or where conventional surface stress measurement with the GASP surface polarimeter is not possible. This may be due to patterns, textures, glass composition, or inaccessibility to the tin side of the glass. Tempered glass may be measured to comply with the edge compression requirements of ASTM C1048 and similar industry specifications.

Stresses may be measured a short distance away from the edge, at the start of the edge finish, or at the physical edge of the glass by using the extrapolation procedures specified in ASTM C1279

Features and Benefits:

- Fast and easy to use, with large counter readout. Stress units may be read directly from a supplied table.
- Suitable for in-plant or field testing. May be used wherever edge is available. No need for tin side, counting fringes, or special preparation.
- Reduces or eliminates the need for destructive testing for many types of glass products.
- Improves process control and productivity through optimization of furnace parameters.
- Accurate and dependable, with precision assured by using a single-wedge (MWA) or double-wedge compensator. Results are independent of refractive index, color, curvature, or surface and edge finish of glass.
- Complies with worldwide industry standards and test methods, including ASTM, GANA, and CE requirements.
- Includes edge stress Cal-Plate for instrument verification, self-calibration, and training.
- Optional range extender for very high stresses.
- Rechargeable batteries and recharger; ac model available.

All GES-100 instruments include:

- Standard measuring wedge (for heat-treated glass) or high-sensitivity measuring wedge (for low-stress glass)
- Calibration certificate with conversion table for direct reading of stress units in MPa, psi, and kg/cm^2
- Practice sample for operator training
- Operator manual with color photos that explains procedures and principles of operation in detail
- Instrument-quality carry case
- Unlimited Email & Phone technical support

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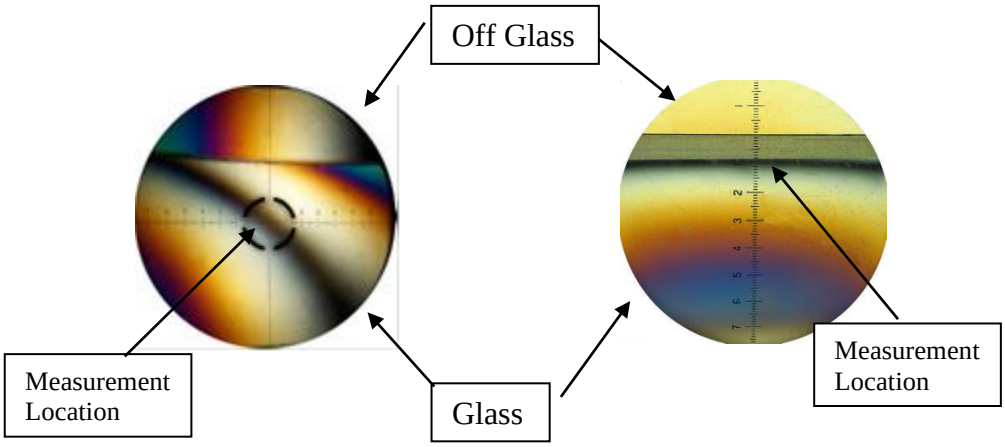

At left: Image through eyepiece of GES-100-MWA on target of edge stress cal-plate (edge compression or near-edge tension).
At right: Image through eyepiece of GES-100 on edge of tempered glass (edge compression).

Specifications

Field of View	1 in (25 mm)
Magnification	10x
Max. Glass Thickness	1 in (25 mm)
Typical Retardation Range:	*Other Ranges Available*
Standard	2000 nm
High Sensitivity	1500 nm
With Range Extender	4000 nm
Typ. Compression Range	*For ¼ in (6.35 mm) glass*
Standard	0 to 16,500 psi (114 MPa)
High-Sensitivity	0 to 10,600 psi (73 MPa)
Typical Stress Resolution	*For ¼ in (6.35 mm) glass*
Standard	±5.5 nm (50 psi/ 0.3 MPa)
High-Sensitivity	±3.5 nm (30 psi/0.2 MPa)

APPLICATIONS for GES-100:

- Flat & Curved Automotive Glass
- Clear & Tinted Tempered Glass
- Annealed & Low-Stress Glass
- Coated & Laminated Glass
- Clear & Patterned Solar Glass

Interested in *Automatic* Edge Stress Measurement?

Ask about our PES-100 PC-Based Edge Stress Measurement System!

Other Strainoptics Products

In addition to the GES-100 edge stress meters, Strainoptics manufactures a complete range of manually operated and PC-based instrumentation for glass manufacturers and fabricators. These include the industry-standard GASP surface polarimeter for measuring surface stress in heat-treated and annealed flat glass, on-line stress scanners for float glass production, laboratory polarimeters and polarizing microscopes for analyzing stress distribution, specialized instruments for measuring stress and light transmission in automotive glass, roller wave gauges for measuring reflective distortion in architectural tempered glass, and simple strain viewers (polariscopes) for visual inspection using photoelastic evaluation. Custom inquiries are always welcome.

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