



# IPC-TM-650 TEST METHODS MANUAL

Number <b>2.4.17</b>	
Subject <b>Tear Strength (Propagation)</b>	
Date <b>4/73</b>	Revision
Originating Task Group <b>N/A</b>	

**1.0 Scope** This method is to determine the average force in grams required to propagate tearing through a specific length of the constant radius specimen. Because of the variation of materials and orientation of fibers, the method has been designed to compensate and derive acceptable data.

## 2.0 Applicable Documents

**ASTM-D-689** Tear Strength

**3.0 Test Specimens** At least five specimens from each direction are required to obtain an average result. They shall be cut as per Fig. 1. A Thwing-Albert Co. TA63 Sample Cutter, Catalog No. 98 may be used.

**4.0 Apparatus** A Pendulum Impluse Tester from Thwing-Albert Co., or equal, having: stationary clamp, moveable clamp, stop catch, pointer and scale.

## 5.0 Procedure

### 5.1 Preparation

**5.1.1** Cut specimens, adjust and calibrate apparatus paying particular attention to the pendulum to be certain it swings freely.

**5.1.2** Separate clamps 0-10 in. apart and align the specimen in the plate perpendicular to the plane of the oscillation of the pendulum, with the edges of the jaws gripping the specimen in a horizontal line.

**5.1.3** The clamping surface of the jaws must be at least 1 in. in width and 0.5 in. in depth.

### 5.2 Test

**5.2.1** Raise the pendulum to its top position, place specimen midway in the clamps so that its upper edge is parallel to the top of the clamps and the precut initial slit is at the bottom of and between the clamps at right angles to their top.

**5.2.2** Release the stop latch and tear the specimen.

**5.2.3** As the pendulum section completes its swing, catch it, being careful not to disturb the position of the pointer.

**5.3 Evaluation** Examine specimen carefully. If torn through the constant-radius section within approximately 60° on either side of the vertical line of intended tear, record the pointer reading to the nearest 0.5 unit. If torn outside the 60°, disregard specimen and test a new piece. Calculate the tearing resistance in grams (R), as follows:

$$R = \frac{S \times C}{n}$$

S = Corrected scale reading

S = Machine capacity in grams

n = Number of sheets torn

**6.0 Notes** Thwing-Albert Instrument Co. is located in Philadelphia, Pennsylvania.

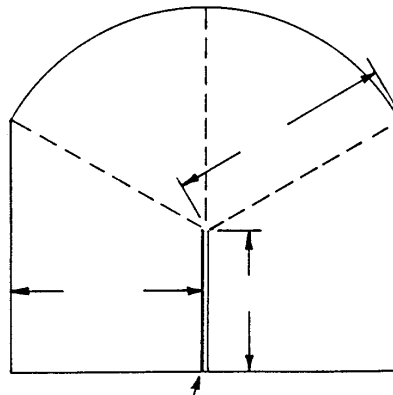


Figure 1