



ASTM D393 Testing Fixture

This test method covers the determination of the properties of flat sandwich constructions subjected to flatwise flexure in which the applied moments cause curvature of the sandwich facing planes.

These tests may be conducted to determine the sandwich flexural stiffness, the core shear strength and shear modulus, or the facings compressive and tensile strengths. Tests to evaluate core shear strength may also be used to evaluate core-to-facing bonds.

These testing fixtures follow a standard method of obtaining the sandwich panel flexural strengths and stiffness.

The sandwich stiffness and core shear modulus may be determined by calculations involving measured deflections of sandwich flexure specimens. Tests can be conducted on short specimens and on long specimens or on one specimen loaded in two ways, and the flexural stiffness and shear modulus can be determined by simultaneous solution of the complete deflection equations for each span or each loading. If the facing modulus values are known, a short span beam can be tested and the calculated bending deflection subtracted from the beam's total deflection. This gives the shear deflection from which the core shear modulus can be determined.



ASTM C393 Testing Fixture - Drawing

Test Standard	ASTM C393, D7249, D7250 and D546
Maximum Load	25 kN
Temperature Range	da -80 °C a 149 °C
Specimen Thickness	1-10 mm
Specimen Width	40 mm
Specimen Length	700 mm
Mass	9.00 kg

This test method it is also useful for flexural testing any other type of specimen, e.g., solid laminates per ASTM D 790, D 6272, and ASTM D 7264. . The standard Long Beam Flexure Fixture can also be customized. ASTM C 393 permits the use of either single loading, or two-point . These are usually termed three-point and four-point flexure, respectively. The fixture can be used in either configuration, one loading

head being removed and the remaining one centered on the loading beam to perform three-point loading.



ASTM C393 Testing Fixture - Assembly



ASTM C393 Testing Fixture - Application

Additional Information:

- ASTM Standard C 393-11 (2011), "Flexural Properties of Flat Sandwich Constructions," American Society for Testing and Materials, West Conshohocken, Pennsylvania (first issued in 1957);
- ASTM Standard D 790-10 (2010), "Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials," American Society for Testing and Materials, West Conshohocken, Pennsylvania (first issued in 1970);
- ASTM Standard D 6272-10 (2010), "Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials by Four-Point Bending," American Society for Testing and Materials, West Conshohocken, Pennsylvania (first issued in 1998).
- ASTM Standard D 7264-07 (2007), "Flexural Properties of Polymer Matrix Composite Materials," American Society for Testing and Materials, West Conshohocken, Pennsylvania (first issued in 2006).

Referenced Documents

- *ASTM C 273* Test Method for Shear Properties of Sandwich Core Materials;
- *ASTM C 480* Test Method for Flexure Creep of Sandwich Constructions;
- *ASTM E 4* Practices for Force Verification of Testing Machines.