



SLOVENSKI STANDARD
SIST EN ISO 7823-1:2000
01-maj-2000

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Poly (methyl methacrylate) sheets - Types, dimensions and characteristics - Part 1: Cast sheets (ISO 7823-1:1991)

Tafeln aus Polymethylmethacrylat - Typen, Maße und Eigenschaften - Teil 1: Gegossene Tafeln (ISO 7823-1:1991)

Plaques en poly (méthacrylate de méthyle) - Types, dimensions et caractéristiques - Partie 1: Plaques coulées (ISO 7823-1:1991)

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Ta slovenski standard je istoveten z: EN ISO 7823-1:1996

ICS:

83.140.10 Filmi in folije Films and sheets

SIST EN ISO 7823-1:2000 **en**

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EUROPEAN STANDARD

EN ISO 7823-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 1996

ICS 83.140

Descriptors: plastics, polymers, methylmethacrylate, castings, plastic sheets, specifications, dimensions, dimensional tolerances, properties

English version

**Poly (methyl methacrylate) sheets - Types,
dimensions and characteristics - Part 1: Cast
sheets (ISO 7823-1:1991)**

Plaques en poly (méthacrylate de méthyle)
Types, dimensions et caractéristiques - Partie
1: Plaques coulées (ISO 7823-1:1991)

Tafeln aus Polymethylmethacrylat - Typen, Maße
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REPUBLIKA SLOVENIJA
MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO
Urad RS za standardizacijo in meroslovje
LJUBLJANA

SIST.....EN ISO 7823-1.....

PREVZET PO METODI RAZGLASITVE

-05- 2000

This European Standard was approved by CEN on 1995-09-18. 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.

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CEN

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 a 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 November 1996, and conflicting national standards shall be withdrawn at the latest by November 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, 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 7823-1:1991 has been approved by CEN as a European Standard without any modification.

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INTERNATIONAL STANDARD

ISO
7823-1

Second edition
1991-11-15

Poly(methyl methacrylate) sheets — Types, dimensions and characteristics —

Part 1: Cast sheets

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Plaques en poly(méthacrylate de méthyle) — Types, dimensions et
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Partie 1. Plaques coulées



Reference number
ISO 7823-1:1991(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 7823-1 was prepared by Technical Committee ISO/TC 61, *Plastics*, Sub-Committee SC 11, *Products*.

This second edition cancels and replaces the first edition (ISO 7823-1:1987), of which it constitutes a technical revision.

ISO 7823 consists of the following parts, under the general title *Poly(methyl methacrylate) sheets — Types, dimensions and characteristics*:

- Part 1: *Cast sheets*
- Part 2: *Melt-calendered extruded sheets*

Annex A forms an integral part of this part of ISO 7823.

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Poly(methyl methacrylate) sheets — Types, dimensions and characteristics —

Part 1: Cast sheets

1 Scope

1.1 This part of ISO 7823 specifies requirements for non-modified flat poly(methyl methacrylate) (PMMA) cast sheets (plates and continuous) for general-purpose use. The sheets may be colourless or coloured, and transparent, translucent or opaque.

1.2 The thickness range of the sheets covered by this part of ISO 7823 is 1,5 mm to 25 mm.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7823. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 7823 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 62:1980, *Plastics — Determination of water absorption.*

ISO 75:1987, *Plastics and ebonite — Determination of temperature of deflection under load.*

ISO 178:1975, *Plastics — Determination of flexural properties of rigid plastics.*

ISO 179:1982, *Plastics — Determination of Charpy impact strength of rigid materials.*

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

ISO 306:1987, *Plastics — Thermoplastic materials — Determination of Vicat softening temperature.*

ISO 489:1983, *Plastics — Determination of the refractive index of transparent plastics.*

ISO/R 527:1966, *Plastics — Determination of tensile properties.*

ISO 1183:1987, *Plastics — Methods for determining the density and relative density of non-cellular plastics.*

ISO 2039-2:1987, *Plastics — Determination of hardness — Part 2: Rockwell hardness.*

ISO 2818:1980, *Plastics — Preparation of test specimens by machining.*

ISO 2859-1:1989, *Sampling procedures for inspection by attributes — Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection.*

ISO 4582:1980, *Plastics — Determination of changes in colour and variations in properties after exposure to daylight under glass, natural weathering or artificial light.*

ISO 4607:1978, *Plastics — Methods of exposure to natural weathering.*

ISO 4892:1981, *Plastics — Methods of exposure to laboratory light sources.*

EN 2155-5:1989, *Aerospace series — Test methods for transparent materials for aircraft glazing — Part 5: Determination of visible light transmission.*

ISO 7823-1:1991(E)

EN 2155-9:1989, *Aerospace series — Test methods for transparent materials for aircraft glazing — Part 9: Determination of haze.*

EN 2155-12:—,¹⁾ *Aerospace series — Test methods for transparent materials for aircraft glazing — Part 12: Determination of coefficient of linear thermal expansion.*

3 Definitions

For the purposes of this part of ISO 7823, the following definitions apply.

3.1 non-modified cast PMMA sheets: Sheets based on homopolymers of MMA, or copolymers of MMA with acrylic or methacrylic monomers, produced by bulk polymerization in the presence of suitable initiators.

3.2 flat PMMA sheets: Sheets with substantially parallel plane surfaces.

4 Composition

4.1 Plasticizing ingredients (materials that do not undergo chemical reaction to become a part of the polymer), other monomers and crosslinking agents (materials that produce the links between the chains of polymers) shall be present in amounts that do not change the basic properties from the values given in table 3. These amounts are in most cases less than 3 % (*m/m*).

4.2 Other additives, e.g. colorants, UV absorbers, pigments, may be included to achieve specific properties.

5 General requirements

5.1 Protective coverings

Unless otherwise agreed between the interested parties, the surfaces of the sheet, as delivered, shall be protected by a suitable material, for example kraft paper secured with a water-soluble or pressure-sensitive adhesive which allows the protective material to be readily removed without surface contamination or damage, or polyethylene film.

1) To be published.

5.2 Appearance

5.2.1 Surface defects

The sheet shall have a smooth surface. There shall be no surface defects, scratches or marks larger than 3 mm² each anywhere on the sheet.

5.2.2 Inclusion defects

There shall be no bubbles, inclusions, cracks or other defects, that could adversely affect the performance of the sheet in its intended application, larger than 3 mm² each anywhere in the sheet.

5.2.3 Classification

The area of any defect found in the sheet shall be classified as specified in table 1. Each defect shall be considered separately.

Table 1 — Classification of defects

Areas in square millimetres

Classification	Area of surface defects	Area of inclusion defects
Negligible	Less than 1	Less than 1
Acceptable	1 to 3	1 to 3

5.2.4 Defect distribution

5.2.4.1 There shall not be a significant number (for the application) of small defects, each particle of which is defined as "negligible" in table 1, within 1 m² anywhere in the sheet.

5.2.4.2 No defect defined as "acceptable" in table 1 shall be within 500 mm of another "acceptable" defect anywhere in or on the sheet.

5.3 Colour

Unless otherwise specified, colour distribution shall be homogeneous. Admissible variation shall be agreed between the interested parties.

5.4 Dimensions

5.4.1 Length and width

The length and width of the sheets shall be agreed between the interested parties. The tolerances shall be as specified in table 2.

Table 2 — Tolerances on length and width

Dimensions in millimetres (unless stated otherwise)

Length or width	Tolerance
≤ 1 000	+3 0
From 1 001 to 2 000	+6 0
From 2 001 to 3 000	+8 0
≥ 3 001	+0,3 0 %

5.4.2 Thickness

The thickness tolerances for sheets of thickness 2 mm to 25 mm and up to 6 m² in area shall be $\pm (0,4 + 0,1 h)$, where h is the nominal sheet thickness in millimetres.

Tolerances apply within each sheet and from sheet to sheet.

5.4.3 Tolerances for other sizes

Tolerances for sheet sizes and thicknesses outside the above ranges shall be agreed between the interested parties.

5.4.4 Conditions of measurement

Measurement of the dimensions of the sheets shall be made at room temperature, except that in case of dispute measurement shall be made under standard conditions, as specified in ISO 291. For measurements made under local ambient conditions, due allowance shall be made for dimensional changes due to the differences in temperature and relative humidity between test locations.

5.5 Basic properties

The mechanical, thermal and optical properties of the sheets shall be as specified in table 3.

Table 3 — Requirements for basic properties

Property	Unit	Test method	Value	Sub-clause
Tensile strength, min.	MPa	ISO/R 527, type 1 specimen, speed B	70	6.5.2
Modulus of elasticity in tension, min.	MPa	ISO/R 527, type 1 specimen, speed B	3 000	6.5.2
Elongation at break, min.	%	ISO/R 527, type 1 specimen, speed B	4	6.5.2
Impact strength (Charpy), min.	kJ/m ²	ISO 179/1D	13	6.5.3
		or ISO 179/2D	10	
Vicat softening temperature, min.	°C	ISO 306, method B (5 kg)	105	6.6.1
Dimensional change on heating (shrinkage), max.	%	Annex A	2,5	6.6.3
Light transmittance, min.	%	EN 2155-5	90 ¹⁾	6.8.1
Light transmittance at 420 nm, min.	%	EN 2155-5	90 ¹⁾	6.8.3
Light transmittance at 420 nm after exposure to xenon lamp for 1 000 h, min.	%	EN 2155-5	88 ¹⁾	6.8.3

1) For transparent, colourless material.