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Plastics - Unplasticized poly(vinyl chloride) (PVC-U) profiles for building applications -
Part 1: Designation of light coloured profiles

Kunststoffe - Profile aus weichmacherfreiem Polyvinylchlorid (PVC-U) für die Anwendung
im Bauwesen - Teil 1: Bezeichnung von hellfarbigen Profilen

Plastiques - Profilés en poly(chlorure de vinyle) non plastifié (PVC-U) pour applications
dans le bâtiment - Partie 1 : Désignation des profilés de coloris clair

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ICS:

83.140.99	Drugi izdelki iz gume in polimernih materialov	Other rubber and plastics products
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Plastics - Unplasticized poly(vinyl chloride) (PVC-U) profiles for building applications - Part 1: Designation of light coloured profiles

Plastiques - Profilés en poly(chlorure de vinyle) non plastifié (PVC-U) pour applications dans le bâtiment - Partie 1 : Désignation des profilés de coloris clair

Kunststoffe - Profile aus weichmacherfreiem Polyvinylchlorid (PVC-U) für die Anwendung im Bauwesen - Teil 1: Bezeichnung von hellfarbigen Profilen

This European Standard was approved by CEN on 24 June 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 13245-1:2004) has been prepared by Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by IBN.

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 March 2005, and conflicting national standards shall be withdrawn at the latest by June 2006.

This document EN 13245 consists of the following parts, under the general title *Plastics – Unplasticized poly(vinyl chloride) (PVC-U) profiles for building applications*:

- *Part 1: Designation of light coloured profiles*
- *Part 2: Profiles for internal and external wall and ceiling finishes.*
- *Part 3: Designation of coloured profiles*
- *Part 4: Designation of light coloured cellular unplasticized poly(chloride) (PVC-UE) profiles*
- *Part 5: Designation of coloured cellular unplasticized poly(chloride) (PVC-UE) profiles*

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

EN 13245-1:2004 (E)**1 Scope**

This part of EN 13245 specifies a method for the designation of light coloured profiles made of unplasticized poly(vinyl chloride) (PVC-U) intended to be used for building applications and gives the relevant test methods. It is intended to be used in product specification when application is specified.

Pipes for the distribution of water, of gas or other fluids, as well as discharge and sewage pipes, profiles for the management of electrical power cables, communication cables and power track systems used for the distribution of electrical power, profiles for windows or doors and profiles made from expanded PVC are not covered by this document.¹⁾

2 Normative references

The following referenced documents are indispensable for the application 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 477:1995, *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 479, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors — Determination of heat reversion.*

EN 513:1999, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors — Determination of the resistance to artificial weathering.*

EN ISO 178, *Plastics — Determination of flexural properties (ISO 178:2001)*

EN ISO 306:1996, *Plastics — Thermoplastics materials — Determination of Vicat softening temperature (VST) (ISO 306:1994).*

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

EN ISO 4892-2:1999, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc sources (ISO 4892-2:1994).*

EN ISO 8256:1996, *Plastics — Determination of tensile-impact strength (ISO 8256:1990, including Technical corrigendum 1:1991).*

ISO 7724-1, *Paints and varnishes — Colorimetry — Part 1: Principles.*

ISO 7724-2, *Paints and varnishes — Colorimetry — Part 2: Colour measurement.*

ISO 7724-3, *Paints and varnishes — Colorimetry — Part 3: Calculation of colour differences.*

1) Products that are excluded are in the scopes of CEN/TC 33, CEN/TC 155, CENELEC/TC 213.

3 Terms and definitions

For the purposes of this document, the following term and definition apply:

3.1 profile

piece with a constant cross section and a length that is several times greater than its width

NOTE 1 This definition is applicable to many types of profiles and applications, including pipes, extruded sheets, plates, etc.

NOTE 2 Profiles are considered of a light colour when the colorimetric coordinates, L^* , a^* et b^* , determined in accordance with ISO 7724-1, ISO 7724-2 and ISO 7724-3, using the test method D 65, SCI (specular reflectance included), $8/d$ or $d/8$, satisfy the following conditions :

- $L^* \geq 82$
- $-2,5 \leq a^* \leq 5$
- $-5 \leq b^* \leq 15$

4 Designation of profiles for building applications

The profiles intended to be used for building applications are designated in accordance with a classification system of their characteristics based on the same principles as those used for the designation of compounds.

This system consists of a description block and five data blocks as follows :

- **Description block** Profile EN 13245-1
- **Block 1 Material identification** : PVC-U
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- **Block 2 Intended application** : one or more following codes shall be given depending on the intended application.
 - a) For outside building applications E
 - b) For inside building applications I
- **Block 3 Material properties** :
 - a) Vicat softening temperature (VST) See 5.1
 - b) Modulus of elasticity in flexure See 5.2
- **Block 4 Profile properties** :
 - a) Nominal linear mass See 5.3
 - b) Heat reversion at 100 °C See 5.4
 - c) Impact resistance See 5.5
- **Block 5 Properties after ageing** : See 5.6

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5 Codification system for blocks 3 to 5

5.1 Vicat softening temperature (block 3)

The Vicat softening temperature (VST) shall be measured in accordance with EN ISO 306:1996, Method B 50, using a 4 mm thick plate, prepared according to EN ISO 1163-2.

For co-extruded profiles, the Vicat softening temperature shall be measured only on the material from the external layer of the profile.

The value of the Vicat softening temperature shall be coded according to Table 1.

5.2 Modulus of elasticity in flexure (block 3)

The modulus of elasticity in flexure, E , shall be measured in accordance with EN ISO 178, using a 4 mm thick plate prepared according to EN ISO 1163-2.

The value of the modulus of elasticity in flexure shall be coded according to Table 1.

For co-extruded profiles, test plates shall be made from each compound, and a specimen shall be taken from each test plate. The values of the modulus of elasticity in flexure of each compound shall be coded from the internal layer to the external layer, with separation by "/". See EXAMPLE 2 given in Clause 6.

Table 1 — Codes for block 3

Vicat softening temperature (VST)	Modulus of elasticity in flexure, E	
	Range of values MPa	Code
The VST is represented by three figures showing the softening temperature. e.g. : code 082 for a nominal VST value of 82 °C.	$1700 \leq E < 2000$	17
	$2000 \leq E < 2300$	20
	$2300 \leq E < 2600$	23
	$2600 \leq E < 2900$	26
	$2900 \leq E < 3200$	29
	$3200 \leq E < 3500$	32
	$1700 + 300 \times n \leq E < 2000 + 300 \times n^a$	$17 + 3 \times n$
a n is an integer.		

5.3 Nominal linear mass of the profile (block 4)

5.3.1 Test method for the determination of the linear mass

5.3.1.1 Apparatus

Balance, with an accuracy of 0,1 g.

Rule or measuring tape, with an accuracy of 0,5 mm.

5.3.1.2 Specimens

The length of the specimen, measured between two cross sections cut perpendicularly to the main axis of the profile, shall be such that its mass is at least 50 g.

5.3.1.3 Procedure

Condition the profile before measuring for at least 1 h, at (23 ± 2) °C.

Measure the length, L , of the specimen, in metres, to 1 mm.

Measure the mass, M , of the specimen in grams, to 0,2 g.

5.3.1.4 Calculation and expression of results

Calculate the linear mass of the profile, P , using the following equation :

$$P = M / L \quad (1)$$

where

P is the value of the linear mass of the profile, expressed in grams per metre, g/m.

Calculate the tolerance, T , for the linear mass of the profile, using the following equation :

$$T = \pm 0,4 P_M^{0,7} \quad (2)$$

where P_M is the value of the nominal linear mass of the profile, as declared by the manufacturer, expressed in grams per metre, g/m.

5.3.2 Codification

The value of the nominal linear mass of the profile shall be coded according to Table 2.

5.4 Heat reversion at 100 °C (block 4)

The heat reversion at 100 °C of the profile, R , shall be measured in accordance with EN 479.

The value of the heat reversion at 100 °C shall be coded according to Table 2.

5.5 Impact resistance (block 4)

The impact resistance of the profile at 23 °C or, if required, at a low temperature (0 °C, - 10 °C, - 20 °C or - T °C), shall be measured in accordance with Annex A.

The value of the impact resistance shall be coded according to Table 2.