SLOVENSKI STANDARD
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Polimerni materiali - Materiali za oblikovanje in ekstrudiranje iz kopolimerov stiren/akrilonitril (SAN) - 1. del: Označevanje

Plastics -- Styrene/acrylonitrile (SAN) copolymer moulding and extrusion materials -- Part 1: Designation

Plastiques -- Matières à mouler et à extruder à base de copolymère de styrène et d'acrylonitrile (SAN) -- Partie 1: Désignation

Ta slovenski standard je istoveten z: **ISO 4894-1:1990**

ICS:

83.080.20 Plastomeri Thermoplastic materials

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INTERNATIONAL STANDARD

ISO 4894-1

Second edition
1990-10-15

Plastics — Styrene/acrylonitrile (SAN) copolymer moulding and extrusion materials —

Part 1: Designation

Plastiques — Matières à mouler et à extruder à base de copolymère de styrène et d'acrylonitrile (SAN) —

Partie 1: Désignation

Reference number
ISO 4894-1:1990(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 4894-1 was prepared by Technical Committee ISO/TC 61, *Plastics*.

This second edition cancels and replaces the first edition (ISO 4894-1:1979), of which it constitutes a technical revision.

ISO 4894 consists of the following parts, under the general title *Plastics — Styrene/acrylonitrile (SAN) copolymer moulding and extrusion materials*:

— *Part 1: Designation*

— *Part 2: Determination of properties*

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Plastics — Styrene/acrylonitrile (SAN) copolymer moulding and extrusion materials —

Part 1: Designation

1 Scope

1.1 This part of ISO 4894 establishes a system of designation for styrene/acrylonitrile (SAN) thermoplastic materials, which may be used as the basis for specifications.

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

a) Vicat softening temperature and

b) melt flow rate,

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

1.3 This designation system is applicable to all copolymers of styrene and/or substituted styrene, having between 10 % (*m*/*m*) and 50 % (*m*/*m*) acrylonitrile.

It applies to materials ready for normal use in the form of powder, granules or pellets, unmodified and modified by colorants, additives, etc.

1.4 It is not intended to imply that materials having the same designation give necessarily the same performance. This part of ISO 4894 does not provide engineering data, performance data or data on processing conditions which may be required to specify a material for a particular application or method of processing.

If such additional properties are required, they shall be determined in accordance with the test methods specified in ISO 4894-2, if suitable.

1.5 In order to specify a thermoplastic material for a particular application, additional requirements may be specified in Data Block 5 (see clause 3).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 4894. 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 4894 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 306:1987, *Plastics — Thermoplastic materials — Determination of Vicat softening temperature.*

ISO 1043-1:1987, *Plastics — Symbols — Part 1: Basic polymers and their special characteristics.*

ISO 1043-2:1988, *Plastics — Symbols — Part 2: Fillers and reinforcing materials.*

ISO 1133:1981, *Plastics — Determination of the melt flow rate of thermoplastics.*

ISO 1656:1988, *Rubber, raw natural, and rubber latex, natural — Determination of nitrogen content.*

ISO 4894-2:1981, *Plastics — Styrene/acrylonitrile (SAN) copolymer moulding and extrusion materials — Part 2: Determination of properties.*

3 Designation system

The designation system for thermoplastics is based on the standardized pattern given in figure 1.

The designation consists of an optional Description Block, reading Thermoplastics, and an Identity Block comprising the International Standard number and an Individual Item Block. For unambiguous designation, the Individual Item Block is subdivided into 4 data blocks comprising the following information:

Data Block 1: Identification of the plastic by its symbol (SAN) and information about the composition of the copolymer (see 3.1).

Data Block 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).

Data Block 3: Designatory properties (see 3.3).

Data Block 4: Fillers or reinforcing materials and the nominal content thereof (see 3.4).

For the purpose of specifications, a fifth data block may be added containing additional information. The kind of information and the code-letters used are not the subject of this part of ISO 4894.

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.

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 the hyphen, the plastic is identified by its symbol (SAN) in accordance with ISO 1043-1 and, after a space, the acrylonitrile (AN) content of the copolymer is designated by a single-figure code-number, as specified in table 1.

For the purposes of this part of ISO 4894, the AN content shall be determined by the Kjeldahl method, as specified in ISO 1656, or, alternatively, by a pyrolysis/thermal conductivity method.

Table 1 — Codes used for acrylonitrile content in Data Block 1

Code	Range of AN content % (*m*/*m*)
1	> 10 to ⩽ 20
2	> 20 to ⩽ 30
3	> 30 to ⩽ 50

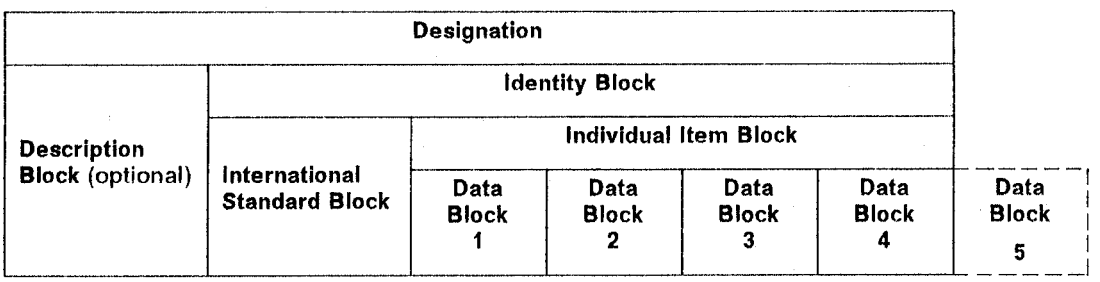


Figure 1 — Data block designation system

3.2 Data Block 2

In this data block, information about the intended application or method of processing is given in position 1 and information about important properties, additives and colour in positions 2 to 4. The code-letters used are specified in table 2.

Table 2 — Code-letters used in Data Block 2

Code-letter	Position 1	Positions 2 to 4
C		Coloured
E	Extrusion of pipes, profiles and sheet	
F		Special burning characteristics
G	General use	
L		Light and/or weather stabilized
M	Injection moulding	
N		Natural (not coloured)
R		Moulding release agent
S		Lubricated
T		Improved transparency
X	No indication	
Z		Antistatic

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.

3.3.1 Vicat softening temperature

The Vicat softening temperature (VST) shall be determined in accordance with ISO 306, method B, using a test load of 50 N ± 1 N and a heating rate of 50 °C/h ± 5 °C/h. The possible values of the VST are divided into four ranges, each represented by a three-figure code-number, as specified in table 3.

Table 3 — Codes used for Vicat softening temperature in Data Block 3

Code	VST range °C
085	⩽ 90
095	> 90 to ⩽ 100
105	> 100 to ⩽ 110
115	> 110

3.3.2 Melt flow rate

The melt flow rate (MFR) shall be determined in accordance with ISO 1133, using set of test conditions No. 19 (temperature 220 °C, load 10 kg). The possible values of the MFR are divided into four ranges, each represented by a two-figure code-number, as specified in table 4.

Table 4 — Codes used for melt flow rate in Data Block 3

Code	MFR range g/10 min
04	⩽ 5
08	> 5 to ⩽ 10
15	> 10 to ⩽ 20
25	> 20

3.3 Data Block 3

In this data block, the Vicat softening temperature is represented by a three-figure code-number (see 3.3.1) and the melt flow rate by a two-figure code-number (see 3.3.2). The two codes are separated from each other by hyphens.

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

NOTE 1 Not all combinations of the values of the designatory properties are provided by currently available materials.

3.4 Data Block 4

In this data block, the type of filler or reinforcing material is represented by one code-letter in position 1 and its physical form by a second letter in position 2 (see table 5 and ISO 1043-2), if requested. Subsequently (without a space), the mass content may be represented by a two-figure code-number in positions 3 and 4, as specified in table 6.

Mixtures of materials or forms may be indicated in parentheses by combining the relevant codes using the sign "+"; for example a mixture of 25 % (*m*/*m*) glass fibres (GF) and 10 % (*m*/*m*) mineral powder (MD) would be indicated by (G+M) in position 1, (F+D) in position 2 and (25+10) in positions 3 and 4.

Table 5 — Coding system for fillers and reinforcing materials in Data Block 4

Code-letter	Material (Position 1)	Form (Position 2)
B	Boron	Balls; beads; spheres
C	Carbon	
D		Powder; dry blend
F		Fibre
G	Glass	Granules; ground
H		Whiskers
K	Chalk ($CaCO_3$)	
M	Mineral[1] ; metal[2]	
S		Scale, flake
T	Talcum	
X	Not specified	Not specified
Z	Others[1]	Others

1) These materials may be defined by two letters after position 4 of the data block, for example by chemical symbol, additional codes or codes to be agreed upon.

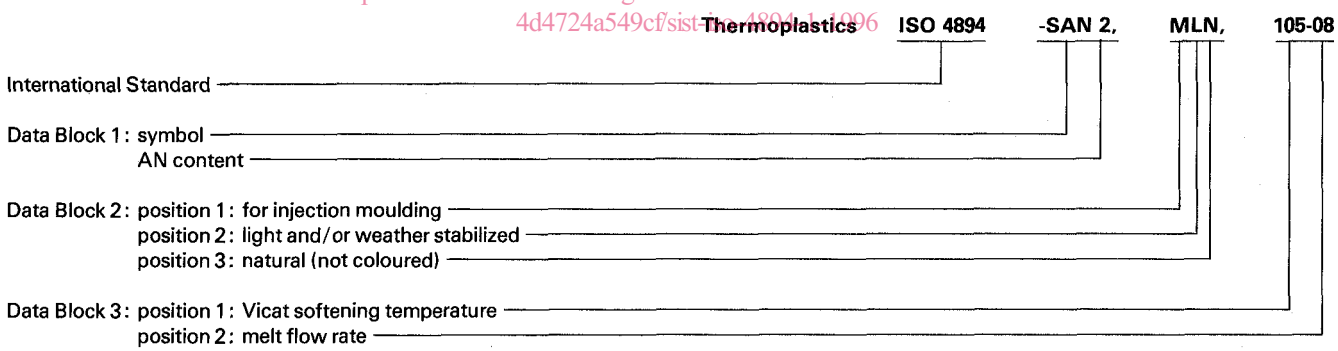
2) Metal filler shall be identified by the chemical symbol (in capital letters) after the mass content. For example steel whiskers may be designated "MH05FE".

Table 6 — Coding system for the mass content in Data Block 4

Code	Mass content % (m/m) (Positions 3 and 4)
05	$\leqslant$ 7,5
10	> 7,5 to $\leqslant$ 12,5
15	> 12,5 to $\leqslant$ 17,5
20	> 17,5 to $\leqslant$ 22,5
25	> 22,5 to $\leqslant$ 27,5
30	> 27,5 to $\leqslant$ 32,5
35	> 32,5 to $\leqslant$ 37,5
40	> 37,5 to $\leqslant$ 42,5

4 Example of designation

An SAN with an acrylonitrile content of 25 % (m/m) (2), intended for injection moulding (M), light and/or weather stabilized (L), natural (not coloured) (N), with a Vicat softening temperature of 101 °C (105) and a melt flow rate of 6 g/10 min (08), would be designated:



Designation: ISO 4894-SAN 2,MLN,105-08