



# SLOVENSKI STANDARD SIST EN ISO 75-1:2004

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Plastics - Determination of temperature of deflection under load - Part 1: General test method (ISO 75-1:2004)

Kunststoffe - Bestimmung der Wärmeformbeständigkeitstemperatur - Teil 1: Allgemeine Prüfverfahren (ISO 75-1:2004)

Plastiques - Détermination de la température de fléchissement sous charge - Partie 1: Méthode d'essai générale (ISO 75-1:2004)

Ta slovenski standard je istoveten z: EN ISO 75-1:2004

**ICS:**

83.080.01 Polimerni materiali na splošno      Plastics in general

SIST EN ISO 75-1:2004      en,fr,de

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN ISO 75-1

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ICS 83.080.01

Supersedes EN ISO 75-1:1996

English version

Plastics - Determination of temperature of deflection under load  
- Part 1: General test method (ISO 75-1:2004)

Plastiques - Détermination de la température de  
fléchissement sous charge - Partie 1: Méthode d'essai  
générale (ISO 75-1:2004)

Kunststoffe - Bestimmung der  
Wärmeformbeständigkeitstemperatur - Teil 1: Allgemeine  
Prüfverfahren (ISO 75-1:2004)

This European Standard was approved by CEN on 20 June 2003.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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**EN ISO 75-1:2004 (E)****Foreword**

This document (EN ISO 75-1:2004) has been prepared by Technical Committee ISO/TC 61 "Plastics" in collaboration with Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by IBN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2004, and conflicting national standards shall be withdrawn at the latest by November 2004.

This document supersedes EN ISO 75-1:1996.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

**Endorsement notice**

The text of ISO 75-1:2004 has been approved by CEN as EN ISO 75-1:2004 without any modifications.

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# INTERNATIONAL STANDARD

**ISO**  
**75-1**

Second edition  
2004-05-15

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## Plastics — Determination of temperature of deflection under load —

### Part 1: General test method

*Plastiques — Détermination de la température de fléchissement sous charge —*  
*Partie 1: Méthode d'essai générale*

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## ISO 75-1:2004(E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 75-1 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 2, *Mechanical properties*.

This second edition cancels and replaces the first edition (ISO 75-1:1993), which has been technically revised.

ISO 75 consists of the following parts, under the general title *Plastics — Determination of temperature of deflection under load*:

- *Part 1: General test method*
- *Part 2: Plastics and ebonite*
- *Part 3: High-strength thermosetting laminates and long-fibre-reinforced plastics*

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## Introduction

ISO 75-1:1993 and ISO 75-2:1993 described three methods (A, B and C) using different test loads and two specimen positions, edgewise and flatwise. For testing in the flatwise position, test specimens with dimensions 80 mm × 10 mm × 4 mm were required. These can be moulded directly or machined from the central section of the multipurpose test specimen (see ISO 3167). These “ISO bars” cannot be easily used in the edgewise position, because this would require both a reduction in span and an increase in test load by the same factor, and this may be impossible to achieve on existing instruments for edgewise testing. Specimens for testing in the edgewise position are less closely specified. Using the 80 mm × 10 mm × 4 mm ISO bar in the flatwise mode has the following advantages:

- Thermal expansion of the test specimen has less influence on the test result.
- Draft angles do not influence the test result. The specimen does not stand “on edge”.
- The moulding parameters and the specimen dimensions are specified more closely.

This increases the comparability of the test results. Therefore, it was decided that the possibility of testing in the edgewise position would be deleted from the standard. In order to provide a sufficient transition period, in this edition the flatwise position is described as the preferred and recommended one, while testing in the edgewise position is optional and has been moved to a normative annex (in ISO 75-2). This annex and all other references to edgewise testing will be deleted on occasion of the next revision of this document.

Earlier editions of this International Standard allowed methods other than using a heating bath for heating the test specimen, namely forced-circulation ovens or fluidized beds. None of these alternative methods is widely used and no proven instruments are commercially available. Furthermore, there is no general comparability between tests using different heating methods due to the differences in the heat transfer characteristics and the temperature control methods described in this standard.

Therefore only heating in heating baths is allowed in this edition.

In order to maintain consistency with ISO 10350-1:1998,  $T_f$  has been used as the symbol for temperature of deflection under load.

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# Plastics — Determination of temperature of deflection under load —

## Part 1: General test method

### 1 Scope

1.1 ISO 75 specifies methods for the determination of the temperature of deflection under load (flexural stress under three-point loading) of plastics. Different types of test specimen and different constant loads are defined to suit different types of material.

1.2 This part of ISO 75 gives a general test method, part 2 gives specific requirements for plastics (including filled plastics and fibre-reinforced plastics in which the fibre length, prior to processing, is up to 7,5 mm) and ebonite while part 3 gives specific requirements for high-strength thermosetting laminates and long-fibre-reinforced plastics in which the fibre length is greater than 7,5 mm.

1.3 The methods specified are suitable for assessing the relative behaviour of different types of material at elevated temperature under load at a specified rate of temperature increase. The results obtained do not necessarily represent maximum applicable temperatures, because in practice essential factors such as time, loading conditions and nominal surface stress may differ from the test conditions. True comparability of data can only be achieved for materials having the same room-temperature flexural modulus.

1.4 The methods specify preferred dimensions for the test specimens. Tests which are carried out on specimens of different dimensions, or on specimens which are prepared under different conditions, may produce different results. Consequently, when repeatable data are required, sample preparation conditions and test variables should be carefully controlled and recorded.

1.5 Data obtained using the test methods described may not be used to predict actual end-use performance. The data are not intended for design analysis or predicting the endurance of materials at elevated temperatures.

1.6 For part 2, two test specimen positions are allowed. However, the flatwise position is the preferred and recommended one, while testing in the edgewise position is described as optional only. It is intended to remove this specimen position altogether on occasion of the next revision of this standard. Part 3 only allows flatwise testing.

1.7 This method is commonly known as the HDT test (heat deflection test or heat distortion test), although there is no official document using this designation.

### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 75-2:2004, *Plastics — Determination of temperature of deflection under load — Part 2: Plastics and ebonite*