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STANDARD

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JIS K 7106 : 1995

**Testing method for stiffness  
of plastics by means of  
a cantilever beam**

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ICS 83.080.01

**Descriptors** : plastics, stiffness, mechanical properties of materials, mechanical testing,  
cantilevers, bend testing

**Reference number** : JIS K 7106 : 1995 (E)

## Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

Date of Establishment: 1982-03-01

Date of Revision: 1995-05-01

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Divisional Council on High Molecular  
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In the event of any doubts arising as to the contents,  
the original JIS is to be the final authority.

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## Testing Method for Stiffness of Plastics by Means of a Cantilever Beam

### 1. Scope

This Japanese Industrial Standard specifies the testing method for the stiffness of plastic materials by means of a cantilever beam.

- Remarks
1. This method is a general testing method and if there are other testing methods specified in the quality standard to be applied to the material, such testing methods may be used.
  2. The method of this standard obtains the stiffness from the angle when bending and deformation is given to a test piece fixed in a test piece vise at one end and the load applied at the other end of the test piece, and is generally called the Olsen bending test.
  3. Although the deformation produced by the method of this standard sometimes extends beyond the elastic region to the plastic region, it is impossible to distinguish or separate such regions from each other. Therefore, the value obtained is an apparent value, and this is taken as the stiffness.
  4. The stiffness obtained by this method is influenced by the span length, and the width and thickness of the test piece, so that the values obtained from test pieces of different dimensions cannot always be compared with each other.
  5. Because the loading method is a method to give a constant speed of rotation to the test piece vise, the loading rate of the true stress given to the test piece is influenced by the span length, the width and thickness of the test piece, the weight of the pendulum system, and the kind of the plastic material being tested.
  6. Applicable Standards and Reference Standards: see page 10.
  7. The units and numerical values shown in { } in this standard are based on the conventional system of units and are appended for reference.

## 2. Definition

The main terms used in this standard shall be in accordance with JIS K 6900, together with the following definition:

**stiffness** The apparent modulus of elasticity obtained from the bending moment applied to a test piece supported as a cantilever beam and the corresponding bending angle.

## 3. Conditioning of Test Piece and Test Temperature and Humidity

**3.1 Conditioning of Test Piece** The test piece shall be conditioned before tested, as a rule, at a temperature of  $23 \pm 2^{\circ}\text{C}$  and a relative humidity of  $50 \pm 5\%$  for not less than 88 hours <sup>(1)</sup>, unless otherwise specified.

Note <sup>(1)</sup> The above time for conditioning may be reduced if it can be confirmed that there is no difference between the measured values obtained by conditioning for not less than 88 hours and for less than 88 hours.

**3.2 Test Temperature and Humidity** The test temperature and humidity shall be a temperature of  $23 \pm 2^{\circ}\text{C}$  and a relative humidity of  $50 \pm 5\%$ , respectively, except in special cases.

## 4. Testing Machine and Accessories

The testing machine for stiffness shall be of the cantilever beam bending type and consist of a test piece vise, loading device, load scale plate, angular deflection scale plate, and the like, as given below. The main parts of the testing machine are shown in Fig. 1.