



**Thwing-Albert  
Instrument Company**

**More Than a Century of Testing Solutions**

**IDM<sup>®</sup>**  
instruments

## **ProTear Elmendorf Tear Tester**

With over 90 years experience as the original manufacturer of the Elmendorf design, the Thwing-Albert Elmendorf Tear Tester is recognized as the worldwide standard.

Based on the classic design, the ProTear Testers quickly and accurately measure the tear resistance of sheet materials including paper, textiles, roofing products, film and foils.

Three models are available: the Electronic ProTear, the Mechanical ProTear and the Heavy-Duty ProTear, which ensures you get the instrument ideal for your application and budget. The ProTear Tester offers several capacity configurations ranging from 200 to 25,600 grams. Capacities can be changed quickly and easily with augmenting weights. This configuration eliminates the necessity of multiple pendulums and simplifies the testing of different material.

- Three models to choose from:  
Mechanical, Electronic & Heavy Duty
- Digital encoder ensures accurate results\*
- Electronic balancing of pendulums\*
- Configurable display shows test information and software menus\*
- User-friendly, one-touch software\*
- RS-232 data output\*
- Quick capacity change with augmenting weights
- One-touch pneumatic clamping and pendulum release available\*

\* *Feature of Electronic Model*



**Over 90 Years of History  
The Original Elmendorf**

The **ProTear Elmendorf Tear Tester** is capable of testing to a variety of standards:

ASTM D295, D752, D4247, D1424, D1922, D5734  
TAPPI T414, T496  
BS 2782, 4253, 4468  
CPPA D.9  
DIN 53862, 53128  
ISO 1974,6383-2, 9290  
EN21974  
SCAN P11

*Heavy-Duty ProTear Standards:*  
ASTM D751, D5734, ASTM D1424  
ISO 13937-1

Visit [www.thwingalbert.com](http://www.thwingalbert.com) for a complete listing of industry standards.

## Electronic ProTear Model

The electronic model provides several enhancements over the mechanical model. All test results and statistics are calculated automatically and displayed on the built-in screen. An RS-232 port enables test results to be transmitted to a printer or computer.

Repeatability and precision are increased as pendulum movement is monitored by a digital encoder. Ergonomically designed for ease of operation and conservation of laboratory space, the ProTear Electronic Model incorporates both mechanics and electronics into a single footprint design.



*Electronic Model*

Other standard features of the electronic model include air-actuated pendulum release and sample clamps, microcomputer-assisted pendulum balancing and a membrane switch display panel.

The control panel provides one-touch clamping and test capabilities. Other functions include data entry of sample information such as sample ID, thickness, basis weight, sample direction and number of plies being torn. The "Units" key enables the simple configuration of result units.

## Mechanical ProTear Model

The Mechanical ProTear is a basic tear tester that offers an economic alternative to the electronic version. This model offers the quick change pendulum configuration without an electronic readout. Test results are obtained by means of a pointer on a graduated scale from 0-100%.



*Mechanical Model*

## Heavy-Duty ProTear Model

The Heavy Duty Elmendorf ProTear is ideal for measuring the tearing strength of textile materials and is available as an electronic or mechanical model. Extremely durable yet compact, this rugged instrument provides capacities of 6,400, 12,800, and 25,600 grams with the use of augmenting weights. Update an existing Heavy Duty Elmendorf with an electronics package to quickly enhance the functionality of the unit.



*Heavy-Duty Model*



## Spencer Impact Attachment

The Spencer Impact Attachment was developed for use with Thwing-Albert's Elmendorf Tear Tester and complies with ASTM D3420-94. It provides one of the most repeatable methods of testing impact resistance of plastic films and packaging materials. The fixture closely approximates the strain rates experienced in end-use applications; thereby, results correlate well with actual material performance. The clamping mechanism is air-operated which ensures a secure hold and high level of accuracy. The Spencer Impact Attachment consists of a puncture arm that is permanently attached to the pendulum and is fitted on the end with an interchangeable impact head that is available in various shapes and sizes. The pendulum swings the impact head through the clamped specimen and the energy required to puncture the sample is recorded.

### Specifications

- **Standard Impact Head:**
  - Radius: 0.5 inches (12.7 mm)
  - Diameter: 0.75 inches (19.0 mm)
- **O-Ring Clamp:**
  - Inside Diameter: 89 mm
- **Sample Size:**
  - 5 x 5 in (127 x 127 mm) square
  - 5.25 in (133.35 mm) diameter circle
- **Air Clamp Assembly:** Min 60 PSI
- **Pendulum Capacities:**
  - 200, 400, 800, 1600, 3200
  - or 6400 gram

## Operation

The operation of the ProTear is easy - simply secure the sample in the two clamps, make an initial tear with the attached blade and release the pendulum. The tearing resistance of the material is measured via the transference of the potential energy stored in the raised pendulum to kinetic energy. A portion of this energy is absorbed during the tearing of the sample and is used as a measure of the material's resistance to a continuing tear. The energy required to tear the sample is reported as a percentage of the pendulum capacity or force.

## Fast, Flexible Software

The ProTear's standard menu-driven software provides total control over test parameters and reports test data seconds after test completion.



- Test Results include tear strength, tear per ply, average tear strength and tear index.
- Quickly enter sample data - thickness, basis weight, sample ID, sample direction.
- Configurable display - test parameters, results and reports.
- Obtain results as percent of pendulum capacity, grams, pounds or millinewtons.
- Calculated Statistics - average, high, low, standard deviation, range & variance.
- Configurable reports.
- Provision to delete and restore test results.

## Data Acquisition Interface Software

An optional data acquisition software program installs quickly and is easily configured with user-friendly drop-down menus. It provides the ability to capture serial data, customize it for specific requirements and then transfer it to other applications such as Excel™ and Access™. Use the capabilities of these applications to create graphs and reports that automatically update with real-time data.

# Accessories

## Air Clamp Assembly

An air-operated clamping assembly is available for both the Mechanical ProTear and the Mechanical Heavy Duty ProTear. Air clamps eliminate user variability, shorten sample set-up time and provide a secure hold.

## Augmenting Weights

Quickly change the capacity of the ProTear Tester for testing different material.

## Calibration Checkweights

To ensure the accuracy of test results, it is vital to maintain the calibration of the ProTear tester. Checkweights are available for periodically verifying the calibration of the instrument.

## 98-1 Sample Cutter

Accurate samples are necessary to achieve repeatable test results. The 98-1 is a twin blade cutter which ensures precise cuts, facilitates testing and reduces operator fatigue. Quickly and accurately prepare samples 63 mm wide and up to 152 mm long.



## Alfa Sample Cutter

The Alfa Sample Cutter utilizes interchangeable dies to prepare a wide range of samples. As industry standards specify different shape and size samples, simply change the die to prepare any shape required. A typical standard, ASTM D1922, calls for a constant radius sample which can be prepared quickly and accurately with an Alfa Cutter.





The Original Elmendorf  
Over 90 Years

# Specifications

## Physical Specifications - ProTear Elmendorf Tear Tester

<b>Model Type</b>	<b>ProTear Electronic</b> Cat. 60-2005	<b>ProTear Mechanical</b> Cat. 60-2001
<b>Dimensions</b>	483 mm x 398 mm x 578 mm 19 in x 15.66 in x 23 in	483 mm x 229 mm x 539 mm 19 in x 9 in x 21.2 in
<b>Net Weight</b>	33.6 lbs (15,2 kg)	31.6 lbs (14,3 kg)
<b>Model Type</b>	<b>Heavy-Duty Electronic</b> Cat. 260-2000	<b>Heavy-Duty Mechanical</b> Cat. 260-2001
<b>Dimensions</b>	483 mm x 330 mm x 610 mm 19 in x 13 in x 24 in <i>Electronic Box:</i> 375 mm x 356 mm x 89 mm (14.75 in x 14 in x 3.5 in)	483 mm x 330 mm x 610 mm 19 in x 13 in x 24 in
<b>Net Weight</b>	Base Unit with 6400 gm pendulum: 71 lbs (31,3 kg)	Base Unit with 6400 gm pendulum: 69 lbs (31,3 kg)

## Performance Data

<b>Model Type</b>	ProTear Electronic (60-2005)	ProTear Mechanical (60-2001)
Capacity	200, 400, 800, 1600, 3200 & 6400 gms	400, 800, 1600, 3200 & 6400 gms
Accuracy	±0.2% of Pendulum Capacity	±0.5% of Pendulum Capacity
<b>Model Type</b>	Heavy-Duty Electronic (260-2000)	Heavy-Duty Mechanical (260-2001)
Capacity	6400, 12,800 & 25,600 gms	6400, 12,800 & 25,600 gms
Accuracy	±0.2% of Pendulum Capacity	±0.5% of Pendulum Capacity

Electronic Models:  
Display  
4 Line by 16 character backlit LCD

Power Consumption  
Operating Maximum: 600 Watts

Standby Maximum: 12 Watts  
Power Requirements  
110 VAC, 50/60 Hz / 220/230 VAC, 50 Hz / 240 VAC, 50 Hz

*Specifications subject to change without notice.*

Operating/Storage Environment:  
Air Temperature:  
Operating: 10° to 50° C (50° to 122° F)  
Storage: -25° to 70° C (-13° to 158° F)  
  
Relative Humidity:  
Operating: 10% to 85% (Non-Condensing)  
Storage: 5% to 90% (Non-Condensing)



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