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**S stekleno tkanino ojačeni polimerni materiali - Določanje praznin v materialu - Žaroizguba, mehansko drobljenje in statistična števna metoda (ISO 7822:1990)**

Textile glass reinforced plastics - Determination of void content - Loss on ignition, mechanical disintegration and statistical counting methods (ISO 7822:1990)

Textilglasverstärkte Kunststoffe - Bestimmung der Menge vorhandener Lunker - Glühverlust, mechanische Zersetzung und statistische Auswertungsverfahren (ISO 7822:1990)

Plastiques renforcés de verre textile - Détermination de la teneur en vide - Méthodes par perte au feu, par désintégration mécanique et par comptage statistique (ISO 7822:1990)

**Ta slovenski standard je istoveten z: EN ISO 7822:1999**

**ICS:**

13.220.40	Sposobnost vžiga in obnašanje materialov in proizvodov pri gorenju	Ignitability and burning behaviour of materials and products
83.120	Ojačani polimeri	Reinforced plastics

**SIST EN ISO 7822:2000****en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN ISO 7822

June 1999

ICS 13.220.00; 83.120

English version

Textile glass reinforced plastics - Determination of void content -  
Loss on ignition, mechanical disintegration and statistical  
counting methods (ISO 7822:1990)

Plastiques renforcés de verre textile - Détermination de la  
teneur en vide - Méthodes par perte au feu, par  
désintégration mécanique et par comptage statistique (ISO  
7822:1990)

Textilglasverstärkte Kunststoffe - Bestimmung der Menge  
vorhandener Lunker - Glühverlust, mechanische  
Zersetzung und statistische Auswertungsverfahren (ISO  
7822:1990)

This European Standard was approved by CEN on 6 May 1999.

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.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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 December 1999, and conflicting national standards shall be withdrawn at the latest by December 1999.

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.

## Endorsement notice

The text of the International Standard ISO 7822:1990 has been approved by CEN as a European Standard without any modification.

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

ALPHAVOLTA ANTI-CORROSIVO  
 SOSTA...  
 ...  
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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 291	1997	Plastics - Standard atmospheres for conditioning and testing	EN ISO 291	1997
ISO 1172	1996	Textile-glass-reinforced plastics - Prepregs, moulding compounds and laminates - Determination of the textile-glass and mineral-filler content - Calcination methods	EN ISO 1172	1998

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# INTERNATIONAL STANDARD

**ISO  
7822**

First edition  
1990-09-01

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## **Textile glass reinforced plastics — Determination of void content — Loss on ignition, mechanical disintegration and statistical counting methods**

**iTeh STANDARD PREVIEW**

*(standards.iteh.ai)*  
*Plastiques renforcés de verre textile — Détermination de la teneur en vide —  
Méthodes par perte au feu, par désintégration mécanique et par comptage  
statistique*

SIST EN ISO 7822:2000

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Reference number  
ISO 7822 : 1990 (E)

## ISO 7822 : 1990 (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 7822 was prepared by Technical Committee ISO/TC 61, *Plastics*.

[SIST EN ISO 7822:2000](#)

Annex A of this International Standard is for information only. <https://standards.iteh.ai/standards/sist/19558455-6756-4d2b-b17e-7bab6dbe18f5/sist-en-iso-7822-2000>

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# Textile glass reinforced plastics — Determination of void content — Loss on ignition, mechanical disintegration and statistical counting methods

## 1 Scope

This International Standard specifies three methods for the determination of the void content of textile glass reinforced plastics or composites, of which the constituents are of a solid nature.

### 1.1 Method A — Loss on ignition

This method is applicable to composites for which the effects of the loss on ignition test on the materials are known. Most matrix resins and textile glass fibre reinforcements fall into this class.

The method is not applicable to composites for which the effects of the loss on ignition test on the resin, the reinforcement, and any fillers are unknown. This may include silicone resins, which do not burn off completely, and fillers consisting of oxides, carbonates, etc., which may gain or lose weight. Note that separate weight loss tests on individual materials will usually, but not necessarily, give the same result as when all the materials are combined.

The accuracy of the method is  $\pm 2,5$  % by volume.

### 1.2 Method B — Mechanical disintegration

This method is applicable if the composite can be disintegrated in such a way, for example by crushing in a press, that all the enclosed voids are connected with the outside of the composite material. The method is destructive and has limited application if the matrix material shows ductile behaviour under compression, unless it can be made more brittle in an artificial way (for example by cooling).

The method is especially suitable when the densities of the constituent materials are not known or not determinable.

The method neglects the influence of any volatile constituents that could evaporate during and after disintegration. In this connection, the conditioning shall be chosen with care. The method also does not take into account any cut or exposed voids at the surface of the sample.

The accuracy of the method is  $\pm 1$  % by volume.

### 1.3 Method C — Statistical counting

This method is applicable to composites having a void content less than or equal to 1 % by volume.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 291:1977, *Plastics — Standard atmospheres for conditioning and testing.*

ISO 1172:1975, *Textile glass reinforced plastics — Determination of loss on ignition.*

## 3 Principle

### 3.1 Method A — Loss on ignition

Determination of the densities of the resin, the reinforcement, filler(s) (if present) and the composite. Determination of the resin content and calculation of a theoretical composite density. Comparison with the measured composite density. The difference in densities indicates the void content.

NOTE — The density of the resin, in this method, is assumed to be the same in the composite as it is in a moulded mass. Although there is no realistic way of avoiding having to make this assumption, it is nevertheless not strictly correct. Differences in curing, heating, pressure and molecular forces arising from the reinforcement surface all make the density of the resin in the composite different from the bulk resin density.

Composites containing inorganic fillers require special care. An accurate determination of the filler content and density is required if the accuracy of this method is to be maintained.

### 3.2 Method B — Mechanical disintegration

Determination of the mass and volume, before and after disintegration, of a fibre reinforced plastic sample to obtain the void content by density difference.

### 3.3 Method C — Statistical counting

Superimposition of a square grid of 20 to 200 points on a micrographic section of the material to be tested. Statistically, the proportion of points of the grid which are superimposed on voids corresponds to the void content of the material. The counting method may be manual, or semi-automatic or automatic using suitable apparatus.