

Test Equipment

Fourier Transform Infrared Spectrometer (FTIR)

This instrument is equipped with a number of attachments that allow scanning of liquids and solids either by transmittance or reflectance. The spectrum of the scanned sample can be compared against standard spectra contained in internal libraries within the instrument. The search program automatically finds the best match. The sample and library spectra can be displayed together on the screen for comparison.

Imaging System

System consists of a Polarized Light Microscope (PLM), Stereo Microscope, Macro Stand, Digital Camera and Image Analysis Software. The System is useful in many areas including investigating new materials, analysis of competitive products and in failure analysis.

The state of polarization of a light beam is generally modified when it is reflected or transmitted through a material. That phenomenon allows PLM to be useful in material identification and characterization, especially fibers and fillers. Magnification in excess of 400X is possible.

The Stereo Microscope provides 3D images with a maximum magnification of approximately 100X.

The Digital Camera / Image Analysis Software permits for archiving, manipulation and measurement of the images of interest.

Stereo microscope or Disecting microscope: Stereoscopic (3D) vision is possible by the combined action of two eyes. This requires an independent optical system for each eye (similar to how binoculars work). A stereo microscope features two tubes with independent optical systems with two eyepieces and two objectives. Which means that a stereo microscope is in fact, a combination of two compound monocular microscopes whose optical axes are at a right angle to each other and directed to the same specimen area.

Stereo microscopes are used for viewing natural specimens such as minerals, insects, plant parts; they are also used for technical applications such as illuminating coins, textiles, and electronic components. Because of its long working distance, dissection and precision assembly are possible under the stereo microscope.

A stereo microscope uses two different paths of light. This allows you to see a specimen in 3-D. Stereo microscopes have high depth perception but low resolution and magnification. These microscopes are great for dissecting

as well as for viewing fossils and insect specimens. The best models have a built-in light source and zoom capabilities.

Programmable, Multi-Functional Test Stand (A.S.T.—Advanced Seal Tester)

This highly sophisticated, PC-driven test stand evaluates properties of gasketing materials under varying conditions; it can be programmed to test leak rates from high vacuum to 300 psig internal pressure, with different compressive loads or test temperatures. Any of the parameters listed below can be programmed to ramp up while the other conditions are held constant, to study the effects these conditions have on the sealability of materials. A Helium Mass Rate Spectrometer can monitor leak rates; gasket thickness and leak rates are monitored to determine percent compression vs. load, leak rate vs. compressive stress, maximum crush resistance, and more.

Programmable Parameters:

- Compressive load (stress)
- Time
- Temperature
- Internal pressure or vacuum
- Leak rate measurement

Capabilities:

- Compressive load:
 - To 107,000 lbs force (475 KN) at room temperature
 - To 73,000 lbs force (325 KN) at 570°F (300°C)
- Temperature: to 840°F (450°C)
- Gasket thickness: 0-5/16" (0-8mm)
- Internal pressure: High vacuum (10^{-3} mbar) to 300 psig He (20 bar)
- Helium leak rate measurement: 1 standard cc/ second down to 1×10^{-11} standard cc/ second



Questions? Call