SLOVENSKI STANDARD
SIST EN 13245-1:2010

01-september-2010

Nadomešča:
SIST EN 13245-1:2005

Polimerni materiali - Profili iz nemehčanega polivinilklorida (PVC-U) za uporabo v gradbeništvu - 1. del: Označevanje profilov PVC-U

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

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

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

Ta slovenski standard je istoveten z: **EN 13245-1:2010**

ICS:

83.140.99	Drugi izdelki iz gume in polimernih materialov	Other rubber and plastics products

SIST EN 13245-1:2010 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13245-1

June 2010

ICS 83.140.99

Supersedes EN 13245-1:2004

English Version

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

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

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

This European Standard was approved by CEN on 19 May 2010.

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 CEN 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 13245-1:2010: E

Contents

Page

Foreword

This document (EN 13245-1:2010) has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by NBN.

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 December 2010, and conflicting national standards shall be withdrawn at the latest by December 2010.

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

This document supersedes EN 13245-1:2004.

EN 13245, *Plastics — Unplasticized poly(vinyl chloride) (PVC-U) profiles for building applications*, consists of the following parts:

— *Part 1: Designation of PVC-U profiles*

— *Part 2: PVC-U profiles and PVC-UE profiles for internal and external wall and ceiling finishes*

— *Part 3: Designation of PVC-UE profiles*

It is a revision of EN 13245-1:2004 with the extension of the scope to:

— light coloured PVC-U profiles with or without a laminated foil or a lacquered-coating;

— coloured PVC-U profiles, obtained by a mono-extrusion or a co-extrusion process, with or without laminated foil or with lacquered-coating.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard establishes a system of designation for profiles made of unplasticized poly(vinyl chloride) (PVC-U) intended to be used for building applications.

This part is applicable to light coloured and coloured PVC-U profiles, obtained by a mono-extrusion or a co-extrusion process, with or without a laminated foil or with a lacquered-coating.

It specifies test methods and test parameters.

This method of designation is intended to be used in product specification when the application is specified.

NOTE It is recommended to use this method for the designation of PVC-U profiles for information related to technical literature of the manufacturer, not for the marking of the products.

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 for guttering are not covered by this European Standard.[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 438-2:2005, *High-pressure decorative laminates (HPL) — Sheets based on thermosetting resins (usually called Laminates) — Part 2: Determination of properties*

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

EN 20105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour (ISO 105-A02:1993)*

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 178:2001)*

EN ISO 306:2004, *Plastics — Thermoplastic materials — Determination of Vicat softening temperature (VST) (ISO 306:2004)*

EN ISO 472:2001, *Plastics — Vocabulary (ISO 472:1999)*

1) Profiles that are excluded are in the scopes of standards prepared by CEN/TC 33, CENELEC/TC 213 or CEN/TC 128.

EN ISO 1043-1:2001, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics (ISO 1043-1:2001)*

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 2409, *Paints and varnishes — Cross-cut test (ISO 2409:2007)*

EN ISO 2813, *Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20°, 60° and 85° (ISO 2813:1994, including Technical Corrigendum 1:1997)*

EN ISO 4624, *Paints and varnishes — Pull-off test for adhesion (ISO 4624:2002)*

EN ISO 4892-2:2006, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps (ISO 4892-2:2006*)

EN ISO 8256:2004, *Plastics — Determination of tensile-impact strength (ISO 8256:2004)*

ISO 7724-1:1984, *Paints and varnishes — Colorimetry — Part 1: Principles*

ISO 7724-2:1984, *Paints and varnishes — Colorimetry — Part 2: Colour measurement*

ISO 7724-3:1984, *Paints and varnishes — Colorimetry — Part 3: Calculation of colour differences*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 472:2001 and EN ISO 1043-1:2001 and the following apply.

3.1
PVC-U profile
profile made of unplasticized poly(vinyl chloride) (PVC-U) material

NOTE It applies to profiles made of non-cellular material as opposed to cellular material.

3.2 Type of profile

3.2.1
Type 1 profile
PVC-U profile obtained by a mono-extrusion process (coloured in the mass)

3.2.2
Type 2 profile
PVC-U profile obtained by a co-extrusion process

3.2.3
Type 3 profile
PVC-U profile as Type 1 or Type 2 with laminated foil

3.2.4
Type 4 profile
PVC-U profile as Type 1 or Type 2 with lacquer-coating

3.3
sight surface
surface of a profile that is exposed to view, when the PVC-U profile is installed

3.4
coating
covering layer on the sight surface of a PVC-U profile, e.g. a co-extruded layer, a lacquer-coating or a laminated foil

3.5
laminated foil
plastic layer bonded with an adhesive or under pressure and temperature to cover a surface of a PVC-U profile

3.6
co-extrusion
durable bonding of two thermoplastics [e.g. unplasticized polyvinylchloride (PVC-U) and poly(methyl methacrylate) (PMMA)] that are melted in separated extruders and fused together in the profile tool

3.7
lacquer-coating
one or several layer(s) of lacquer (e.g. acrylic or polyurethane resin) or varnish (clear coating material) that cover(s) a PVC-U profile

3.8
radiant exposure
time integral of irradiance, measured in joules per square metre (J/m^{-2})

[ISO 9370:2009]

4 Designation of PVC-U profiles

The PVC-U profiles are designated in accordance with a classification system of their characteristics.

The designation consists of a description block and five data blocks as given in Table 1.

Table 1 — Designation of PVC-U profiles

Description block	Profile EN 13245-1
Data block 1: Material and profile type identification	PVC-U – Type 1, Type 2, Type 3 [a] or Type 4 [a] For types of profiles See 3.2
Data block 2: Intended application	One or more following codes depending on the intended application: For outside building applications: *E* For inside building applications: *I*
Data block 3: Material properties	Vicat softening temperature (VST): See 5.1 Modulus of elasticity in flexure: See 5.2
Data block 4: Profile properties	Nominal linear mass: See 5.3 Heat reversion at 100 °C: See 5.4 Impact resistance: See 5.5
Data block 5: Durability	See 5.6
[a] For Type 3 or Type 4 profiles, the requirements given in 6.1 to 6.4 shall be fulfilled, as applicable.	

5 Codification system for Data block 3 to Data block 5

5.1 Vicat softening temperature (Data block 3)

The Vicat softening temperature (VST) shall be measured in accordance with EN ISO 306:2004, Method B50, using 4 mm thick test specimens, prepared according to EN ISO 1163-2, as indicated in Table 2.

Table 2 — Preparation of test specimens

Type of profile	Compound to be tested
Type 1	PVC-U compound
Type 2, Type 3 and Type 4	Each of the extruded compounds, as applicable

The value of VST shall be coded according to Table 3.

For Type 2, Type 3 and Type 4 profiles, as applicable, the values of the VST of each compound shall be coded from the internal layer to the external layer, with a separation by "/".

5.2 Modulus of elasticity in flexure (Data block 3)

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

For Type 2, Type 3 and Type 4 profiles, as applicable, the values of the modulus of elasticity in flexure of each compound shall be coded from the internal layer to the external layer, with a separation by "/".

The value of the modulus of elasticity in flexure shall be coded according to Table 3.

Table 3 — Codification for Data block 3

Vicat softening temperature (VST)	Modulus of elasticity in flexure, E	
	Range of values MPa	Code
The VST is represented by three figures giving the softening temperature. E.g. code 082 for a nominal VST value of 82 °C.	1 700 ≤ E < 2 000	17
	2 000 ≤ E < 2 300	20
	2 300 ≤ E < 2 600	23
	2 600 ≤ E < 2 900	26
	2 900 ≤ E < 3 200	29
	3 200 ≤ E < 3 500	32
	(1 700 + 300 × n) ≤ E < (2 000 + 300 × n) [a]	"(17 + 3 × n)"
[a] n is an integer.		

5.3 Nominal linear mass (Data block 4)

The nominal linear mass of the PVC-U profile shall be measured in accordance with Annex A.

The value of the nominal linear mass shall be coded according to Table 4.

5.4 Heat reversion at 100 °C (Data block 4)

The heat reversion at 100 °C of the PVC-U 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 4.

5.5 Impact resistance (Data block 4)

The impact resistance of the PVC-U 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 B.

The value of the impact resistance shall be coded according to Table 4.

Table 4 — Codification for Data block 4

Nominal linear mass, P_M	Heat reversion at 100 °C		Impact resistance at T °C	
	R	Code	Energy level	Code
	%		J	
The nominal linear mass is represented by four figures giving the nominal linear mass. E.g. code 1483 for a nominal linear mass of 1 483 g/m.	$R \leq 2$	2	1	(T,01)
	$R \leq 3$	3	2	(T,02)
	$R \leq n$ [a]	n	3	(T,03)
			4	(T,04)
			5	(T,05)
			6	(T,06)
			10	(T,10)
			15	(T,15)
			20	(T,20)
			"(5 × m)" [b]	"[T,(5 × m)]"
[a] n is an integer. [b] m is an integer.				

EXAMPLES

– Code (23,10) for a PVC-U profile with an impact resistance at 23 °C of 10 J;

– Code (-20,05) for a PVC-U profile with an impact resistance at - 20 °C of 5 J.

5.6 Durability (Data block 5)

5.6.1 General

Assessment of the durability is based on the following criteria:

a) The colour differences between unexposed and exposed PVC-U profiles;

b) The tensile-impact strength of the PVC-U profiles after ageing;

c) The visual inspection of the PVC-U profiles after ageing;

d) The adhesion of the coating of the PVC-U profiles after ageing (for Type 3 and Type 4 profiles, only).

5.6.2 Test methods for ageing

5.6.2.1 Outside building applications

Ageing shall be carried out according to either an artificial ageing test method or a natural ageing test method.

a) Artificial ageing test method according to EN 513:1999, Method 1 (referring to EN ISO 4892-2:2006, Method A).

The conditions shall be defined in accordance with the code "A.n.T", where:

1) A means "artificial ageing";