



Designation: D 6790 – 02

Standard Test Method for Determining Poisson's Ratio of Honeycomb Cores¹

This standard is issued under the fixed designation D 6790; 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 approval. 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 honeycomb Poisson's ratio from the anticlastic curvature radii, see Fig. 1.

1.2 The values stated in SI units 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. Referenced Documents

2.1 *ASTM Standards:*

C 271 Test Method for Density of Sandwich Core Materials²

C 274 Terminology of Structural Sandwich Constructions²

3. Terminology

3.1 *Definitions*—Terminology C 274 defines terms relating to sandwich constructions.

3.2 *Symbols:*

c = chord measurement

d = depth measurement

R_a = anticlastic curvature radius

R_c = cylinder radius

μ = Poisson's ratio

4. Summary of Test Method

4.1 The Poisson's ratio of honeycomb core is determined by bending the core around a cylinder and taking measurements of the anticlastic curvature that occurs.

¹ This test method is under the jurisdiction of ASTM Committee D30 on Composite Materials and is the direct responsibility of Subcommittee D30.09 on Sandwich Construction.

Current edition approved Apr. 10, 2002. Published June 2002.

² *Annual Book of ASTM Standards*, Vol 15.03.

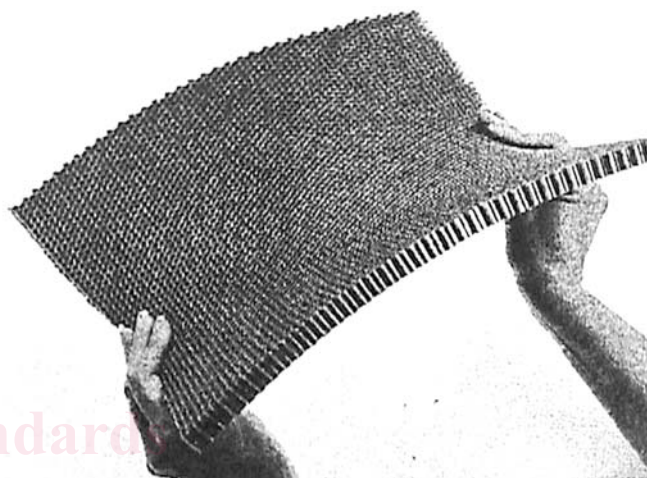


FIG. 1 Anticlastic Curvature

5. Significance and Use

5.1 Certain sandwich panel finite element programs require the Poisson's ratio of the honeycomb core. It is not possible to measure the honeycomb's Poisson's ratio by standard methods.

6. Interference

6.1 The test method shown here is one means of obtaining the Poisson's ratio of honeycomb. However, this test method has not been widely used, and it is in its conceptual stage.

7. Apparatus

7.1 *Cylinders*, of various diameters. A 610 mm (24 in.) diameter cylinder is recommended.

7.2 *Scale*, capable of measuring accurately to 0.25 mm (0.01 in.).

8. Sampling and Test Specimens

8.1 Test at least five specimens per test condition unless valid results can be gained through the use of fewer specimens, such as in the case of a designed experiment.