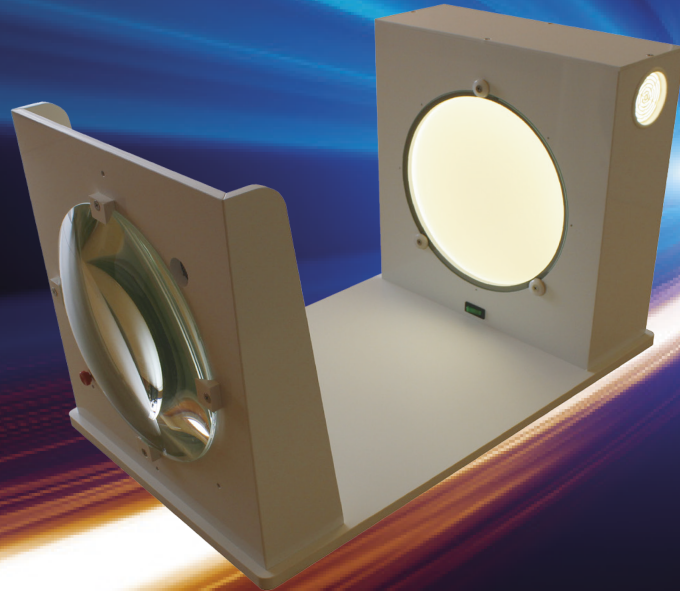


POLARISCOPE

Production monitoring by qualitative and quantitative measuring of stress in glass



www.aerne-analytic.de

Application

With the Polariscope the annealing process of glass can be controlled quickly and easily directly on the production line. Thermal or mechanical stress caused by temper faults or inclusions can be recognised quickly and can be evaluated qualitatively and quantitatively.

The Polariscope combines the following stress measuring procedures in one device:

- light-dark method (qualitative measuring)
- colour change method (semi-quantitative measuring)
- compensation method according on Sénarmont (quantitative measuring)

The Polariscope is therefore a simple and compact instrument for modern quality assurance and production monitoring.

Measuring procedure

For a qualitative analyse of stress, the specimen, i. e. a glass rod or a bottle bottom, is held in the upper half of the viewing field (full-wave plate). It can be seen by colour change if tensile or compressive stress exists. The strength of the stress can be estimated by the intensity and extension of the coloured range. In order to determine 'stress' quantitatively, the stress centre is tested in the lower half of the viewing field (green colour filter). By rotating of the analyser till the darkening of the corresponding range and reading of the appropriate angle from the scale, the degree of the stress is determined.

Model variations

The Polariscope is available in two different models:

- with rotating analyser for qualitative and quantitative measurements (standard version)
- with fixed analyser for qualitative measuring by comparing with standard samples

The device can be installed on an optional available tripod. For the direct integration into the production line, the strain tester is also available with separate lighting case. Further special models are available upon request.

Assembly and function

The Polariscope consists of the following components:

- lighting case with lighting source and diffuser plate for fluoroscopy of the specimen
- polarising filter for polarisation of the lighting waves
- test enclosure for the specimen
- quarter-wave plate (= 140 nm) for the change of light from the specimen into a linear polarised wave
- sensitive tint plate (= 560 nm) in the upper half of the viewing field for qualitative analysis of the stress (colour change method)
- green colour filter (= 546 nm) in the lower half of the viewing field for quantitative analysis of the stress (compensation method according to Sénarmont)
- rotating polarising filter with radial scale as analyser
- plastic lens for magnification of the specimen

Technical data

Housing	PVC, white
Lighting source	round fluorescent lamp, 32 W
Optical system	two polarising filters, quarter-wave plate (140 nm), full-wave plate (560 nm), green colour filter (546 nm)
Viewing field size	235 mm
Magnification lens	3-fold, 250 mm
Power supply	230 V / 50 Hz or 115 V / 60 Hz (optinal)
Dimensions	600mm depth, 360mm width, 380mm height
Weight	approx. 22 kg