



Standard Specification for Toilet Tissue for Industrial and Institutional Use¹

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1. Scope

1.1 This specification covers various types and styles of toilet tissue for purchasers such as government agencies, school boards, and industry. (Additional information is given in Appendix X1.)

1.2 This specification covers virgin, recycled, and recycled content paper products (see X1.2):

1.3 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

1.4 The following safety hazards caveat pertains only to the test method portion, Section 9, of this specification: *This standard does not purport to address all of the safety problems, 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 646 Test Method for Grammage of Paper and Paperboard (Weight Per Unit Area)²

D 685 Practice for Conditioning Paper and Paper Products for Testing²

D 824 Test Method for Rate of Absorption of Water by Bibulous Papers²

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

D 1968 Terminology Relating to Paper and Paper Products²

2.2 TAPPI Standards:

T 402 Standard conditioning and testing atmospheres for paper, board, pulp handsheets, and related products³

T 404 Tensile breaking strength and elongation of paper and paperboard (Using pendulum-type tester)³

T 410 Weight per unit area (Grammage or substance) of paper and paperboard³

T 432 Water absorbency of bibulous papers³

T 452 Brightness of pulp, paper and paperboard (Directional reflectance at 457 nm)³

T 494 Tensile breaking properties of paper and paperboard (Using constant rate of elongation apparatus)³

T 525 Brightness of pulp (Diffuse illumination and 0° observation)³

3. Terminology

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

4. Classification

4.1 The toilet tissue shall be classified as follows:

4.1.1 *Type*—See Table 1.

4.1.2 *Style*—Style I, Roll; Style II, Folded.

5. Ordering Information

5.1 Orders for tissue based on this specification shall specify the type, style, and type of wrapping (if any).

6. Chemical Composition

6.1 Toilet tissue shall be unglazed, and the fiber content or recycled fiber content, or both, shall be agreed upon between the buyer and seller.

7. Physical Properties

7.1 The average value of each characteristic shall meet the requirements specified in Table 1.

7.2 The number of sheets per roll or package, the sheet width and length, the roll diameter, and the core diameter shall be agreed upon between the buyer and seller.

7.3 *Workmanship*—The toilet tissue shall be made as agreed upon in 8.1 with respect to holes, tears, wrinkles, cleanliness, and foreign materials or dirt. Edges shall be cleanly cut and not ragged.

7.4 *Brightness*—When required, the brightness level shall be agreed upon between the buyer and the seller (see TAPPI T452).

8. Other Requirements

8.1 Precise defect levels and acceptable quality levels shall be agreed upon between the buyer and seller.

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

³ Available from the Technical Association of the Pulp and Paper Industry, One Dunwoody Park, Atlanta, GA 30341.

⁴ Available from American Paper Institute, 260 Madison Avenue, New York, NY 10016.

TABLE 1 Requirements for Toilet Tissue, Industrial

Test Basis→		Style I—Roll Toilet Tissue				Style II—Folded	
		Type 1	Type 2	Type 3 ^A		Type 4	Type 5
		one-ply	one-ply	two-ply	one-ply	single-fold	double-fold
Test Method D 646 or TAPPI T410							
Basis weight 24 × 36—500 or grammage	lb, min g/m ² , min	12.5 20.3	10.0 16.3	17.0 27.7	8.5 13.8	10.0 16.3	17.0 27.7
Test Method D 828, TAPPI T404 or T494							
Tensile strength, dry cross- direction	ozf/in., min	4.0	4.0	4.0	1.9	4.8	4.8
2-in. (50-mm) gage length	N/m, min	44	44	44	22	53	53
Test Method D 824 or TAPPI T432							
Absorption time 0.01 MI H ₂ O	s, max	60	60	5	60	60	5

^AThis is a two-ply tissue but may be tested either for one- or two-ply values as listed.

8.2 *Odor*—The tissue shall have no disagreeable odor, either wet or dry, in accordance with reasonable industry practice.

8.3 *Dispensability*—The tissue shall dispense properly from the fixture, when loaded according to directions.

9. Sampling and Test Method

9.1 Test each lot of toilet tissue of a single type and style for characteristics listed in Table 1. Randomly select 25 rolls or packages for testing. Remove and discard any packaging or banding material. Determine compliance to size specifications as agreed upon between the buyer and the seller in accordance with 7.2. Size determination is made by averaging measurements of at least one tissue from each of the 25 packages for each dimension of interest. From each roll or package randomly withdraw twelve folded tissue sheets, or unroll a random strip of twelve connected sheets on perforated roll tissue, or a random specimen approximately 54 in. (1350 mm) long for non-perforated roll tissue. Distribute the twelve folded tissues into twelve equal test units. Separate the twelve connected perforated sheets by cutting, being careful not to stretch the sheets, and distribute into twelve test units. Cut the 54-in. specimen of non-perforated roll tissue into twelve approximately 4.5-in. (110-mm) sheets, being careful not to stretch the sheets, and distribute into twelve test units. Combine four test units (100 sheets) and determine grammage by cutting the (100 sheets) to a size of 100 by 100 mm and weighing the 100 sheets as a unit. The weight of the 100 sheets will be the grammage. Repeat with a second four test units. Use two test units to determine dry crossdirection tensile strength making one measurement on each sheet. Use two test units to determine absorption time by making one test on each sheet. Average the 2 measurements of grammage, the 50 measurements of cross-direction tensile strength, and the 50 measurements of absorption time to determine acceptance.

10. Bid Samples

10.1 When requested, the bidder shall submit a representative sample for testing purposes. The sample shall be com-

prised of five packages (or rolls) of each type and style of tissue being bid. All samples shall be clearly marked with the bidder's name and address, bid number, commodity number, manufacturer and brand name.

11. Conditioning

11.1 Prior to any physical testing, condition all samples in accordance with Practice D 685 or TAPPI T402.

12. Inspection and Deliveries

12.1 When a random sample is obtained at the point of delivery, it shall be selected and tested in accordance with 9.1.

13. Rejection and Rehearing

13.1 If samples selected in accordance with 9.1 fail to meet the bid award specifications, the entire shipment of that type and style is subject to rejection, and the seller shall be notified immediately. Further procedure is subject to prior agreement between the buyer and the seller.

14. Packaging, Package Marking, and Shipping

14.1 Toilet tissue shall be packed in shipping containers of the type, size, and kind commonly used for the purpose and in a manner that ensures acceptance by common carrier and safe delivery to the point of destination.

14.2 Each shipping container shall be clearly marked with the following information:

14.2.1 Name and address of the manufacturer,

14.2.2 Type and style of tissue,

14.2.3 Quantity of packages or rolls and tissue sheets per package or roll, and

14.2.4 Any other information agreed upon between the buyer and the seller.

15. Keywords

15.1 paper; tissue; tissue paper; toilet tissue