



**SLOVENSKI STANDARD**  
**SIST EN ISO 4600:2000**  
**01-maj-2000**

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Dc`ja Yfb]a UYf]U]!'8c`c Ub`bUdYrcgfbY`\_cfcnj`Y`f9 G7 L!`A YrcXUg`\_fc[ `]Wt`U]  
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Plastics - Determination of environmental stress cracking (ESC) - Ball or pin impression method (ISO 4600:1992)

Kunststoffe - Bestimmung der umgebungsbedingten Spannungsrißbildung (ESC) - Kugel - oder Stifteindruckverfahren (ISO 4600:1992)

Plastiques - Détermination de la fissuration sous contrainte dans un environnement donné (ESC) - Méthode par enfoncement de billes ou de goupilles (ISO 4600:1992)

<https://standards.iteh.ai/catalog/standards/sist/6d2ed7c5-faef-480e-9397-e383c5a94efb/sist-en-iso-4600-2000>

**Ta slovenski standard je istoveten z: EN ISO 4600:1997**

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**ICS:**

83.080.01	Polimerni materiali na splošno	Plastics in general
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**SIST EN ISO 4600:2000**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN ISO 4600

November 1997

ICS 83.080

Descriptors: see ISO document

English version

Plastics - Determination of environmental stress cracking (ESC)  
- Ball or pin impression method (ISO 4600:1992)

Plastiques - Détermination de la fissuration sous contrainte  
dans un environnement donné (ESC) - Méthode par  
enfouissement de billes ou de goupilles (ISO 4600:1992)

Kunststoffe - Bestimmung der umgebungsbedingten  
Spannungsrißbildung (ESC) - Kugel- oder  
Stifteindruckverfahren (ISO 4600:1992)

This European Standard was approved by CEN on 16 October 1997.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

## Foreword

The text of the International Standard from Technical Committee ISO/TC 61 "Plastics" of the International Organization for Standardization (ISO) has been taken over as an European Standard by 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 May 1998, and conflicting national standards shall be withdrawn at the latest by May 1998.

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

## iTeh STANDARD PREVIEW

Endorsement notice  
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The text of the International Standard ISO 4600:1992 has been approved by CEN as a European Standard without any modification.

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NOTE: Normative references to International Standards are listed in annex ZA (normative).

ALIBVOJB ANIBU9ER  
CNDUKNHET NI YUONAVE LE YUO TIBHIN  
UIC'KDOM NI CIBANIZHONIA NI (NI) NI  
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.....YUO  
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**Annex ZA (normative)**  
**Normative references to international publications**  
**with their relevant European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 178	1993	Plastics - Determination of flexural properties	EN ISO 178	1996
ISO 291		Plastics - Standard atmospheres for conditioning and testing	EN ISO 291	1997
ISO 2818	1994	Plastics - Preparation of test specimens by machining	EN ISO 2818	1996
ISO 3167	1993	Plastics - Multipurpose test specimens	EN ISO 3167	1996
ISO 4599	1986	Plastics - Determination of resistance to environmental stress cracking (ESC) - Bent strip method	EN ISO 4599	1996

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# INTERNATIONAL STANDARD

**ISO  
4600**

Second edition  
1992-08-15

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## Plastics — Determination of environmental stress cracking (ESC) — Ball or pin impression method

### iTeh STANDARD PREVIEW

*Plastiques — Détermination de la fissuration sous contrainte dans un environnement donné (ESC) — Méthode par enfoncement de billes ou de goupilles*

[SIST EN ISO 4600:2000](https://standards.iteh.ai/catalog/standards/sist/6d2ed7c5-faef-480e-9397-e383c5a94efb/sist-en-iso-4600-2000)

<https://standards.iteh.ai/catalog/standards/sist/6d2ed7c5-faef-480e-9397-e383c5a94efb/sist-en-iso-4600-2000>



Reference number  
ISO 4600:1992(E)

## ISO 4600:1992(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.

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.

International Standard ISO 4600 was prepared by Technical Committee ISO/TC 61, *Plastics*, Sub-Committee SC 6, *Ageing, chemical and environmental resistance*.

This second edition cancels and replaces the first edition (ISO 4600:1981), of which it constitutes a technical revision.

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Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland



## Introduction

Environmental stress cracking is exhibited by many materials, including plastics. When a plastic material is stressed or strained in air below its yield point, stress cracking can occur after a period of time, which may be very long. These stresses may be internal or external, or a combination of both. Exposure to a chemical medium simultaneously with the same stress or strain may result in a dramatic shortening of the time to failure. This phenomenon is referred to as environmental stress cracking (ESC). The permissible long-term stress or strain may be reduced considerably by this phenomenon.

The cracks produced may penetrate completely through the thickness of the material, separating it into two or more pieces, or they may be arrested on reaching regions of lower stress or different material morphology.

The determination of ESC is complex because it is influenced by many parameters, including:

- test specimen dimensions;
- test specimen state (orientation, structure, internal stresses);
- stress and strain;
- temperature of test;
- duration of test;
- chemical medium;
- test method;
- failure criterion.

By keeping all but one parameter constant, the influence of the variable parameter on ESC can be assessed. The main objective of ESC measurements is to determine the effect of chemical media (environment) on plastics (test specimens and articles). The measurements may also be used to evaluate the influence of the moulding conditions upon the quality of an article when the failure mode corresponds to that obtained in actual service. It may not be possible, however, to establish any direct correlation between the results of short-duration ESC measurements on test specimens and the actual service behaviour of articles, because the behaviour of the latter is likely to be more complex than that of test specimens.