



Designation: D 2808 - 69 (Reapproved 1990)

Standard Test Method for Compressive Strength of Corrugated Fiberboard (Short Column Test)¹

This standard is issued under the fixed designation D 2808; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers the determination of the edgewise compressive strength, parallel to the flutes, of single-wall, double-wall, or triple-wall corrugated fiberboard.

1.2 *This standard does not purport to address the safety problems 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 Method for Sampling and Accepting a Single Lot of Paper, Paperboard, Fiberboard, or Related Product²
- D 641 Method for Conditioning Paperboard, Fiberboard, and Paperboard Containers for Testing³

3. Significance and Use

3.1 This test method measures the edgewise compressive strength of a short column of combined corrugated fiberboard. Research has shown that the edgewise compressive strength of specimens with flutes vertical in combination with the flexural stiffness of the combined board relate to the top-to-bottom compressive strength of corrugated fiberboard shipping containers (1).⁴ This test method may be used for comparing the edgewise compressive strength of different lots of similar combined boards, or for comparing different material combinations (2,3).

4. Apparatus

4.1 *Compression Testing Machine*, having the following:

4.1.1 An upper and lower platen, one spring supported and the other driven. The surfaces of the platens shall be smooth, flat, and shall remain parallel to each other within 1 part in 2000 throughout the test. The platens shall have not more than 0.002-in. (0.050-mm) lateral relative movement.

4.1.2 A rate of force increase of 25 ± 5 lb/s (11 ± 2 kgf/s) when the platens are in contact and driven at 1.25 ± 0.75 in. (31.75 ± 19.05 mm)/min (4).

4.1.3 A capacity of at least 500 lb (227 kg).

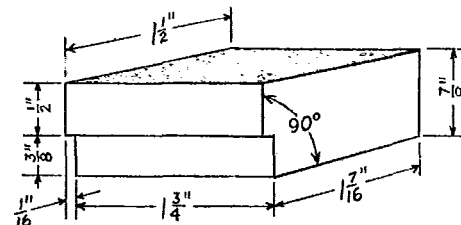


FIG. 1 Metal Guide Block

4.1.4 A means for measuring and indicating the applied load within 1 lb (0.5 kg).

4.1.5 An indicating mechanism that can be checked accurately with dead-weight loads, load cell, or proving ring. The accuracy required is 0.5 % or 0.5 lb (0.25 kg), whichever is greater.

4.2 Two metal guide blocks, like the one shown in Fig. 1, are required to align the specimen vertically in the testing machine.

5. Test Specimens (5,6)

5.1 From each test unit of the sample obtained in accordance with Test Method D 585, accurately cut with a sharp, no-set, (hollow-ground or taper-ground is desirable) saw blade ten representative specimens, each 1.25 ± 0.0625 in. (31.75 ± 1.59 mm) high by 2.00 ± 0.03125 in. (50.8 ± 0.79 mm) wide with the long edges parallel to each other and perpendicular to the axes of the flutes (Fig. 2). Assume that the saw blade is at a 90° angle to the table supporting the specimen.

5.2 Dip each loading edge (long edge) in molten paraffin (melting point 125°F, (52°C) approximately) to a depth of 1/4 in. (6.0 mm) and hold there until the absorbed paraffin, as determined visually, begins to migrate above the 1/4-in. (6.0-mm) dipped zone. Normally, a 3-s dip in molten paraffin at a temperature of 156 to 166°F (69 to 74°C) is satisfactory. If excessively rapid migration is encountered, reduce the temperature of the molten paraffin. Immediately after dipping, momentarily blot the loading edges of the specimen on paper toweling, preheated on a hot plate maintained at 170 to 180°F (77 to 82°C).

NOTE 1—The following alternative procedure for impregnating the loading edge of a specimen with paraffin is permissible: Place the loading edge on a paraffin-saturated pad, such as a paper toweling, heated on a hot plate maintained at 170 to 180°F (77 to 82°C) until the paraffin impregnates the specimen to the desired 1/4-in. (6.0-mm) depth. Generally this method is slower than the dipping method, and therefore permits better control of the depth of paraffin penetration for specimens

¹ This test method is under the jurisdiction of ASTM Committee D-10 on Packaging and is the direct responsibility of Subcommittee D10.17 on Paper and Paperboard Products.

Effective July 18, 1969.

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

³ Discontinued, see 1977 *Annual Book of ASTM Standards*, Part 20.

⁴ The boldface numbers in parentheses refer to the list of references at the end of this test method.