Designation: C 366 – 99

Standard Test Methods for Measurement of Thickness of Sandwich Cores[1]

This standard is issued under the fixed designation C 366; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 These test methods cover plant manufacturing procedures for measuring the thickness of flat sandwich cores. The two test methods covered are the following:

1.1.1 *Test Method A*—Roller-Type Thickness Tester and

1.1.2 *Test Method B*—Disk-Type Thickness Tester.

1.2 The values stated in SI are to be regarded as the standard. The inch-pound units given may be approximate.

1.3 *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. Significance and Use

2.1 Normally a close tolerance is desirable for core thickness so that sandwich panels may be manufactured with all the sandwich components fitting properly and without crushing the core.

2.2 These test methods are designed for measuring thickness of core as it is produced and are not intended for use in determining dimensions of core specimens for other tests.

2.3 These test methods provide standard methods of obtaining the core thickness of flat sandwich core materials and provide a basis for determining average thickness dimensions.

3. Apparatus

3.1 *Test Method A—Roller-Type Thickness Tester*:

3.1.1 *Roller-Type Thickness Tester*, consisting of a flat table with a rigid yoke framework attached, as shown in Fig. 1. Two rollers shall be mounted on this yoke, one fixed in position and one movable in the vertical direction. The vertical movement of the upper roller shall be translated to a dial gage, calibrated in 0.01-mm (0.001-in.) increments, that registers the amount of variation above or below a preset nominal dimension. The lower roller shall be fixed in position so that it projects 6 mm (0.25 in.) above the surface of the table. The upper roller shall exert a force of 18 N (4 lb) on the core material.

3.2 *Method B—Disk-Type Thickness Tester*:

FIG. 1 Roller-Type Thickness Tester

3.2.1 *Disk-Type Thickness Tester*, consisting of a flat table with a rigid yoke framework attached, as shown in Fig. 2. A 25-mm (1-in.) diameter presser disk movable in a vertical direction shall be mounted on the yoke. The vertical movement of the disk shall be translated to a dial gage, calibrated in 0.01-mm (0.001-in.) increments, that registers the amount of variation above or below a preset nominal dimension. The disk shall exert a force of 24 N (5.5 lb) on the core material.

4. Test Specimens

4.1 The test specimen shall be flat but otherwise may be any

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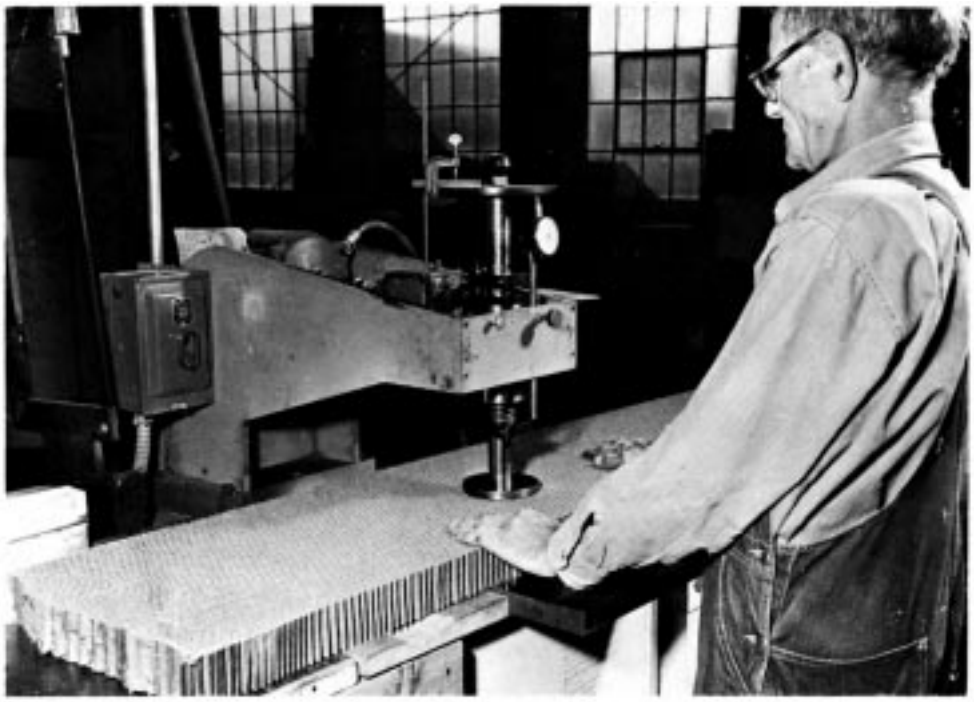

FIG. 2 Disk-Type Thickness Tester

length, width, and thickness consistent with the limits of the measuring apparatus.

5. Conditioning

5.1 When the physical dimensions of the core materials are affected by moisture, bring the specimens to constant weight (±1 %) before measuring, preferably in a conditioning room having temperature and humidity control, and perform the measuring, preferable, in a room under the same condition. A temperature of 23 ± 3°C (73± 5°F) and a relative humidity of 50 ± 5 % are recommended.

5.1.1 When a conditioning room is not available, record the actual temperature and humidity at the time of measurement.

6. Procedure

6.1 *Method A—Roller-Type Thickness Tester*:

6.1.1 Place a spacer bar of a thickness equal to the desired nominal core thickness between the rollers and zero the dial gage. Remove the spacer bar and insert the core material to be measured. Move the core through the rollers back and forth and observe the dial gage readings. Take care not to exert hand pressure on the core slice near the rollers, as this will affect the dial gage readings.

6.2 *Method B—Disk-Type Thickness Tester*

6.2.1 Place a spacer bar of a thickness equal to the desired nominal core thickness beneath the disk and zero the dial gage. Remove the spacer bar and insert the core material to be measured. With the disk automatically reciprocating vertically, move the core in a saw tooth pattern along the length of the specimen and observe the dial gage readings. If the honeycomb sample is excessively warped and the weight of the presser disk is not sufficient to straighten it, use an additional adjustable pressure ring concentric with the 25-mm (1-in.) diameter presser foot to force the sample to lie flat on the metal base plate. The outside diameter of this ring shall be 115 mm (4.5 in.).

7. Report

7.1 The shall include the following:

7.1.1 Complete description of the material and size of specimens,

7.1.2 Type of thickness measuring apparatus used,

7.1.3 Nominal core thickness,

7.1.4 Prescribed or recommended tolerance, plus or minus, and

7.1.5 Maximum variation of dial gage reading from zero (nominal core thickness) plus and minus.

8. Precision and Bias

8.1 *Precision*— It is not possible to specify the precision of the procedure in Test Method C 366 for measuring the core thickness because of the unavailability of consistent samples for testing.

8.2 *Bias*—Since there is no accepted reference material suitable for determining the bias for the procedures in this test method, bias has not been determined.

9. Keywords

9.1 core thickness; sandwich core