

JIS

JAPANESE INDUSTRIAL STANDARD

**Testing method of
Izod impact strength of
glass fiber reinforced plastics**

JIS K 7062—1992

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

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glass fiber reinforced plastics

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1. Scope

This Japanese Industrial Standard specifies the method for the Izod impact test (hereafter referred to as an impact test) of glass fiber reinforced plastics (hereafter referred to as GFRP).

Remarks 1. The test by this method is a type of impact bending test. The test is as follows: When one end of the specifically sized test piece, which has been held as a cantilever, is impacted with specified speed and specified energy that is larger than that required for fracture, the energy needed for its fracture by one impact shall be measured, and then such as impact resistance, brittleness, and toughness of the test piece, GFRP, shall be measured.

2. The standards applicable to this Standard are as follows.

JIS B 7502-Micrometer Callipers for External Measurement

JIS B 7507-Vernier Callipers

JIS B 7739-Pendulum-Type Impact Testing Machines for
Non-Metallic Materials

JIS K 6900-Glossary of Terms Used in Plastic Industry

JIS K 7011-Glass Fibre Reinforced Plastics for Structural
Use

JIS K 7100-Standard Atmospheres for Conditioning and
Testing of Plastics

JIS Z 8401-Rules for Rounding off of Numerical Values

3. The units put in { } in this Standard are based on the traditional units and are appended for informative reference.

2. Definition of terms

The definition of main terms used in this Standard shall be as follows except those defined in JIS K 6900.

- (1) Izod impact test The test to measure Izod impact value by the operation as follows: Fix vertically one end of a test piece at its middle on a test-piece supporting base, give an impact to the spot of free end, 22 mm off from the fixed end of the test piece, by a hammer of an impact machine, and break the test piece by one impact.

- (2) Absorbed energy The energy needed to break a test piece (J){kgf·cm}.
- (3) Izod impact value The value (kJ/m²){kgf·cm/cm²} obtained by dividing an absorbed energy (J){kgf·cm} with original central sectional area of the test piece.
- (4) Fracture The separation of a test piece into two or more pieces by one impact by the hammer of an impact machine.

Remarks: When one impact gives no complete separation of glass fiber in the test piece, it might be regarded as being separated if the bending toughness is judged to be completely lost by trying quietly to bend it to the direction of impact.

- (5) Flat impact The impact carried out perpendicularly to the surface of original plate.
- (6) Edge impact The impact carried out in parallel to the surface of original plate.
- (7) Capacity of impact testing machine Nominal capacity which is potential-energy difference between the impacting position and raised position of the hammer of an impact testing machine.
- (8) Crest of impact edge The straight part of an edge crest, which is equipped on a hammer of the impact testing machine and gives the impact to a test piece.
- (9) Center of impact Point at which whole mass of a hammer is concentrated when the hammer of the impact testing machine swings around center line of a horizontal rotation axis.
- (10) Velocity of impact Linear velocity of impact center of a hammer given the instant the hammer of the impact testing machine strikes the test piece.
- (11) Blank swinging Swinging downward of the hammer of the impact testing machine from the raised position, without setting of a test piece, to opposite side by letting the hammer swing up freely.
- (12) Energy loss of testing machine When making the hammer carry out blank swinging with the pointer-for-desertion, the difference of potential energy which is calculated from the measured positions of being originally raised and of being swung up to the opposite side.

3. Conditioning of test piece and temperature and humidity for test

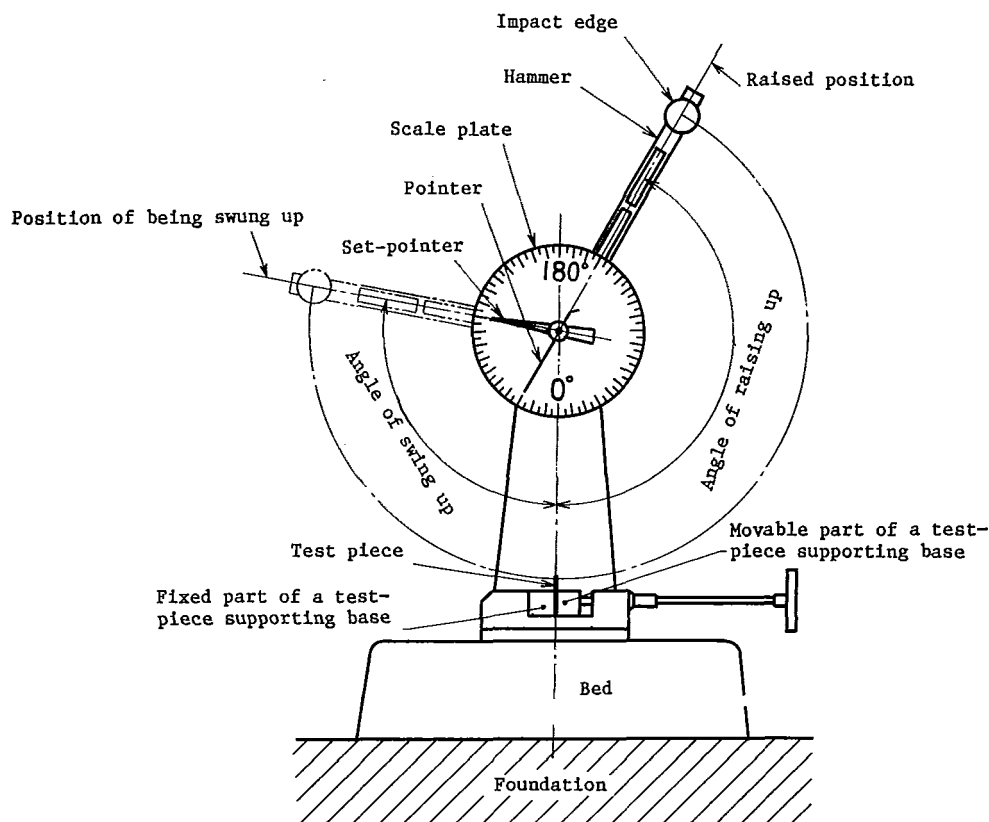
3.1 Conditioning of test piece Test piece should principally be kept for 48 h or longer under the second class standard temperature condition and the second class standard humidity condition [temperature $23 \pm 2^{\circ}\text{C}$, and relative humidity $(50 \pm 5) \%$] specified in JIS K 7100 prior to the test.

3.2 Temperature and humidity for test Test shall principally be carried out in the room of temperature and humidity conditioned [temperature $23 \pm 2^{\circ}\text{C}$, and relative humidity $(50 \pm 5) \%$] the same as shown in 3.1.

4. Testing machine and measuring tools

4.1 Testing machine The testing machine for impact test shall comply with the Izod impact testing machine specified in JIS B 7739. An example of impact testing machine is shown in Fig. 1.

Fig. 1. Example of Izod impact testing machine



- Remarks 1. Impact testing machine, when either being decomposed, reconstructed, remodeled, or being replaced, shall be tested on its precision and, prior to use, be confirmed if it meets the requirements in JIS B 7739.
2. Even when not applicable to the above case, it shall be necessary to carry out the reconfirmation of precision at every decided interval according to the frequency of its employment.