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**Plastics — Poly(methyl methacrylate) (PMMA) moulding
and extrusion materials —**

**Part 1:
Designation**

Plastiques — Poly(méthacrylate de méthyle) (PMMA) pour moulage et extrusion —

Partie 1: Désignation

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Reference number
ISO 8257-1:1987 (E)

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8257-1 was prepared by Technical Committee ISO/TC 61, *Plastics*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Plastics — Poly(methyl methacrylate) (PMMA) moulding and extrusion materials —

Part 1: Designation

1 Scope and field of application

1.1 This part of ISO 8257 establishes a system of designation for poly(methyl methacrylate) thermoplastic materials which may be used as the basis for specifications.

1.2 The types of PMMA plastics are differentiated from each other by a classification system based on appropriate levels of the designatory properties:

- a) Vicat softening temperature,
- b) melt flow rate,
- c) viscosity number (optional),

and information about intended application, method of processing, important properties, additives and colour.

1.3 This designation system is applicable to all poly(methyl methacrylate) (PMMA) homopolymers and copolymers of methyl methacrylate (MMA) containing at least 80 % (*m/m*) of MMA and not more than 20 % (*m/m*) of acrylic esters or other monomers. It applies to materials ready for normal use and to materials unmodified and modified by colorants, additives, etc.

This part of ISO 8257 does not apply to PMMA modified with elastomers.

1.4 It is not intended to imply that materials having the same designation give necessarily the same performance. This part of ISO 8257 does not provide engineering data, performance data or data on processing conditions which may be required to

specify a material for a particular end-use or method of processing.

If such additional properties are required, they shall be determined in accordance with the methods specified in ISO 8257-2, if suitable.

1.5 In order to specify a thermoplastic material for a particular application or reproducible processing, additional requirements can be coded in Data Block 5 (see clause 3).

2 References

ISO 306, *Plastics — Determination of the Vicat softening temperature of thermoplastics.*

ISO 1043-1, *Plastics — Symbols and codes — Part 1: Symbols for basic polymers and their special characteristics.*¹⁾

ISO 1133, *Plastics — Determination of the melt flow rate of thermoplastics.*

ISO 1628-6, *Plastics — Determination of viscosity number and limiting viscosity number — Part 6: Poly(methyl methacrylate) (PMMA) moulding and extrusion materials.*²⁾

ISO 8257-2, *Plastics — Poly(methyl methacrylate) (PMMA) thermoplastic moulding material — Part 2: Preparation of test specimens and determination of properties.*²⁾

1) At present at the stage of draft. (Partial revision of ISO 1043 : 1978.)

2) At present at the stage of draft.

3 Designation system

The designation system of thermoplastics is based on the following standardized pattern.

Designation						
Description Block (optional)	Identity Block					
	International Standard Number Block	Individual Item Block				Data Block 5
		Data Block 1	Data Block 2	Data Block 3	Data Block 4	

It consists of an optional Description Block, reading Thermoplastics, and an Identity Block comprising the International Standard number and an Individual Item Block. For unambiguous coding the Individual Item Block is subdivided into four data blocks comprising the following information:

- No. 1: Identification of the plastic by its symbol PMMA, according to ISO 1043-1 (see 3.1).
- No. 2: Position 1: Intended application or method of processing (see 3.2).
Positions 2 to 4: Important properties, additives and supplementary information (see 3.2).
- No. 3: Designatory properties (see 3.3).
- No. 4: Fillers or reinforcing materials and their nominal content (not included in this part of ISO 8257).

For the purpose of specifications, a fifth data block may be added containing additional information. The kind of information and its codes are not the subject of this part of ISO 8257.

The first character of the Individual Item Block shall be a hyphen. The four data blocks shall be separated from each other by a comma.

NOTE — If a data block is not used, this shall be indicated by doubling the separation sign, i.e. by two commas (,,).

3.1 Data Block 1

In this data block, after a hyphen, a poly(methyl methacrylate) plastic is identified by its symbol PMMA, according to ISO 1043-1.

3.2 Data Block 2

In this data block, information about intended end-use application or method of processing is given in Position 1 and information about important properties, additives and colour in Positions 2 to 4. The codes are specified in table 1.

If information is presented in Positions 2 to 4 and no specific information is given in Position 1, the letter X shall be inserted in Position 1.

3.3 Data Block 3

In this data block, the Vicat softening temperature is coded by three figures, the melt flow rate by three figures and optionally the viscosity number by two figures. The two (or three) codes are separated from each other by hyphens.

If a property value falls on or near a cell limit, the manufacturer shall state which cell will designate the material. If subsequent individual test values lie on, or either side of, the cell limit because of manufacturing tolerances, the designation is not affected.

NOTE — Not all combinations of the values of the designatory properties may be provided by currently available materials.

The Vicat softening temperature shall be determined according to ISO 306, method B, using a load of 50 N and a heating rate of 50 ± 5 K/h. The melt flow rate shall be determined according to ISO 1133, condition No. 13, at a temperature of 230 °C with a load of 3,8 kgf (MFR 230/3,8). The viscosity number shall be determined according to ISO 1628-6.

The designatory properties are each classified by six cells and coded as shown in table 2.

Table 1 – Codes used in Data Block 2

Code	Position 1	Code	Positions 2 to 4
D	Disc manufacture ¹⁾	A	Processing stabilized
E	Extrusion of tubes, profiles and sheet	C	Coloured ²⁾
F	Extrusion of film and thin sheeting	D	Beads
G	General use	E	Expandable
H	Coating	F	Special burning characteristics
L	Monofilament extrusion	G	Pellets, granules
M	Injection moulding	H	Heat-ageing stabilized
Q	Compression moulding	L	Light and/or weather stabilized
R	Rotational moulding	N	Natural (not coloured)
S	Powder coating or sintering	R	Moulding release agent
X	No indication	S	Lubricated
		T	Controlled transparency
		Z	Antistatic

1) In this part of ISO 8257: video disc manufacture.

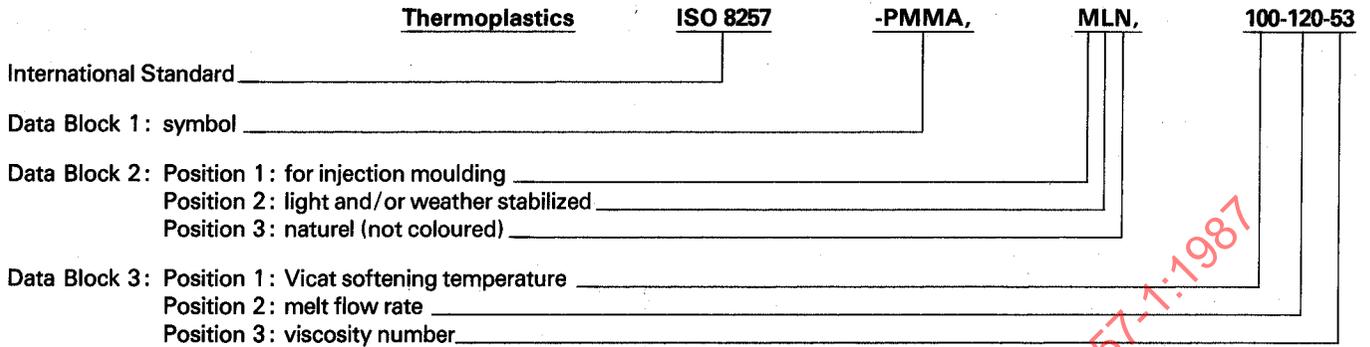
2) C1 = coloured transparent;
C2 = coloured non-transparent.

Table 2 – Cell codes and cell ranges for Vicat softening temperature, melt flow rate and viscosity number (optional) in data block 3

Vicat softening temperature		Melt flow rate (MFR 230/3,8)		Viscosity number (optional)	
Code	VST range °C	Code	MFR range g/10 min	Code	VN range ml/g
076	< 80	005	< 1	43	< 48
084	> 80 to 88	015	> 1 to 2	53	> 48 to 58
092	> 88 to 96	030	> 2 to 4	63	> 58 to 68
100	> 96 to 104	060	> 4 to 8	73	> 68 to 78
108	> 104 to 112	120	> 8 to 16	83	> 78 to 88
116	> 112	240	> 16	93	> 88

4 Coding example

A PMMA intended for injection-moulding material (M), light stabilized (L), natural (not coloured) (N), with a Vicat softening temperature of 101 °C (100), a melt flow rate of 10 g/10 min (120) and a viscosity number of 50 ml/g (53) would be designated :



Designation : ISO 8257-PMMA,MLN,100-120-53

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