

# JIS

## JAPANESE INDUSTRIAL STANDARD

Testing method for  
apparent interlaminar shear  
strength of carbon fiber  
reinforced plastics by  
three point loading method

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Testing method for apparent  
interlaminar shear strength of carbon  
fiber reinforced plastics by three  
point loading method

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1. Scope

This Japanese Industrial Standard specifies the method for testing the apparent short beam shear strength of carbon fiber reinforced plastics (hereafter referred to as the "CFRP"), by means of three-point loading method.

Remarks 1. The interlaminar shear strength obtained by this test are apparent values and therefore should be used only for the purpose of quality control and mutual comparison among materials.

2. The units and numerical values given in { } in this Standard are based on the conventional unit system and are appended informative reference.

3. The following standards are cited in this Standard.

JIS B 0601 Definitions and Designation of Surface Roughness

JIS B 7502 Micrometer Callipers for External Measurement

JIS B 7507 Vernier Callipers

JIS K 6900 Glossary of Terms Used in Plastic Industry

JIS K 7072 Preparation of Carbon Fibre Reinforced Plastic Panels for Test Purpose

JIS K 7100 Standard Atmospheres for Conditioning and Testing of Plastics

JIS Z 8401 Rules for Rounding off of Numerical Values

2. Definitions

For the main terms used in this Standard, the definition in JIS K 6900 is applied, and the rest of the terms shall be as follows.

- (1) interlaminar shear strength The strength against the shear stress working to slide laminar layers of CFRP laminated plate each other.
- (2) loading nose A jig to apply the load to the center of test specimen.
- (3) support distance A jig to support test specimens at two supports with a given distance.

3. Conditioning of test specimens and test temperature and humidity

3.1 Conditioning of test specimen The test specimen shall be conditioned at a standard temperature grade 2 and a standard humidity grade 2 [temperature  $23 \pm 2^\circ\text{C}$  and relative humidity  $(50 \pm 5) \%$ ] for 48 h or longer before test in accordance with JIS K 7100, unless otherwise specified.

3.2 Test temperature and humidity The test shall be conducted in a test room at the temperature and humidity specified in 3.1 [temperature  $23 \pm 2^\circ\text{C}$  and relative humidity  $(50 \pm 5) \%$ ], unless otherwise specified.

4. Apparatus

4.1 Testing machine The testing machine shall be capable of being operated at a constant speed of cross-head irrespective of the existence of loading or not and satisfies the following condition.

- (1) Loading jig The loading jig shall be of the fundamental structure illustrated in Fig. 1. The distance between the supports shall be adjustable, and the radii of the loading nose and the supports shall be as specified in Table 1.

Remarks 1. The widths of both loading nose and supports which contact with a test specimen shall be considerably larger than that of the test specimen. Moreover the surface of the loading jig shall have 6.3 a of the centre line average roughness specified in JIS B 0601.

2. When fracture occurs on the test specimen just under a loading nose as shown in Fig. 2, it is desirable to insert rigid plastic sheet (e.g. polyethylene sheet of about 0.2 mm in thickness) between loading nose and specimen.

Fig. 1. Example of loading jig for interlaminar shear

