INTERNATIONAL STANDARD

ISO 2898-1

Third edition
1996-08-15

Plastics — Plasticized poly(vinyl chloride) (PVC-P) moulding and extrusion materials —

Part 1:
Designation system and basis for specifications

Plastiques — Matériaux à base de poly(chlorure de vinyle) plastifié (PVC-P) pour moulage et extrusion —

Partie 1: Système de désignation et base de spécification

Reference number
ISO 2898-1:1996(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 2898-1 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 9, *Thermoplastics*.

This third edition cancels and replaces the second edition (ISO 2898-1:1986) and includes the following changes:

the text has been brought into line with latest version of the so-called "frame text";

"tape manufacture" has been added in data block 2 as a possible application.

ISO 2898 consists of the following parts, under the general title *Plastics — Plasticized poly(vinyl chloride) (PVC-P) moulding and extrusion materials.*

— *Part 1: Designation system and basis for specifications*

— *Part 2: Preparation of test specimens and determination of properties*

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Plastics — Plasticized poly(vinyl chloride) (PVC-P) moulding and extrusion materials —

Part 1:
Designation system and basis for specifications

1 Scope

1.1 This part of ISO 2898 establishes a system of designation for plasticized thermoplastic material which may be used as the basis for specifications.

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

a) Shore hardness

b) density

c) torsional-stiffness temperature at 300 MPa

and on information about physical form, intended application and/or method of processing, important properties, additives and colorants.

1.3 This part of ISO 2898 is applicable to all plasticized compositions of homopolymers and copolymers that contain at least 50 % (*m/m*) of vinyl chloride. It is also applicable to plasticized compositions containing chlorinated poly(vinyl chloride) and to plasticized compositions containing blends of one or more of the above-mentioned polymers, provided that the total amount of these polymers represents at least 50 % (*m/m*) of the polymer content of the composition.

This part of ISO 2898 applies to materials ready for normal use in the form of powder (dry blends), granules or pellets, unmodified or modified by colorants, additives, fillers, etc.

This part of ISO 2898 does not apply to cellular plastics or to paste compositions (plastisols).

1.4 It is not intended to imply that materials having the same designation give necessarily the same performance. This part of ISO 2898 does not provide engineering data, performance data or data on processing conditions which may be required to specify a material for a particular application and/or method of processing.

If such additional properties are required, they shall be determined in accordance with the test methods specified in part 2 of this International Standard, if suitable.

1.5 In order to specify a thermoplastic material for a particular application or to ensure reproducible processing, additional requirements may be given in data block 5 (see clause 3, first paragraph).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 2898. 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 2898 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 1043-1:— [1], *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics.*

ISO 2898-2:— [2], *Plastics — Plasticized poly(vinyl chloride) (PVC-P) moulding and extrusion materials — Part 2: Preparation of test specimens and determination of properties.*

3 Designation and specification system

The designation and specification system for thermoplastics is based on the following standardized pattern:

Designation						
Description block (optional)	Identity block					
	International Standard Number block	Individual-item block				
		Data block 1	Data block 2	Data block 3	Data block 4	Data block 5

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 coding, the individual-item block is subdivided into 5 data blocks comprising the following information:

Data block 1: Identification of the plastic by its symbol PVC-P in accordance with ISO 1043-1 and information about the polymerization process or the composition of the polymer.

Data block 2: Position 1: Intended application or method of processing (see 3.2).
Positions 2 to 8: 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 their nominal content (not included in this part of ISO 2898).

Data block 5: For the purpose of specifications, a fifth data block may be added containing additional information.

The first character of the individual-item block shall be a hyphen. The data blocks shall be separated from each other by commas.

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, plasticized poly(vinyl chloride) plastics are identified by the symbol PVC-P, in accordance with ISO 1043-1.

1) To be published. (Revision of ISO 1043-1:1987)

2) To be published. (Revision of ISO 2898-2:1989)

3.2 Data block 2

In this data block, information about intended application and/or method of processing is given in position 1 and information about important properties, additives and colour in positions 2 to 8. The code-letters used are specified in table 1.

If information is presented in positions 2 to 8 and no specific information is given in position 1, the letter X shall be inserted in position 1.

Table 1 — Code-letters used in data block 2

Code-letter	Position 1	Code-letter	Positions 2 to 8
B	Blow moulding	**B**	Antiblocking
C	Calendering	**C**	Coloured
		D	Powder dry blend
E	Extrusion	**E**	Expandable
F	Extrusion of films	**F**	Special burning characteristics
G	General use	**G**	Granules
H	Coating	**H**	Heat-ageing stabilized
K	Cable and wire coating		
		L	Light or weather stabilized
M	Injection moulding		
		N	Natural (no colour added)
		P	Impact modified
Q	Compression moulding		
R	Rotational moulding	**R**	Mould release agent
S	Sintering	**S**	Lubricated
T	Tape manufacture	**T**	Transparent
X	No indication		
		Y	Increased electrical conductivity
		Z	Antistatic

3.3 Data block 3

In this data block, the Shore hardness is represented by a 2-figure code number (see 3.3.1), the range of density by a 2-figure code number (see 3.3.2) and the range of torsional-stiffness temperature at 300 MPa by a 2-figure code-number (see 3.3.3). The code numbers 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 on either side of, the limit, because of manufacturing tolerances, the designation is not affected.

NOTE 1 Not all combinations of the values of designatory properties are provided in currently available polymers.

3.3.1 Shore hardness

The Shore A or D hardness shall be determined in accordance with ISO 2898-2.

The value of the Shore hardness is represented by a 2-figure code-number as specified in table 2. The scale used is indicated by a single code-letter (A or D) immediately preceding the code-number indicating the hardness value.

3.3.2 Density

The density shall be determined in accordance with ISO 2898-2.

The possible values of density are divided into 17 ranges, each represented by a 2-figure code-number as specified in table 2.

3.3.3 Torsional-stiffness temperature at 300 MPa

The torsional-stiffness temperature at 300 MPa shall be determined in accordance with ISO 2898-2.

The possible values of the torsional-stiffness temperature at 300 MPa are divided into 7 ranges, each represented by a 2-figure code-number as specified in table 2.

Table 2 — Code-numbers used for designatory properties

Shore hardness	Density		Torsional-stiffness temperature at 300 MPa	
	Code-number	Range g/cm³	Code-number	Range °C
The Shore hardness is designated by the letter A or D followed by the hardness value, for example, A82 for a measured Shore A value of 82. A tolerance of ± 3 is permitted. Use the D scale when the A scale value exceeds 85.	**15**	≤ 1,17	**00**	≥ −5
	20	> 1,17 but ≤ 1,22	**10**	< −5 but ≥ −15
	25	> 1,22 but ≤ 1,27	**20**	< −15 but ≥ −25
	30	> 1,27 but ≤ 1,32	**30**	< −25 but ≥ −35
	35	> 1,32 but ≤ 1,37	**40**	< −35 but ≥ −45
	40	> 1,37 but ≤ 1,42	**50**	< −45 but ≥ −55
	45	> 1,42 but ≤ 1,47	**60**	< − 55
	50	> 1,47 but ≤ 1,52		
	55	> 1,52 but ≤ 1,57		
	60	> 1,57 but ≤ 1,62		
	65	> 1,62 but ≤ 1,67		
	70	> 1,67 but ≤ 1,72		
	75	> 1,72 but ≤ 1,77		
	80	> 1,77 but ≤ 1,82		
	85	> 1,82 but ≤ 1,87		
	90	> 1,87 but ≤ 1,92		
	95	> 1,92		

3.4 Data block 4

Not included in this part of ISO 2898.

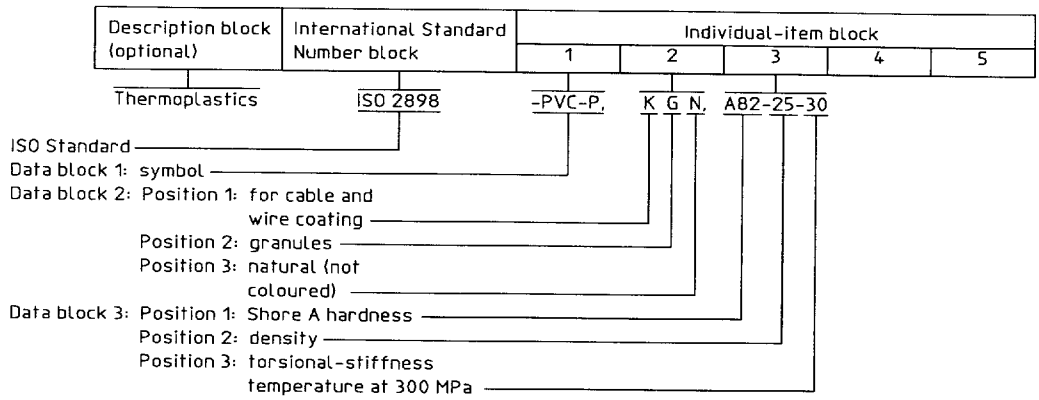
3.5 Data block 5

Indication of additional requirements in this optional data block is a way of transforming the designation of a material into a specification for a particular application. This may be done for example by reference to a suitable national standard or to a standard-like, generally established specification.

4 Examples of designations

4.1 Designation only

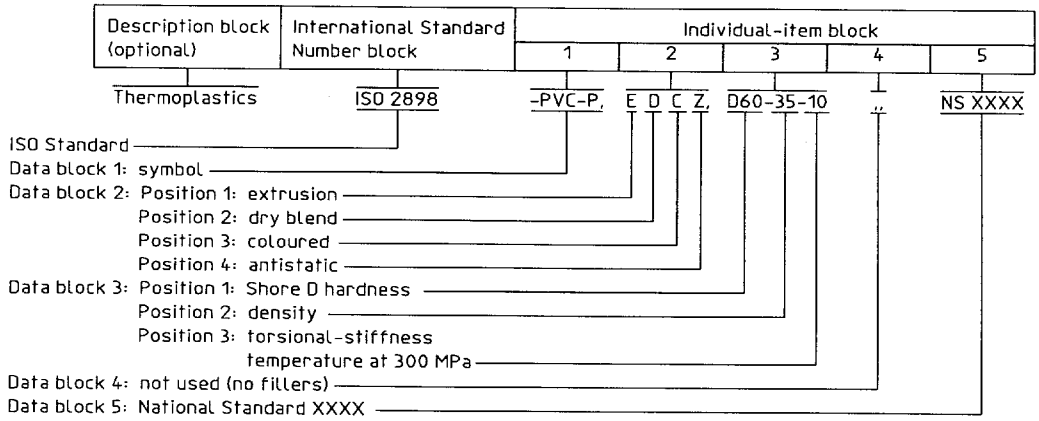
A plasticized poly(vinyl chloride) thermoplastic material (PVC-P), intended for cable and wire coating extrusion (K), in the form of a granular material (G), natural and not coloured (N), with a Shore A hardness of 82 (A82), a density of 1,24 g/cm^3 (25) and a torsional-stiffness temperature at 300 MPa of – 31 °C (30), would be designated:



Designation: ISO2898-PVC-P,KGN,A82-25-30

4.2 Designation transformed into a specification

A plasticized poly(vinyl chloride) thermoplastic material (PVC-P), intended for extrusion (E), in the form of a dry blend (D), coloured (C), with an antistatic additive (Z), having a Shore D hardness of 60 (D60), a density of 1,34 g/cm^3 (35), a torsional-stiffness temperature at 300 MPa of – 9 °C (10), but otherwise conforming to National Standard XXXX, would be specified:



Specification: ISO 2898-PVC-P,EDCZ,D60-35-10,,NS XXXX

ICS 83.080.20

Descriptors: plastics, thermoplastic resins, moulding materials, extrusion materials, plasticized polyvinyl chloride, designation, data blocks, data codes, alphabetic codes.

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