



SLOVENSKI STANDARD

SIST EN 12608:2003

01-oktober-2003

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Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors
- Classification, requirements and test methods

Profile aus weichmacherfreiem Polyvinylchlorid (PVC-U) zur Herstellung von Fenstern
und Türen - Klassifizierung, Anforderungen und Prüfverfahren

Profilés de polychlorure de vinyle non plastifié (PVC-U) pour la fabrication des fenetres
et des portes - Classification, prescriptions et méthodes d'essai

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ICS:

83.140.99	Drugi izdelki iz gume in polimernih materialov	Other rubber and plastics products
91.060.50	Vrata in okna	Doors and windows

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EUROPEAN STANDARD

EN 12608

NORME EUROPÉENNE

EUROPÄISCHE NORM

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Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors - Classification, requirements and test methods

Profilés de polychlorure de vinyle non plastifié (PVC-U)
pour la fabrication des fenêtres et des portes -
Classification, prescriptions et méthodes d'essai

Profile aus weichmacherfreiem Polyvinylchlorid (PVC-U)
zur Herstellung von Fenstern und Türen - Klassifizierung,
Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 27 December 2002.

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 Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 12608:2003) has been prepared by Technical Committee CEN/TC 33 "Doors, windows, shutters, building hardware and curtain walling", the secretariat of which is held by AFNOR.

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 October 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

The standard specifies classification, requirements and test methods.

It is based on standards of the CEN member bodies on PVC-U profiles for the fabrication of windows and the Guide Technique UEAtc "Pour l'agrément des fenêtres en PVC".

No existing European Standard will be superseded by this standard.

This standard is supported by separate standards on test methods to which references are made.

Annexes A and C are normative. Annex B is informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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EN 12608:2003 (E)**1 Scope**

This European Standard specifies classifications, requirements and test methods for unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors.

This standard applies to profiles in the colour range:

$$L^* \geq 82 \text{ (chromaticity co-ordinate } Y \geq 60)$$

$$- 2,5 \leq a^* \leq 5$$

$$- 5 \leq b^* \leq 15$$

when determined according to ISO 7724-3 with the apparatus according to ISO 7724-1 and ISO 7724-2 with the following specifications:

- employing CIE Standard illuminant D65 including specular reflectance;
- measuring condition 8/d or d/8 (without gloss trap for both).

NOTE Profiles in accordance with this standard are capable of making durable windows and doors, taking into account factors such as climatic conditions, design, methods of fabrication and long term performance.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 477, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors – Determination of the resistance to impact of main profiles by falling mass.*

EN 478, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors – Appearance after exposure at 150 °C – Test method.*

EN 479, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors – Determination of heat reversion.*

EN 513, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors – Determination of the resistance to artificial weathering.*

EN 514, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors – Determination of the strength of welded corners and T-joints.*

EN ISO 105-A01:1995, *Textiles – Tests for colour fastness – Part A01: General principles of testing (ISO 105-A01:1994).*

EN ISO 178, *Plastics – Determination of flexural properties (ISO 178:1993).*

EN ISO 179-2, *Plastics – Determination of Charpy impact properties – Part 2: Instrumented impact test (ISO 179-2:1997).*

EN ISO 306, *Plastics – Thermoplastic materials – Determination of Vicat softening temperature (VST) (ISO 306:1994).*

EN ISO 8256, *Plastics – Determination of tensile-impact strength (ISO 8256:1990, including Technical Corrigendum 1:1991)*.

EN ISO 1163-2:1999, *Plastics – Unplasticized poly(vinylchloride) (PVC-U) moulding and extrusion materials – Part 2: Preparation of test specimens and determination of properties (ISO 1163-2:1995)*.

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1

durability

ability of a profile to maintain satisfactory properties in a window and/or door over an estimated working life which is at least the economically reasonable working life of the window and/or door installed in a building (works)

NOTE The indications given on the working life of a product cannot be interpreted as a guarantee given by the producer, but are regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3.2

profile

product produced by extrusion

3.2.1

main profile

profile, which has a load bearing function within the window

3.2.2

auxiliary profile

glazing bead or profile, which has a reduced load bearing function within the window

3.3

external wall of the main profile

wall as shown in Figure 2 and according to the requirements of Table 3

3.4

sight surface

face surface of a profile, that is exposed to view, when the window is closed

3.5

nominal profile shape

shape and dimensions of the profile, as specified by the manufacturer

3.6

deviation from straightness

deviation of the longitudinal axis of the profile from the straight line

3.7

depth of a profile (D)

dimension which is measured at right angles to the glazing plane, between the front and back face surfaces of a profile (see Figure 1)

3.8

overall width of a profile (W)

greatest dimension, measured in the direction of the glazing plane, and perpendicular to the longitudinal axis of the profile (see Figure 1)

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3.9 material

compound of PVC-U in the form of granules or powder for the production of profiles for the fabrication of windows and doors (for the different types of material see 3.9.2 to 3.9.5.2)

3.9.1 defined formulation

formulation, which is a controlled composition of polymer, additives and pigments

3.9.2 virgin material

material of defined formulation in granular or powder form, which has not been used or processed other than required for its manufacture and to which no reprocessible or recyclable material has been added

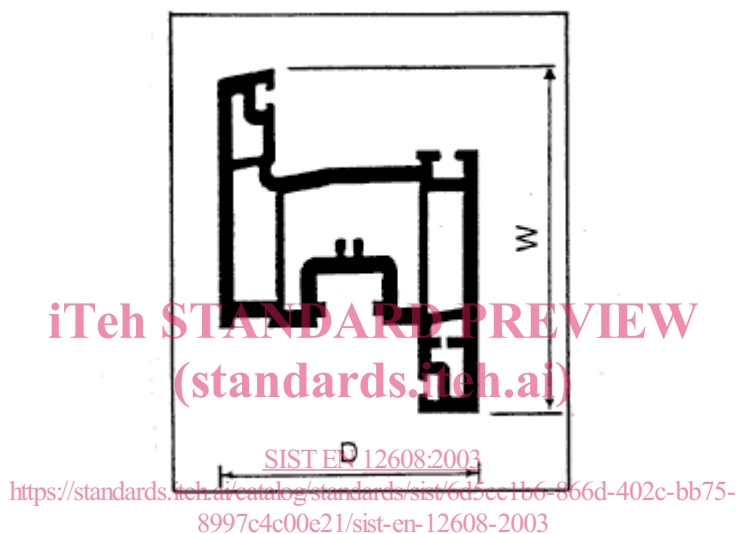


Figure 1 — Example of D and W

3.9.3 own reprocessible material

material of defined formulation free of contamination and degradation, made from unused PVC-U profiles including offcuts, which is reprocessed in the same factory in which it was previously extruded

NOTE This includes unused products, such as mis-measured windows, coming from window manufacturers using profiles from the same material as that to be processed.

3.9.4 external reprocessible material

two types of external reprocessible materials are defined: ERM_a and ERM_b

3.9.4.1 ERM_a

material free of contamination and degradation, made from unused PVC-U window profiles, including off cuts, which has been originally processed by a manufacturer other than that carrying out the reprocessing

3.9.4.2 ERM_b

material made from unused PVC-U products, other than window profiles or a mixture of PVC-U products with PVC-U window profiles, regardless of where they were originally manufactured

3.9.5**recyclable material**

two types of recyclable materials are defined: RM_a and RM_b

3.9.5.1 **RM_a**

material made from used PVC-U window profiles which is free from contamination

3.9.5.2 **RM_b**

material made from used PVC-U products other than window profiles or a mixture of PVC-U products with PVC-U window profiles

4 Classification**4.1 General**

In this European Standard various aspects of performance are classified. The selection of appropriate classes necessary to fulfil national requirements may be incorporated into normative national annexes to this standard.

4.2 Classification by climatic zones

Two different climatic zones M (moderate climate) and S (severe climate) for Europe are given in Table 1.

Table 1 — Classification of climatic zones in Europe

	Moderate climate	Severe climate
	M	S
Annual total solar energy ^a on horizontal surface	< 5 GJ/m ² and < 22 °C	≥ 5 GJ/m ² or ≥ 22 °C
Average of the daily maximum temperature ^a of the warmest month per year		
^a Values measured according the specifications of the World Meteorological Organisation (WMO).		

In order to be classified as a moderate climate, the annual solar energy on a horizontal surface shall be < 5 GJ/m² and the average temperature of the warmest month of the year shall be < 22 °C.

If the annual total solar energy on a horizontal surface is ≥ 5 GJ/m² or the average daily maximum temperature of the warmest month of the year is ≥ 22 °C, the climate is classified as severe.

NOTE 1 Profiles which are designed to be used in a severe climate (S), can also be used in a moderate climate (M).

NOTE 2 In those countries where the two climatic zones exist care should be taken that profiles designed for a moderate climate (M) are not used in the severe climate (S).

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4.3 Classification of resistance to impact by falling mass of main profiles

For the resistance to impact by falling mass at - 10 °C two classes are given in Table 2.

Table 2 — Classification of main profiles to impact by falling mass at - 10 °C

	Class I	Class II
Falling mass (g)	1 000	1 000
Falling height (mm)	1 000	1 500

NOTE In certain climatic regions a greater resistance to brittle failure is considered and therefore two classes for the impact resistance of main profiles by falling mass are established.

4.4 Classification of wall thickness of main profiles

For the external wall of the main profile three classes of wall thickness are given in Table 3 (see also Figure 2).

Table 3 — Classification of wall thickness

Dimensions in millimetres

	Class A	Class B	Class C
sight surface	≥ 2,8	≥ 2,5	no requirements
non-sight surface	≥ 2,5	≥ 2,0	no requirements

In order to be classified for either class A or B both minimum requirements for wall thickness shall be fulfilled. Sight surfaces and non-sight surfaces are shown in Figure 2.

NOTE 1 Class A, B or C is used for the declaration of the wall thickness of the main profile.

NOTE 2 The classification of profiles by wall thickness is intended to represent the wide variations in profile and window design for the various applications which are in use in Europe. It is not intended to imply differences in profile quality or in the performance of windows provided that the relevant performance requirements for both profiles and windows are met.

5 Requirements

5.1 Material

5.1.1 Virgin material

Profiles shall be manufactured from a virgin material of unplasticized polyvinylchloride (PVC-U), complying with the requirements in 5.1.3. Only those additives and pigments may be used, that are necessary for the manufacturing of durable profiles with appropriate surface finish, mechanical strength and physical properties as required by this European Standard.

5.1.2 Reprocessable and recyclable material

When the material used is not 100 % virgin material then all the requirements of this standard apply together with the further requirements of this clause.

5.1.2.1 Own reprocessable material

The use of own reprocessable material for the production of PVC-U profiles is permitted without limitations and provided that the defined formulation is the same as for the virgin material.

5.1.2.2 External reprocessable material

External reprocessable material type ERM_a may be used after any necessary restabilization and/or addition of additives (e.g. modifiers, pigments, lubricants etc.) as a core of a profile where any surfaces or parts of surfaces which may be visible after installation of the window fabricated from the profiles are completely covered by coextrusion with a virgin material or an own reprocessable material.

The thickness of the coextruded outer surface layer shall be a minimum of 0,5 mm.

External reprocessable material type ERM_b shall not be used.

5.1.2.3 Recyclable material

Recyclable material type RM_a may be used after any necessary restabilization and/or remodification as a core of a profile where any surfaces or parts of surfaces which may be visible after installation of windows fabricated from the profiles are completely covered by coextrusion with a virgin material or an own reprocessable material.

The thickness of the outer surface coextruded layer shall be a minimum of 0,5 mm.

Recyclable material type RM_b shall not be used.

5.1.3 Material characteristics

The materials which are used for the extrusion of profiles shall meet the requirements of annex A.

5.2 Appearance

The colour of the profile shall be the same and uniform on any surfaces or parts of surfaces which may be visible after installation of the window fabricated from the profile, when viewed in accordance with 6.1.

The surfaces of the profiles shall be smooth, flat and free from pitting, impurities, cavities and other surface defects when viewed in accordance with 6.1. The edges of the profiles shall be clean and burr-free.

NOTE 1 Further arrangements with respect to appearance (see annex B), such as tolerances on the standard colour, should be made between the customer and the manufacturer, and are not part of the requirements of this standard.

NOTE 2 Extrusion lines, caused by the process are admissible, so long as they are not visually intrusive.

5.3 Dimensions and tolerances

5.3.1 Nominal shape

The cross-section of the profiles shall conform to the nominal profile shape.

The tolerances of the external dimensions of the profile (see Figure 1) with respect to the nominal profile shape shall be in accordance with Table 4.