

JIS

JAPANESE INDUSTRIAL STANDARD

Testing Methods for Flexural Properties of Carbon Fiber Reinforced Plastics

JIS K 7074—1988

Translated and Published

by

Japanese Standards Association

Printed in Japan

Licensee=Hong Kong Polytechnic University/9976803100
Not for Resale, 07/29/2014 23:17:47 MDT



Documents

Document Sharing Hub

6 S

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.



JAPANESE INDUSTRIAL STANDARD

JIS

Testing Methods for Flexural Properties of Carbon Fiber Reinforced Plastics K 7074-1988

1. Scope

This Japanese Industrial Standard specifies the methods for testing the flexural properties of carbon fibre reinforced plastics, hereinafter referred to as "CFRP" by means of three-point loading (Method A) and four-point loading (Method B).

Remark: The units and numerical values given in { } in this Standard are based on the traditional unit system and are appended for informative reference.

2. Definitions

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

- (1) flexural stress The value (product of the flexural load applied to the test specimen at an arbitrary point and the distance between the supports) divided by the value (product of the width and the square of the thickness of the test specimen) and multiplied by a coefficient ($\frac{3}{2}$ for three-point loading and 1 for four-point loading).
- (2) flexural strength The maximum flexural stress applied to test specimen.
- (3) flexural rupture strength The flexural stress at the moment when test specimen ruptures.
- (4) deflection The distance which the midpoint of the distance between the supports of the test specimen under load has moved from the original position.
- (5) maximum flexural deflection The deflection corresponding to the flexural strength or the flexural rupture strength.
- (6) flexural modulus of elasticity The value calculated from the gradient in linear part, within the elastic limit, of a flexural load-deflection curve.
- (7) loading nose A jig for applying load on test specimen.

Applicable Standards:

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 7100-Standard Atmospheres for Conditioning and Testing of Plastics
 JIS Z 8401-Rules for Rounding off of Numerical Values

Reference Standards:

JIS K 7055-Testing Method for Flexural Properties of Glass Fiber Reinforced Plastics
 JIS K 7203-Testing Method for Flexural Properties of Rigid Plastics
 JIS Z 8203-SI Units and the Use of their Multiples and of Certain other Units



3. Conditioning of Test Specimens and 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 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 apparatus shall operate at a constant speed of crosshead motion and comprise the following devices.

4.1.1 Loading Jig The loading jig for the three-point loading and that for the four-point loading shall be of the fundamental structure illustrated in Fig. 1 (a) and Fig. 1 (b), respectively. The distance between the supports shall be adjustable, and the radii of the noses and the supports shall be as specified in Table. The distance between the loading noses for the four-point loading may be variable.

Remark: The widths of the noses and the supports which contact with a test specimen shall be well over that of the specimen. Moreover the surface of the loading jig shall be 6.3 μm in the centre line average roughness specified in JIS B 0601.

4.1.2 Load Indicator The load indicator shall be capable of recording the total flexural load applied to a specimen with the passage of time during test and shall have a mechanism capable of indicating load with an accuracy of at least $\pm 1\%$ of the actual value.

4.1.3 Deflection Gauge The deflection gauge shall be capable of recording the total deflection of a specimen with the passage of time during test, and shall have a mechanism capable of indicating deflection with an accuracy of at least $\pm 1\%$ of the actual value.

Fig. 1. (a) Example of Loading Jig for Three-Point Loading (Method A)

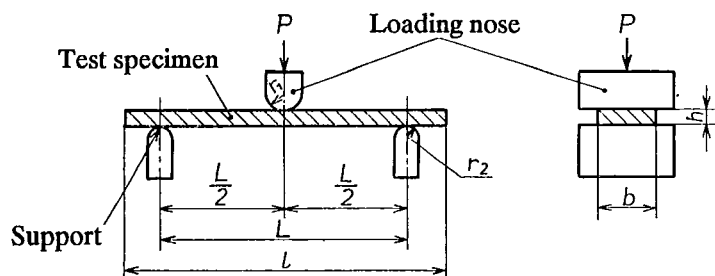


Fig. 2. (b) Example of Loading Jig for Four-Point Loading (Method B)

