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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 37897-2019

**Fibre-reinforced plastic composites - Determination of the
in-plane shear modulus by the plate twist method**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method equivalent to the ISO 15310.1999 "fiber reinforced plastic composite flat plate twist method to measure in-plane shear

Modulus.

The documents of our country that have a consistent correspondence with the international documents referenced in this standard are as follows.

---GB/T 27797 (all parts) Fiber reinforced plastic test board preparation method [ISO 1268 (all parts)];

---GB/T 17200-2008 Rubber and plastic tensile, pressure and bending test machine (constant speed drive) technical specifications (ISO 5893.

2002, IDT).

This standard was proposed by the China Building Materials Federation.

This standard is under the jurisdiction of the National Fiber Reinforced Plastics Standardization Technical Committee (SAC/TC39).

This standard was drafted. Inner Mongolia Aerospace Honggang Machinery Co., Ltd., Northwestern Polytechnical University.

1 Scope

1.1 This standard specifies the test method for testing the in-plane shear modulus (G_{12}) of fiber reinforced composites using standard flat specimens. When applied

For isotropic materials, the shear modulus test is independent of direction.

1.2 This standard is used to test the in-plane shear modulus of the specimen and cannot be used to test the shear strength. It is two points using the diagonal of the sample plate

As a support point, two points of the other diagonal line act as loading points, and the

loading point moves synchronously with the displacement of the tester beam.

1.3 This standard applies to fiber reinforced thermosetting composites and fiber reinforced thermoplastic composites.

Due to shear deformation under bending conditions, the entire section of the material is used for different fiber forms and/or different direction of the layup material

The layers must be evenly distributed so that the material is close to the homogeneous material in the thickness direction.

The coordinate system of the material is as specified in 3.8.

Note. This standard can be applied to polymers or other materials (including metal, ceramic and metal-based or ceramic-based composites).

For materials prepared using unidirectional fabrics, shear modulus and unidirectional or orthogonal paving obtained with multidirectional reinforced specimens ($0^\circ/90^\circ/\pm 45^\circ$)

The layer ($0^\circ/90^\circ$) enhanced sample obtained different shear modulus.

1.4 Specimens of this standard can be directly molded to the specified size, and samples can be added from the flat area of the board or the product.

1.5 This standard specifies a preferred sample size. Test results using other size specimens or specimens prepared under different conditions are not tested

Can be compared. Factors such as test rate and sample state also affect the test results. Therefore, when comparing test data, these factors should be

Strictly controlled and recorded.

Note. The shear stress-strain response is nonlinear at high strain levels. This test method measures the shear modulus in the low strain region and is not suitable for high strain.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

ISO 291.1997 Standard environment for plastic conditioning and testing
(Plastics-Standardatmospheresforcondi-

Tyingingandtesting)

ISO 1268.1974 Preparation of glass fibre reinforced plastics, resin adhesives, low-pressure laminates or slats for plastics testing (Plastics-Prep-

Aratationofglassfibrereinforced, resinbonded, low-pressure laminated plates or panels for test purposes)

Ses)

ISO 2602.1980 Statistical Interpretation of Test Results Average Confidence Interval (Statistical Interpretation of

test results-Estimation of the mean-Confidence interval)

ISO 2818.1994 Plastics are prepared by mechanical processing (Plastics-Preparation of test specimens by mechanical

Chinging)

ISO 5893.1993 Rubber and plastic tensile, pressure and bending tester (constant speed drive) specification [Rubber and plastics

test equipment-Tensile, flexural and compression types (constant rate of traverse)-Description]