



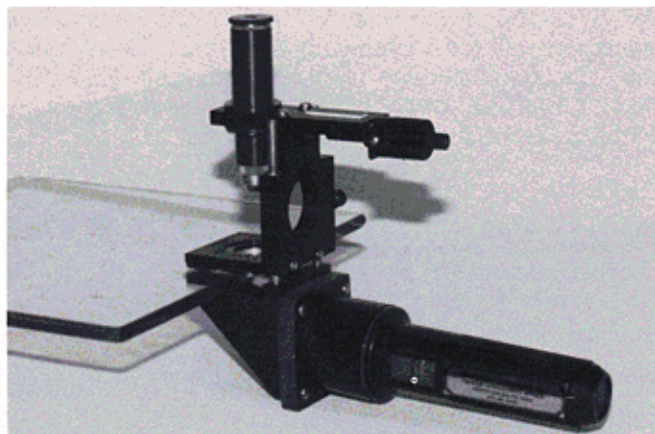
Strainoptic Technologies, Inc.

GES-100 GLASS EDGE STRESS METERS

BULLETIN GES-103

STRAINOPTIC® Stress Meters

STRAINOPTIC GES-100 EDGE-STRESS METERS are portable instruments for non-destructive, precision measuring of edge stress in tempered, heat-strengthened and annealed glass, in accordance with ASTM test method C1279 (or equivalent). GES-100 models can be used on both flat and curved glass.



STRAINOPTIC Edge-Stress Meters are:

- **Fast and Easy to Use**

Digital readout is provided by a large counter, with a table directly yielding the stress. There is no need for sample preparation. No need for counting fringes. No need for cleaning. No need to locate the tin side.

- **Light Weight and Portable**

The GES-100 weighs approximately two pounds. The light source is powered by two rechargeable "D" size cells. GES-100-MWA4 plugs into an AC outlet.

- **Accurate and Dependable**

Precision is insured by an accurately calibrated Double Wedge Compensator (DWC) or a single "quartz" wedge (MWA), also known as a "babinet." Results are independent of refractive index, color, curvature, or surface and edge condition of the glass.

- **Easy to Understand**

Our color-illustrated instruction manual removes most of the mystique associated with edge stress measurements. Any operator can learn to measure edge stress reliably, consistently, and immediately without extensive training or education.

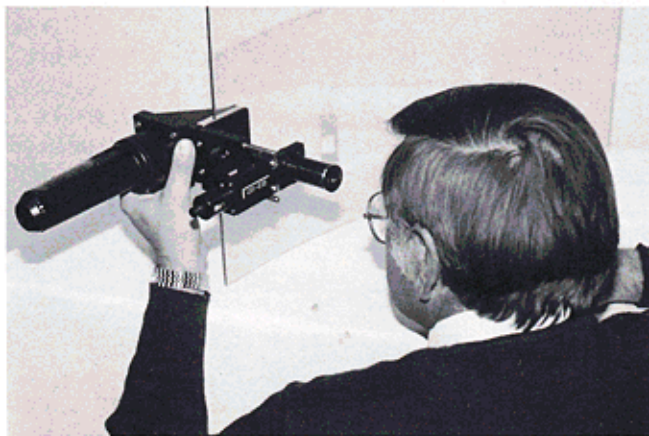
QC of Tempered and Heat-Strengthened Glass

Tempered and heat-strengthened glass have gained wide acceptance for their strength and break patterns. The specific property that makes heat-treated glass desirable is a build up of a residual compressive stress on the surface and edges. Material specifications (ASTM C1048 or equivalent) require minimum surface or edge compressive stress to insure quality, reliability and performance.

With growing emphasis on product quality, pressure to meet users' specifications and concerns about product liability, there is an increasing need to test a larger production sample for conformance to required standards.

Destructive testing is costly and no longer adequate to assure consistent quality. An easy and reliable non-destructive testing method is preferred using GES-100 Edge-Stress Meters.

ASTM C1279 specifies a polariscopic test method for measuring edge or surface compression stress. Surface stress can be easily measured using Strainoptic's GASP®. (Bulletin GASP-103)



Measuring edge stress using GES-100 is easy. It allows users to take readings a short distance away from the edge, eliminating inaccuracies related to the ground or seamed edge. GES-100 advantages are recognized by industry leaders, both in the U.S. and abroad.

Operating Principal

STRAINOPTIC's GES-100 measures stress-induced photoelastic retardation using a calibrated compensator. By turning the lead-screw knob, the operator moves the fine black fringe to the edge. The counter indicates the measured retardation.

The edge stress is identified using the equation:

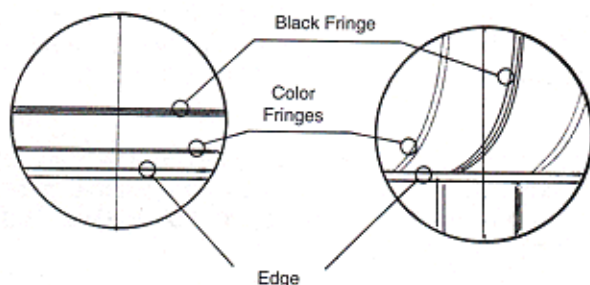
$$(\text{EDGE STRESS}) = \frac{\text{Retardation}}{C_s \times \text{Thickness}}$$

where C_s is the material stress constant provided in the manual. Tables are also provided, relating the counter reading directly to the edge stress.

Views in the eyelens of the GES

GES-100
Double-Wedge

GES-100-MWA
Single-Wedge



Specifications

Power:	Rechargeable Batteries
GES-100 and GES-100-MWA	110 VAC
GES-100-MWA/4	
Field of View:	1" (25 mm)
Magnification:	10x
Maximum Thickness of Glass:	1" (25 mm)
Specimen and Edge Curvature:	No limitations
Retardation Measuring Range:	2500 nm
With Optional Range Extender:	5000 nm
Stress Range*:	Compression 0 to 40,000 psi (300 M Pa)
	Tension 0 to 8,000 psi (60 M Pa)
Stress Resolution:	±100 psi (0.7 M Pa)*
Carrying Case:	Included
Training Specimen:	Included
Recharger:	Included

*Typical for 1/8" (3 mm) thick glass, $C_s = 2.65$ Brewsters



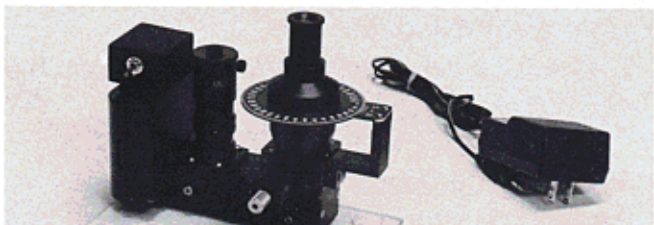
Ordering Information

All GES-100 Edge-Stress Meters are completely equipped with a compensator, calibration chart, training specimen, carrying case, and manual. GES-100 and GES-100-MWA models are supplied with rechargeable batteries and a recharger.

Double-Wedge Compensator	GES-100
Single-Wedge Compensator ("Quartz Wedge")	GES-100-MWA
Deep measurement model – measures up to 4 inches (100 mm) from the edge (AC Power)	GES-100-MWA/4
2x Range Extender	GRE-100

STRAINOPTIC Products and Services for Glass Industries

Strainoptic Technologies manufactures a full line of stress-measuring instruments for on-line and off-line applications in the glass manufacturing and processing industries, from the hand-held portable PSV-100 strain viewer to sophisticated continuous monitoring, computerized equipment, and surface-stress measuring GASP®.



For additional information, contact STRAINOPTIC TECHNOLOGIES, or our qualified representatives and distributors.



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