

ASTM D732 TESTING FIXTURE

SHEAR STRENGTH BY PUNCH TOOL



ASTM D732 Testing Fixture

ASTM D 732, defines a punch-type of shear test. This test method covers the procedure for determining the shear strength of composite materials in the form of sheets, plates, and molded shapes. The thicknesses of specimen can range from 0.050” to 0.500”. A disc from 1” diameter will be drilled by the specimen using a specific equipment.

The specimen to be used may be either square with side 2” or circular with diameter of 2”. At the centre of specimen, will be a 7/16” hole. This specimen is clamped between the two hardened steel disks of the punch. The lower part of the punch will be inserted in the hole of the base plate, while the upper plate will be bolted to secure the specimen. The fixture will be placed at the base of the test machine, so the punch thanks to a compressive force applied from the top, will cut a 1” diameter disk from the specimen. The shear force is simply calculated as the maximum force applied divided by the shear area (punch circumference x specimen thickness).



ASTM D 732 Testing Fixture - Drawing

This test method is intended as a comparative test, and not as a quantitative measure of the shear strength of the material. As a materials screening test it does have the advantages of requiring a simple specimen and utilizing a simple test procedure. However, a uniform shear stress state is not attained; severe stress concentrations occur at the edges of the punch. If design values of shear strength are desired, either the Iosipescu Shear (Reference 2) or V-Notched Rail Shear (Reference 3) test method is recommended.

Test Standard	ASTM D 732 / no ISO equivalent
Maximum Load	100 kN
Temperature Range	from -73 °C to 316 °C
Specimen Thickness	between 0.127 and 12.7 mm
Specimen Width	50 mm
Specimen Length	50 mm
Mass	4.7 kg



ASTM D 732 Testing Fixture - Assembly



ASTM D 732 Testing Fixture - Application

Additional Information:

ASTM Standard D 732-10 (2010), “Standard Test Method for Shear Strength of Plastics by Punch Tool,” American



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Society for Testing and Materials, West Conshohocken, Pennsylvania (first published in 1943).

ASTM Standard D5379-12 (2012), “Standard Test Method for Shear Properties of Composite Materials by the V-Notched Beam Method,” American Society for Testing and Materials, West Conshohocken, Pennsylvania (first published in May 1993).

ASTM Standard D7078-12 (2012), “Standard Test Method for Shear Properties of Composite Materials by the V-Notched Rail Shear Method,” American Society for Testing and Materials, West Conshohocken, Pennsylvania (first published in April 2005).