
International Standard 2898/1

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Plastics — Plasticized compounds of homopolymers and copolymers of vinyl chloride (PVC-P) — Part 1: Designation

Plastiques — Compositions plastifiées d'homopolymères et de copolymères de chlorure de vinyle (PVC-P) — Partie 1: Désignation

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Descriptors : plastics, homopolymers, copolymers, plasticized polyvinyl chloride, designation.

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.

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 2898/1 was prepared by Technical Committee ISO/TC 61, *Plastics*.

This second edition cancels and replaces the first edition (ISO 2898/1-1980), of which it constitutes a technical revision.

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 — Plasticized compounds of homopolymers and copolymers of vinyl chloride (PVC-P) — Part 1: Designation

1 Scope and field of application

1.1 This part of ISO 2898 establishes a system of designation for plasticized compounds of homo- and copolymers of vinyl chloride (PVC-P) thermoplastic materials, which may be used as the basis for specifications.

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

- a) Shore hardness,
- b) density,
- c) stiffness in torsion (300 MPa)

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

1.3 This designation system is applicable to plasticized compounds of polymers of vinyl chloride based on homopolymers of vinyl chloride or copolymers with at least 50 % (*m/m*) of vinyl chloride, or chlorinated poly(vinyl chloride), or mixtures of such polymers with one another or with other polymers, the principle ingredient being a polymer of vinyl chloride.

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

This International Standard does not apply to cellular plastics and to paste compounds (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 end-use application or method of processing.

If such additional properties are required, they shall be determined in accordance with the test methods specified in ISO 2898/2, if suitable.

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

2 References

ISO 458/2, *Plastics — Determination of stiffness in torsion of flexible materials — Part 2: Application to plasticized compounds of homopolymers and copolymers of vinyl chloride.*

ISO 868, *Plastics — Determination of indentation hardness by means of a durometer (Shore hardness).*

ISO 1043, *Plastics — Symbols and codes*

— *Part 1: Symbols for basic polymers and their modifications, and for plasticizers.*¹⁾

— *Part 2: Codes for designations of polymers by a data-block system.*¹⁾

ISO 1183, *Plastics — Methods for determining the density and relative density (specific gravity) of plastics excluding cellular plastics.*²⁾

ISO 2898/2, *Plastics — Plasticized compounds of homopolymers and copolymers of vinyl chloride — Part 2: Preparation of test specimens and determination of properties.*

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

2) At present at the stage of draft. (Revision of ISO/R 1183-1970.)

3 Designation system

The designation system of thermoplastics is based on the following standardized pattern.¹⁾

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 PVC-P, according to ISO 1043/1.
- No. 2: Position 1: Intended application or method or 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 particular designation).

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 2898.

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, the compound is identified by the symbol PVC-P, according to ISO 1043/1.

3.2 Data Block 2

In this data block, information about intended application or method of processing is given in Position 1 and information about the form of the material (D or G), 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 range of the Shore hardness A or D is coded by a letter and two digits (see 3.3.1); then, separated by a hyphen, the range the density is coded by two digits (see 3.3.2), then, separated by a hyphen, the range of the stiffness in torsion (300 MPa) is coded by two digits (see 3.3.3).

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 on 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.

1) See ISO 1043/2.

3.3.1 The Shore hardness shall be determined according to ISO 868 (reading after 15 ± 1 s) and coded by the letter A or D and two digits as specified in table 2.

3.3.2 The density shall be determined according to ISO 1183 and coded by two digits, as specified in table 2.

3.3.3 The stiffness in torsion (300 MPa) shall be determined according to ISO 458/2 and coded by two digits, as specified in table 2.

Table 1 – Codes used in Data Block 2

Code	Position 1	Code	Positions 2 to 4
B	Blow moulding	B	Antiblocking
C	Calendering	C	Coloured
E	Extrusion of pipes, profiles and sheet	D	Powder (dry blend)
F	Extrusion of film and thin sheeting	E	Expandable
G	General use	F	Special burning characteristics
H	Coating	G	Pellets, granules
K	Cable and wire coating	H	Heat-ageing stabilized
M	Injection moulding	L	Light and/or weather stabilized
Q	Compression moulding	N	Natural (not coloured)
R	Rotational moulding	O	No indication
S	Powder coating or sintering	P	Impact modified
X	No indication	R	Moulding release agent
		S	Lubricated
		T	Improved transparency
		Y	Increased electrical conductivity
		Z	Antistatic

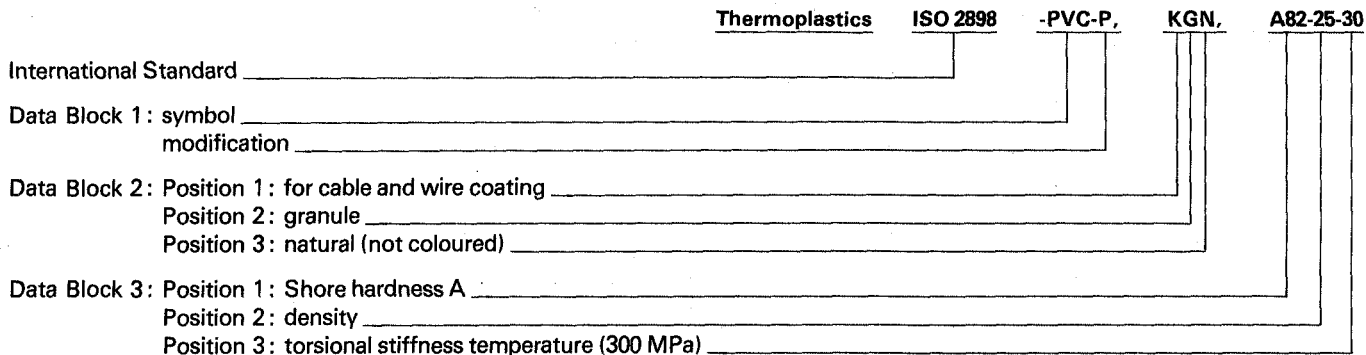
Table 2 – Cell codes and cell ranges for Shore hardness, density and stiffness in torsion in Data Block 3

Shore hardness (A or D ¹⁾ code	Density		Stiffness in torsion (300 MPa)	
	Code	Range g/cm ³	Code	Range °C
The letter A or D and two figures for the Shore hardness, for example A82 for a Shore A value of 82, assuming a tolerance of ± 3	15	< 1,17	00	> -5
	20	> 1,17 to 1,22	10	< -5 to -15
	25	> 1,22 to 1,27	20	< -15 to -25
	30	> 1,27 to 1,32	30	< -25 to -35
	35	> 1,32 to 1,37	40	< -35 to -45
	40	> 1,37 to 1,42	50	< -45 to -55
	45	> 1,42 to 1,47	60	< -55
	50	> 1,47 to 1,52		
	55	> 1,52 to 1,57		
	.	etc.		
	90	> 1,87 to 1,92		
95	> 1,92			

1) The Shore D scale is used when the Shore A value exceeds 86.

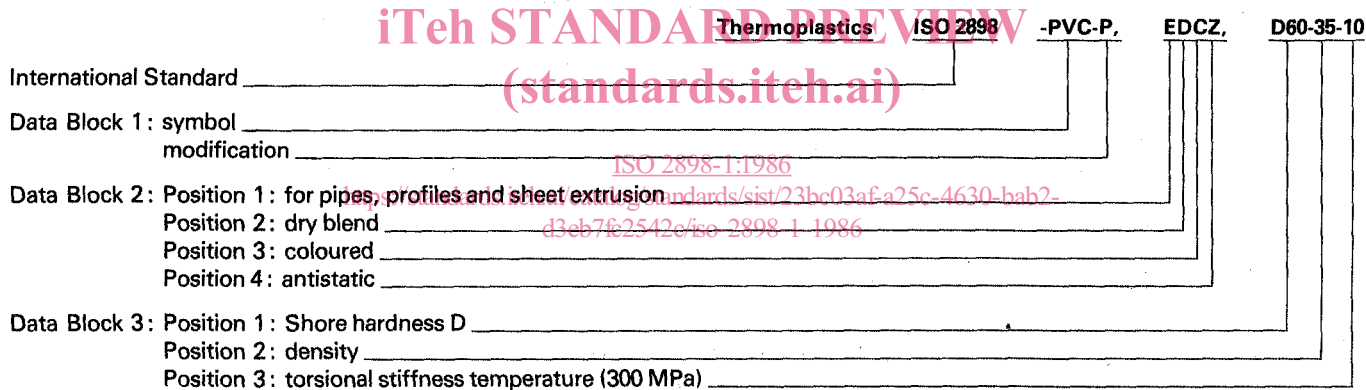
4 Coding examples

4.1 A plasticized compound of a polymer of vinyl chloride (PVC-P), for cable and wire extrusion (K), having the physical form of a granule (G), natural (not coloured) (N), with a Shore hardness A/82 (A82), a density of 1,24 g/cm³ (25) and torsional stiffness temperature (300 MPa) of - 31 °C (30), would be designated:



Designation: ISO 2898-PVC-P,KGN,A82-25-30

4.2 A plasticized compound of a polymer of vinyl chloride (PVC-P), for pipes, profiles and sheet extrusion (E), having the physical form of a dry blend (D), coloured (D), with an antistatic additive (Z), having a Shore hardness D/60 (D60), a density of 1,34 g/cm³ (35) and a torsional stiffness temperature (300 MPa) of - 9 °C (10), would be designated:



Designation: ISO 2898-PVC-P,EDCZ,D60-35-10