



Standard Test Method for Tensile Breaking Strength of Perforations in One-Part Continuous Forms Paper¹

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1. Scope

1.1 This test method covers the procedure for testing the tensile breaking strength of the perforations in one-part continuous forms.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

D 585 Practice for Sampling and Accepting a Single Lot of Paper, Paperboard, Fiberboard, or Related Products²

D 685 Practice for Conditioning Paper and Paper Products for Testing²

D 828 Test Method for Tensile Properties of Paper and Paperboard Using Constant-Rate-of-Elongation Apparatus²

E 122 Practice for Choice of Sample Size to Estimate a Measure of Quality for a Lot or Process³

D 1968 Terminology Relating to Paper and Paper Products²

3. Terminology

3.1 Definitions shall be in accordance with Terminology D 1968 and the *Dictionary of Paper*⁴.

4. Summary of Test Method

4.1 ASTM test methods for tensile strength form the basis of this test. The size of test specimens may be modified to accommodate the characteristics of the material that is being tested.

5. Significance and Use

5.1 Minimum tensile strength of the perforation is important to assure that the form will not prematurely break apart during

the printing, converting, and forms handling operation.

5.2 Where the various parts are detached for further processing maximum tensile strength of the perforation is important in the various operations to which the form is subjected.

6. Interferences

6.1 Avoid manipulation by folding and refolding a perforation since this will cause weakening of the ties in the perforation. The folded specimen should not be unfolded until just prior to testing.

6.2 To avoid placing uneven stress on the perforation, exercise extreme care in placing the test piece in the jaws of the tensile tester to be sure that the strip is not skewed. Uneven stress results in a “tear” effect rather than the “tensile” effect.

7. Apparatus

7.1 *Tensile Tester*—Testing machines meeting the requirements of Test Method D 828.

NOTE 1—Test Method D 828 describes the apparatus and calibration of the instrument to be used for conducting tests described in this test method. The sampling, test specimen, and procedure portions of the test should follow the instructions given in this test method.

7.2 *Specimen Cutter*—A device for cutting test specimens with clean and parallel edges to a width of 25.4 ± 1 mm (1 ± 0.04 in.).

8. Sampling

8.1 For acceptance sampling, obtain the sample in accordance with Practice D 585.

8.2 When sampling for other purposes, use Practice E 122 as an alternative.

8.3 From the material obtained in 8.1 or 8.2, select sufficient test units of each sample to meet the requirements of 8.5 and 8.6 as follows:

8.3.1 *Folded perforations*—Take consecutive duplicate samples of the perforation folded so that the front printing is not visible (in角度 perforation) and consecutive duplicate samples so that the front printing is visible (outfold perforation).

8.3.2 *Unfolded perforations perpendicular to the machine or web direction*—Take duplicate samples of each perforation between consecutive “in角度” perforations.

8.3.3 *Unfolded perforations parallel to the machine or web direction*—Take duplicate samples of each perforation, the

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² *Annual Book of ASTM Standards*, Vol 15.09.

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ Available from the Technical Association of the Pulp and Paper Industry, P.O. Box 105113, Atlanta, GA 30348.