

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 458

PLASTICS

DETERMINATION OF STIFFNESS IN TORSION AS A FUNCTION OF TEMPERATURE

1st EDITION

November 1965

COPYRIGHT RESERVED

The copyright of ISO Recommendations and ISO Standards belongs to ISO Member Bodies. Reproduction of these documents, in any country, may be authorized therefore only by the national standards organization of that country, being a member of ISO.

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 458, *Determination of Stiffness in Torsion as a Function of Temperature*, was drawn up by Technical Committee ISO/TC 61, *Plastics*, the Secretariat of which is held by the American Standards Association, Inc. (ASA).

Work on this question by the Technical Committee began in 1959 and led, in 1960, to the adoption of a Draft ISO Recommendation.

In April 1962, this Draft ISO Recommendation (No. 469) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Australia	India	Spain
Austria	Italy	Sweden
Brazil	Japan	Switzerland
Chile	Mexico	United Kingdom
Czechoslovakia	New Zealand	U.S.A.
Finland	Poland	Yugoslavia
France	Republic of South Africa	
Germany	Romania	

Two Member Bodies opposed the approval of the Draft:
Belgium, U.S.S.R.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in November 1965, to accept it as an ISO RECOMMENDATION.

PLASTICS**DETERMINATION OF STIFFNESS IN TORSION
AS A FUNCTION OF TEMPERATURE****1. SCOPE**

- 1.1** This ISO Recommendation describes a procedure for determining the stiffness in torsion properties of plastics over a wide temperature range.
- 1.2** It is particularly used for determining the stiffness properties of non-rigid plastics at temperatures below 0 °C.

2. PRINCIPLE OF TEST

An observation of torque and deflection is made after an arbitrarily fixed time of load application. This procedure is employed at selected temperature intervals over a wide range. It is necessary that the dimension of time for load application be arbitrarily fixed because of the known "creep" characteristics of this type of material.

The property actually measured by this method is the apparent modulus of rigidity G , sometimes called the apparent shear modulus of elasticity. It is important to note that this property is not the same as the modulus of elasticity E , measured in tension, flexure or compression. (See note 1.)

NOTES

1. By means of certain simplifying assumptions, an apparent modulus of elasticity may be calculated from the apparent modulus of rigidity. This is described in the Annex A to this ISO Recommendation.
2. The variation of the apparent shear modulus of elasticity of the material with temperature is an important consideration in the application of various plastics.