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JIS K 7244-2 : 1998

(ISO 6721-2 : 1994)

**Plastics—Determination of
dynamic mechanical properties—
Part 2 : Torsion-pendulum method**

ICS 83.080.01

Descriptors : plastics, mechanical behaviour of materials, strength of materials,
mechanical testing, torsion pendulums, torsion testing

Reference number : JIS K 7244-2 : 1998 (E)

K 7244-2 : 1998 (ISO 6721-2 : 1994)

Foreword

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

By this Standard, **JIS K 7213** : 1995 was withdrawn and replaced.

JIS K 7244 consists of the following parts, under the general title *Plastics—Determination of dynamic mechanical properties*:

Part 1 : General principles

Part 2 : Torsion-pendulum method

Part 3 : Flexural vibration—Resonance-curve method

Part 4 : Tensile vibration—Non-resonance method

Part 5 : Flexural vibration—Non-resonance method

Part 6 : Shear vibration—Non-resonance method

Part 7 : Torsional vibration—Non-resonance method

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In the event of any doubts arising as to the contents,
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Plastics—Determination of dynamic mechanical properties— Part 2 : Torsion-pendulum method

Introduction This Japanese Industrial Standard has been prepared based on ISO 6721-2 : 1994, *Plastics—Determination of dynamic mechanical properties—Part 2 : Torsion-pendulum method* without modifying its technical content and structure.

The parts underlined with dots are items not included in the original International Standard.

1 Scope This part of JIS K 7244 specifies two methods (A and B) for determining the linear dynamic mechanical properties of plastics, i.e. the storage and loss components of the torsional modulus, as a function of temperature, for small deformations within the frequency range from 0.1 Hz to 10 Hz.

The temperature dependence of these properties, measured over a sufficiently broad range of temperatures (for example from $-50\text{ }^{\circ}\text{C}$ to $+150\text{ }^{\circ}\text{C}$ for the majority of commercially available plastics), gives information on the transition regions (for example the glass transition and the melting transition) of the polymer.

It also provides information concerning the onset of plastic flow.

The two methods described are not applicable to non-symmetrical laminates (see ISO 6721-3 : 1994, *Plastics—Determination of dynamic mechanical properties—Part 3 : Flexural vibration—Resonance-curve method*). The methods are not suitable for testing rubbers, for which the user is referred to ISO 4663 : 1986, *Rubber—Determination of dynamic behaviour of vulcanizates at low frequencies—Torsion pendulum method*.

2 Normative reference The following standard contains provisions which, through reference in this text, constitute provisions of this part of JIS K 7244. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of JIS K 7244 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below.

ISO 6721-1 : 1994 *Plastics—Determination of dynamic mechanical properties—Part 1 : General principles*

Informative reference : JIS K 7244-1, *Plastics—Determination of dynamic mechanical properties—Part 1 : General principles* is identical with ISO 6721-1.

3 Definitions See JIS K 7244-1 (ISO 6721-1), clause 3.

4 Principle A test specimen of uniform cross-section is gripped by two clamps, one of them fixed and the other connected to a disc, which acts as an inertial member, by a rod. The end of the specimen connected to the disc is excited, together with the disc, to execute freely decaying torsional oscillations. The oscillation mode is that designated IV in JIS K 7244-1 (ISO 6721-1), Table 2, and the type of modulus is G_{t0} as defined in JIS K 7244-1 (ISO 6721-1), Table 3.