



# Thwing-Albert Instrument Company

More Than a Century of Testing Solutions

## Internal Bond Tester Model 1314

Model 1314 Internal Bond Tester, utilizes the Scott method to produce a high speed Z-direction rupture of paper and paperboard. It is a dynamic test that measures and defines strength in terms of energy absorption.

### *Correlation with real-world performance*

Correlation with printing and converting failures due to impulses, impacts and shocks is excellent. While static tests focus on the ultimate yield value of a sample, the Model 1314 responds to the semi-elastic nature of paper and board. Materials that are somewhat elastic and “give” during rupture absorb more energy and exhibit “stronger” behavior in real-world situations.

Key to correlation is speed. Most printing and converting failures occur in fractions of a second. The Internal Bond test is dynamic. The test pendulum falls at a speed more than 6500 times as fast as a typical static test.

### *Wide range of applications*

Ideal for monitoring the effects of dry strength additives and to evaluate stock preparation and refining. Applications include prediction of blistering of coated offset grades, picking, manufacturers flap failures, delaminations, ply separations and other shock-induced failures. In addition to correlations with customer complaints, in-mill processing trouble-spots are of growing interest. Examples of dry-end analysis are monitoring Z-direction strength deterioration due to calendering or the application of relatively brittle coatings. The increasing use of recycled fiber and dry strength additives in both paper and board open even more applications and create economic value for the test today. At the product research and development level, sequential photographs of the ruptures can further enhance analysis and understanding.



▲ Model 1314 Internal Bond Tester measures the internal bond strength of paper and board.

### *Benefits*

- Stainless steel pendulum
- AV-3 Microcomputer displays test results and statistics
- RS-232C Computer Output
- Magnetic pendulum release for positive positioning and repeatable drops
- Pneumatic/hydraulic sample press insures exact control and equalization of the clamping force
- Electronically controlled press time
- Side knife-guides for easier and accurate sample preparation
- Clutched, gear-driven tape dispenser
- Calibration weight set and slide



## Sample Preparation

The Accupress ensures consistent, identical test specimens by preparing five samples simultaneously with individual clamping cylinders. A strip of the test substrate is glued between a stainless steel sample base and an aluminum angle with double-sided tape. After applying a defined pressure for a predetermined time, the samples are cut apart and placed into the striking fixture. The pendulum, held in a horizontal position by an electro-magnet, is released and strikes the vertical leg of the aluminum angle with exactly defined kinetic energy. The impact separates the sample allowing the pendulum to swing further. The microcomputer displays the energy absorbed in rupturing the specimen.

## Specifications

Standard Range:	0-347 x 10 <sup>-3</sup> ft lb/sq in (0-729 J/m <sup>2</sup> )
High Range:	0-729 x 10 <sup>-3</sup> ft lb/sq in (0-1950 J/m <sup>2</sup> )
Display:	3.5 LED digits controlled by AV-3 Microcomputer
Computer Output:	RS-232C
Peak/Angular Resolution:	0.1°
Unit Repeatability:	±2 English units as determined by calibration test weights
Unit to Unit Agreement:	3% with calibrated, solid stainless steel pendulum
Sample Press (Accupress):	Adjustable: 5 individual hydraulic cylinders driven by pneumatic multiplier
Sample Press Timer:	Electronic: adjusted at factory for 3.0 seconds
Sample Size:	1.0 x 1.0 inches (5 each)
Pendulum Release:	Magnetic
Sample Stage Clamp:	Pneumatic, push button
Statistics Package:	Average, standard deviation, sample delete, calibrate function (all switch actuated)
Zero and Span Adjustments:	Electrical, locking, accessible from front panel
Instrument Air:	50 psi, 35 cubic inches per press cycle
Input Power:	120 V ±10% / 60 Hz @ 3 amps 240 V ±10% / 50 Hz (specify with order)
Warm-up Time:	5 minutes
Instrument Dims. (WxHxD):	609.6 mm x 558.8 mm x 406.4 mm (24 in x 22 in x 16 in)
Case Dims. (WxHxD):	736.6 mm x 660 mm x 482.6 mm (29 in x 26 in x 19 in)
Net Weight:	33.5 kg (74 lb)
Gross Weight:	37 kg (82 lbs)

*Specifications subject to change without notice.*

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