



Test Method for Determining the Dimensional Stability of Fiberboards, Cardboard, and Similar Rigid Materials Under Humid Conditions

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. This standard shall be used to determine the shape retention characteristics of fiberboards, cardboard and similar materials when subjected to specific temperature and humidity conditions.

1.2 Applicability. Fiberboard, cardboard, and similar rigid materials.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

None

3 Resources

3.1 Facilities.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.2 Equipment.

3.2.1 Cutting dies or shears for preparation of test pieces.

3.2.2 Pan (for containing test pieces) of internal dimensions $(254 +10/-0)$ mm $\times$ (400 ± 10) mm with vertical walls of ≈ 30 mm height, (material optional provided that it is unaffected by the test environment e.g., aluminium).

3.2.3 Vernier callipers accurate to ± 0.1 mm.

3.2.4 Humidity cabinet with air circulation, adjustable, capable of maintaining a temperature of $+40\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ and a relative humidity of $95\% \pm 5\%$.

3.3 Test Vehicle/Test Piece.

3.3.1 From the available material, test pieces $(254 +0/-0.2)$ mm $\times$ (40 ± 0.2) mm shall be taken from two (2) directions perpendicular to one another. If material is bowed the longer dimension shall be the chord of the sector produced by placing the test piece on a flat surface.

3.3.2 For initial sample approval and arbitration purposes six test pieces minimum from each direction, and for routine quality control three test pieces minimum from each direction shall be tested.

3.4 Test Time.

Calendar time: 3 d
Test time: 24 h
Coordination time: 2 h

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Personnel trained in accordance with the laboratory accreditation and Standard Operating Procedure requirements.

4 Procedure

4.1 Preparation. For initial sample approval, arbitration purposes and routine quality control, test pieces shall be tested in the as received condition (i.e., no special preconditioning).

4.2 Conditions.

4.2.1 Environmental Conditions. See 4.3.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

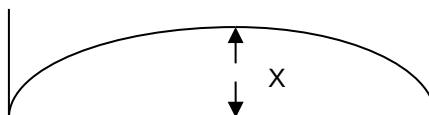
4.3 Instructions.

4.3.1 The test pieces shall be placed in the test pan such that the longitudinal dimension is across the 254 mm dimension of the pan, and that the test pieces are not in contact with one another. Any bowing of the test piece shall be measured with the calipers and noted as the datum for subsequent measurements.

4.3.2 The pan and contents shall be maintained in the humidity cabinet for $(24 \pm 0.5/-0)$ h at a temperature of $(+40 \pm 3)$ °C and a relative humidity of $(95 \pm 5)\%$.

4.3.3 After the treatment, any convex bowing (See Figure 1) of the test piece shall be measured as the vertical distance (X) maximum. from the pan bottom to the underside of the test piece to the nearest 0.1 mm.

Figure 1: Convex Bowing



4.3.4 Where concave bowing (See Figure 2) is observed the test piece shall be reversed in the pan and measurement of bowing performed as previously mentioned.

4.3.5 All calculations of bowing shall take into account any initial bowing of the test piece.

Figure 2: Concave Bowing

