
**Profili iz nemehčanege polivinilklorida (PVC-U) za izdelavo oken in vrat -
Razvrstitev, zahteve in preskusne metode - 2. del: PVC-U profili, prevlečeni s
folijami, lepljenimi z lepili**

Unplasticized poly(vinyl chloride) (PVC-U) profiles for the fabrication of windows and doors - Classification, requirements and test methods - Part 2: PVC-U profiles covered with foils bonded with adhesives

Profile aus weichmacherfreiem Polyvinylchlorid (PVC-U) zur Herstellung von Fenstern und Türen - Klassifizierung, Anforderungen und Prüfverfahren - Teil 2: PVC-U-Profil mit kaschierten Folien, die mittels Klebstoff aufgebracht sind

Profilsés de poly(chlorure de vinyle) non plastifié (PVC-U) pour la fabrication des fenêtres et des portes - Classification, exigences et méthodes d'essai - Partie 2 : Profilsés en PVC-U plaxés avec des films collés

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European foreword

This document (EN 12608-2:2023) has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by SIS.

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of an identical text or by endorsement, at the latest by April 2024, and conflicting national standards shall be withdrawn at the latest by April 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

The EN 12608 series, *Unplasticized poly(vinyl chloride) (PVC-U) profiles for the fabrication of windows and doors — Classification, requirements and test methods*, currently consists of the following parts:

- *Part 1: Non-coated PVC-U profiles with light coloured surfaces*
- *Part 2: PVC-U profiles covered with foils bonded with adhesives*
- *Part 3: PVC-U profiles covered with paint (in preparation)*
- *Part 4: PVC-U profiles with thermo-laminated foils (in preparation)*
- *Part 5: PVC-U profiles with coextruded coloured top-layer (in preparation)*

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

1 Scope

This document specifies the classifications, requirements and test methods for unplasticized poly(vinyl chloride) (PVC-U) profiles covered with foils designed for external uses bonded with adhesives which are intended to be used for the fabrication of windows and doors.

NOTE 1 For editorial reasons, in this document, the term “window” is used for window/door.

NOTE 2 For the purpose of production control, test methods other than those specified in this document can be used.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 410, *Glass in building — Determination of luminous and solar characteristics of glazing*

EN 478, *Plastics — Poly(vinyl chloride) (PVC) based profiles — Determination of the appearance after exposure at 150 °C*

EN 479, *Plastics — Poly(vinyl chloride) (PVC) based profiles — Determination of heat reversion*

EN 513, *Plastics — Poly(vinyl chloride) (PVC) based profiles — Determination of the resistance to artificial weathering*

EN 514, *Plastics — Poly(vinyl chloride) (PVC) based profiles — Determination of the strength of welded corners and T-joints*

EN 12608-1:2016+A1:2020, *Unplasticized poly(vinyl chloride) (PVC-U) profiles for the fabrication of windows and doors — Classification, requirements and test methods — Part 1: Non-coated PVC-U profiles with light coloured surfaces*

EN 17271, *Plastics — Poly(vinyl chloride) (PVC) based profiles — Determination of the peel strength of profiles laminated with foils*

EN 17508, *Plastics — Unplasticized poly(vinyl chloride) (PVC-U) profiles for the fabrication of windows and doors — Terminology of PVC based materials*

EN 20105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour (ISO 105-A02)*

EN ISO 105-A01:2010, *Textiles — Tests for colour fastness — Part A01: General principles of testing (ISO 105-A01:2010)*

EN ISO 178, *Plastics — Determination of flexural properties (ISO 178)*

EN ISO 179-1, *Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test (ISO 179-1)*

EN ISO 306, *Plastics — Thermoplastic materials — Determination of Vicat softening temperature (VST) (ISO 306)*

EN ISO 2409, *Paints and varnishes — Cross-cut test (ISO 2409)*

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EN ISO 4892-2:2013, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps (ISO 4892-2:2013)*

EN ISO 8256, *Plastics — Determination of tensile-impact strength (ISO 8256)*

EN ISO/CIE 11664-4, *Colorimetry — Part 4: CIE 1976 L*a*b* colour space (ISO/CIE 11664-4)*

EN ISO 21306-2:2019, *Plastics — Unplasticized poly(vinyl chloride) (PVC-U) moulding and extrusion materials — Part 2: Preparation of test specimens and determination of properties (ISO 21306-2:2019)*

3 Terms and definitions

For the purposes of this document the terms and definitions given in EN 12608-1 (except for material definitions), EN 17508 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1**base profile**

profile without covering foil intended for lamination

3.2**laminated profile**

profile covered with foil

3.3**foil**

plastics layer for external uses intended to cover surfaces of a base profile

Note 1 to entry: Foil can be lacquered or not.

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3.4**base layer of the foil**

layer of the foil with or without further surface treatment which is in contact with the adhesive system

3.5**adhesive system**

material or combination of materials which assures the adhesion of the foil on the base profile

EXAMPLES Primer and glue; primerless treatment of the surface (e.g. plasma treatment) and glue.

4 Classifications**4.1 General**

The selection of appropriate classes necessary to fulfil national requirements may be given in the national foreword of this document.

4.2 Classification of main base profiles according to the wall thickness of the external walls

For the wall thickness of the external walls, the main base profiles shall be classified according to EN 12608-1:2016+A1:2020, 4.4 (Figure 2 and Table 3).

4.3 Classification of main base profiles according to the resistance to impact by falling mass

For the resistance to impact by falling mass, the main base profiles shall be classified according to EN 12608-1:2016+A1:2020, 4.3.

4.4 Classification of base profile materials according to the resistance to artificial weathering

Resistance to artificial weathering of base profile materials shall be determined according to Annex A. There are two possibilities for the classification of base profile materials which are used for the profile's surface according to the resistance to artificial weathering:

- a) for UV resistant materials (UVM) classification according to climatic zones conforming to EN 12608-1:2016+A1:2020, 4.2, applies (classes M and S);
- b) for reduced-UV resistant materials (RUVM) the class "RUVM" applies.

4.5 Classification of foils according to the resistance to artificial weathering

The resistance to artificial weathering of foils shall be classified according to Table 1 after testing according to 6.3.

For guidance regarding the selection of the appropriate foil class, see Annex B.

Table 1 — Classification of foils according to the resistance to artificial weathering

Class	M 8	M 12	M 20	M 30
Radiant exposure in wavelength range (300 to 800) nm	8 GJ/m ²	12 GJ/m ²	20 GJ/m ²	30 GJ/m ²

5 Requirements for base profiles

5.1 Base profiles in conformance with EN 12608-1

If the base profile is in accordance with EN 12608-1, no further requirements for the base profile apply.

5.2 Other base profiles

5.2.1 Materials

All requirements for materials of other base profiles than described in 5.1 are given in Annex A. To fulfil requirements according to Annex A materials of type rPVC may be re-stabilized and/or enhanced with additives (e.g. modifiers, pigments, lubricants) before use.

The use of permitted materials on surfaces of profiles is given in Table 2 and Figure 1.

It is permitted to use a reduced-UV resistant virgin material (RUVM) on the surface when the sight surfaces of the profile are covered with foil (see Table 2).

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If PVC-U recyclate (rPVC) or non-UV resistant virgin material (NUVM) is used for the base profile the following shall apply:

- a) these materials may be used for the core of a profile, where any visible surfaces are completely covered by coextrusion with a virgin material (UVM), an UV resistant internally reused material (IRM) or a reduced-UV resistant virgin material (RUVM);
- b) for sight surfaces, the minimum value of thickness of the coextruded surface layer shall be 0,5 mm;
- c) for non-sight visible surfaces, the minimum thickness of the coextruded surface layer shall be 0,2 mm;
- d) there is no requirement for minimum thickness of the coextruded surface layer: 1) at the inside surface of grooves with an entry width ≤ 5 mm (see Figure 1); 2) for grooves protected from UV radiation (e.g. grooves equipped with gasket) regardless of their width;
- e) the thickness of the coextruded layer is determined according to EN 12608-1:2016+A1:2020, 6.4.

Table 2 — Use of materials on surfaces of profiles

Permitted material	Sight surface	Non-sight visible surface	Non-visible surface
UV resistant virgin material (UVM)	Yes	Yes	Yes
UV resistant internally reused material (IRM)	Yes	Yes	Yes
Reduced-UV resistant virgin material (RUVM)	Yes (if intended to be covered with foil)	Yes	Yes
Non-UV resistant virgin material (NUVM)	No	No	Yes
PVC-U recyclate (rPVC)	No	No	Yes

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