

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 306

PLASTICS

DETERMINATION OF THE VICAT SOFTENING TEMPERATURE
OF THERMOPLASTICS

2nd EDITION

October 1968

This second edition supersedes the first edition

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 306, *Determination of the Vicat softening point of thermoplastics*, was drawn up by Technical Committee ISO/TC 61, *Plastics*, the Secretariat of which is held by the United States of America Standards Institute (USASI).

Work on this question by the Technical Committee began in 1956 and led, in 1959, to the adoption of a Draft ISO Recommendation.

In October 1960, this Draft ISO Recommendation (No. 380) was circulated to all the ISO Member Bodies for enquiry. It was approved by 22 Member Bodies. Two Member Bodies opposed the approval of the Draft : Italy and U.S.S.R.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council which decided, in May 1963, to accept it as an ISO RECOMMENDATION.

BRIEF HISTORY RELATING TO THE 2nd EDITION

In September 1964, a Draft Revision (No. 750) 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 :

Argentina	Germany	Romania
Australia	Hungary	South Africa, Rep. of
Austria	India	Spain
Belgium	Israel	Sweden
Bulgaria	Italy	Switzerland
Canada	Japan	Turkey
Czechoslovakia	Korea, Rep. of	U.A.R.
Denmark	Netherlands	United Kingdom
Finland	New Zealand	U.S.A.
France	Poland	Yugoslavia

One Member Body opposed the approval of the Draft :

U.S.S.R.

The Draft Revision was then submitted by correspondence to the ISO Council, which decided, in October 1968, to accept it.

The title of ISO Recommendation R 306-1963 has been modified as follows : *Plastics – Determination of the Vicat softening temperature of thermoplastics*.

This edition (2nd edition) supersedes the first edition of ISO Recommendation R 306-1963.

PLASTICS

DETERMINATION OF THE VICAT SOFTENING TEMPERATURE OF THERMOPLASTICS

1. SCOPE

- 1.1 This ISO Recommendation describes two methods for the determination of the Vicat softening temperature of thermoplastics materials under compression:
- method A using a load of 1 kgf;
 - method B using a load of 5 kgf.
- 1.2 These two methods are only applicable to thermoplastics, for which they give a measure of the temperature at which they start to soften rapidly.

2. PRINCIPLE

Determination of the temperature at which a standard indenter penetrates 1 mm into the surface of a plastics test specimen under one of the loads given in clause 1.1. During the test the temperature is raised at a uniform rate.

The temperature at 1 mm penetration is quoted as the *Vicat softening temperature* (VST) in Celsius degrees.

3. APPARATUS

The apparatus consists essentially of :

- 3.1 *A rod provided with a load carrying plate*, held in a rigid metal frame so that it can move freely and vertically, the base of the frame serving to support the test specimen under the indenter at the end of the rod (see Figure, page 7).
- 3.2 *An indenting tip*, preferably of hardened steel, 3 mm (1/8 in) long, of circular cross-section, and area $1.000 \pm 0.015 \text{ mm}^2$ is fixed at the bottom of the rod. The lower surface of the indenting tip should be square to the axis of the rod and free from burs.
- 3.3 *A micrometer dial gauge* (or other suitable measuring instrument), graduated in divisions of 0.01 mm, should be used to measure the penetration of the indenter into the test specimen. The thrust of the dial gauge, which contributes to the thrust on the test specimen, should be known and should comply with clause 3.4 below.