

## TESTING STANDARDS AND DEFINITION OF TERMS

(B) The P.L. 101-423, Joint Resolution to Establish a National Policy on Permanent Paper, passed October 1990, states: "It is the policy of the United States that Federal records, books, and publications of enduring value be produced on acid free permanent papers."

**Pick resistance:** Use method T-459 (wax pick) for uncoated papers. *Note: There is no standardized pick test for coated papers.*

**PMU** (phosphor meter unit): Specialized equipment for measuring this property available from the U.S. Postal Service.

**Porosity:** Use method T-460.

**Postconsumer fiber:** Pulp fiber derived from postconsumer recovered paper.

**Postconsumer material:** "(1) Paper, paperboard and fibrous wastes from retail stores, office buildings, homes and so forth, after they have passed through their end-usage as a consumer item including: Used corrugated boxes; old newspapers; old magazines; mixed waste paper; tabulating cards and used cordage; and

(2) All paper, paperboard and fibrous wastes that enter and are collected from municipal solid waste." (40 CFR 247.3)

**Recovered material:** Waste material and by-products that have been recovered or diverted from solid waste, but such term does not include those materials and by-products generated from, and commonly reused within, an original manufacturing process. In the case of paper and paper products, the term "recovered materials" includes:

(1) Postconsumer materials such as:

(i) Paper, paperboard, and fibrous wastes from retail stores, office buildings, homes, and so forth, after they have passed through their end usage as a consumer item, including: Used corrugated boxes, old newspapers, old magazines, mixed waste paper, tabulating cards, and used cordage, and,

(ii) All paper, paperboard, and fibrous wastes that enter and are collected from municipal solid waste; and

(2) Manufacturing, forest residues, and other wastes such as:

(i) Dry paper and paperboard waste generated after completion of the papermaking process (that is, those manufacturing operations up to and including the cutting and trimming of the paper machine reel into smaller rolls or rough sheets) including envelope cuttings, bindery trimmings, and other paper and paperboard waste, resulting from printing, cutting, forming, and other converting operations; bag, box and carton manufacturing wastes; and butt rolls, mill wrappers, and rejected unused stock; and

(ii) Finished paper and paperboard from obsolete inventories of paper and paperboard manufacturers, merchants, wholesalers, dealers, printers, converters, or others;

(iii) Fibrous by-products of harvesting, manufacturing, extractive, or wood-cutting processes, flax, straw, linters, bagasse, slash, and other forest residues;

(iv) Wastes generated by the conversion of goods made from fibrous material (e.g., waste rope from cordage manufacture, textile mill waste, and cuttings); and

(v) Fibers recovered from waste water that otherwise would enter the waste stream." (40 CFR 247.3)

**Recovered Materials Advisory Notice (RMAN):** EPA guidance regarding certification and verification of the use of recovered fiber in printing and writing papers clarifying section 6002(i)(2)(c) of the Resource Conservation and Recovery Act (RCRA) of 1976.

**"Recycled" content paper:** This term is not specifically defined in any EPA guidance documents or in the statutes, but has come to mean paper containing any of the recovered material categories of fiber, such as postconsumer or cotton (or equivalent).

**Reflectance (brightness) drop:** Measure brightness on a marked area of the sheet, using method T-452. Expose the marked area in a water-cooled xenon-arc lamp, continuous Lamp fading apparatus for 48 Standard Fading Hours, using method 16E of the American Association of Textile Chemists and Colorists (One Davis Drive P.O. Box 12215, Research Triangle Park, NC 27709; www.aatcc.org). Recondition the sheet in the standard atmosphere, and again measure the brightness of the marked area. Calculate reflectance drop as the difference between the two brightness results. Report the average reflectance drop of not less than five sheets.

**Rosin:** See sizing.

**Sampling:** Sampling shall be conducted in accordance with T-400. Agencies shall specify detailed plans, and criteria for acceptance or rejection, tailored to specific end products, grades, end uses, or other particular conditions. Each agency shall also specify detailed plans for visual examination of lots of paper for properties not included in these Testing Standards. Agencies shall make documents incorporating such plans available to bidders and contractors.

**Sizing:** (A) For animal glue, use method T-504. (B) For rosin, use method T-408.

**Smoothness:** Use method T-538.

**Speck:** A unit of dirt; any foreign matter 0.02 mm<sup>2</sup> or larger embedded in the sheet which when examined by reflected light has a contrasting color to the rest of the surface. Use method T-537. *Note, in making the visual count, the specks should be visible when the specimen is examined in well lit room at a 45° angle from the normal, 30 to 45 cm (12 to 18 inches) from the surface of the sheet. It is not necessary to lift or rotate the specimen to see the specks.* Also see dirt.

**Stiffness:** Gurley test—use method T-543. Test specimen size is 64 mm long by 51 mm wide. Taber test—use method T-489.

**Stock (fiber analysis):** Use method T-401, except for those paper specification standards containing the following language:

"Free from groundwood and/or unbleached pulp," or

"100 percent or the remainder bleached chemical (wood) pulp."

These requirements shall be interpreted to mean that "the paper is essentially free from lignin."

To evaluate for the presence of lignin, use lignin test method above. Alternatively, use TAPPI T-401 and the Graff C-Stain for fiber analysis. A yellow color reaction shall be interpreted to signify the presence of lignin and **shall be sufficient cause for rejection of the paper.** Note, (1) In the case of hardwood pulps, the yellow reaction may be masked by the strong blue kraft reaction and thus give the fibers a greenish appearance. See Appendix H.1.2 of T-401 for specific Color descriptions. (2) Some pulps such as BCTMP also produce a yellow reaction to the Graff C-stain. Should this occur, the paper manufacturer should be contacted for a certification of the composition of the fiber furnish used in the manufacture of the paper. If hardwood BCTMP has been used, the lignin content of the paper shall not exceed 3 percent when measured spectrophotometrically.

**TCF:** See chlorine-free.

**Tearing strength (resistance):** Use method T-414.

**Tensile strength:** Use method T-494. For wet tensile strength, heat the specimens at 105 °C for 15 minutes, then use method T-456. Report time of the immersion.

**Thickness:** Use method T-411.

**Thread count:** Use method 5050 of Federal Test Method Standard No. 191 or D 1910 of ASTM.

**Unbleached:** Paper or pulp not treated with bleaching agents. See stock.

**Vegetable-fiber paper:** Paper which typically contains a significant amount of "renewable" plant fibers, not wood or cotton fibers.

**Wastepaper:** The term is obsolete.

**Watermark:** A translucent design impressed on paper by the raised pattern on the dandy roll used during the manufacture of paper.

**Water resistance:** (A) For papers, use method T-433. (B) For boards, use method T-441, except that the depth of water shall be 75 mm and the time of exposure 60 minutes.

**Writing quality:** When "pen and ink" is specified, the degree of feathering shall be determined by using a 1 pct ink solution of either C.I. Acid Red 1, C.I. 18050 or C.I. Acid Green 3, C.I. 42085 using an extra fine pen nib such as Estabrook Falcon #048, Hunt #107, Hunt #512 or equivalent. If "ball point and felt tip pens" are specified, any commercially available brand name may be used.