

Standard Method of Test for BULKING THICKNESS OF PAPER¹



A.S.T.M. Designation: D 527 - 41

ADOPTED, 1941.²

This Standard of the American Society for Testing Materials is issued under the fixed designation D 527; the final number indicates the year of original adoption as standard or, in the case of revision, the year of last revision.

Scope

1. This method of test for bulking thickness covers the procedure for measuring the average thickness of paper when placed in a pile, as for use in books.

Bulking Thickness

2. The bulking thickness of paper or paperboard is the average single-sheet thickness in thousandths of an inch when a pile of several sheets is placed under a steady pressure of 7 to 9 psi. between two circular and parallel plane surfaces, the smaller of which has an area of approximately 0.25 sq. in. (160 sq. mm.).

NOTE.—In general for ordinary papers, the average bulking thickness is approximately the same as the single-sheet thickness but usually from about 2 to 6 per cent lower. Also, depending on the type of paper, a variation in pressure of from 5 to 10 psi. causes a corresponding decrease in the results by about 3 per cent. Halving the area of the presser foot

while maintaining the unit pressure constant results in an increase of from 1 to 3 per cent.

Apparatus

3. The micrometer shall conform to the following requirements:

(a) It shall have two plane faces, the smaller of which is circular and 0.25 to 0.33 sq. in. (160 to 215 sq. mm.) in area, corresponding to a diameter of 0.56 to 0.65 in. (14.3 to 16.5 mm.). The faces shall be parallel to within 0.0002 in. (0.005 mm.) and constrained to move apart in an axis perpendicular to themselves.

(b) When the specimen is clamped between the faces, it shall be under a steady pressure of 7.0 to 9.0 psi. (0.40 to 0.63 kg. per sq. cm.).

(c) The distance between the graduations on the dial shall be such as to permit of estimating the thickness to 0.0001 in. or less.

(d) The micrometer shall be such as to repeat its readings to within 0.0001 in. at zero setting or on a steel gage block.

(e) Measurements made on standard steel thickness gages shall be within the following permissible variations:

¹ Under the standardization procedure of the Society, this method is under the jurisdiction of the A.S.T.M. Committee D-6 on Paper and Paper Products.

² Prior to adoption as standard, this method was published as tentative from 1939 to 1941.