SLOVENSKI STANDARD
SIST EN 438-3:2016

01-april-2016

Nadomešča:
SIST EN 438-3:2005

Dekorativni visokotlačni laminati (HPL) - Plošče na osnovi duromernih smol - 3. del: Razvrstitev in specifikacije za manj kot 2 mm debele laminate, namenjene za vezavo na nosilne materiale

High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (Usually called Laminates) - Part 3: Classification and specifications for laminates less than 2 mm thick intended for bonding to supporting substrates

Dekorative Hochdruck-Schichtpressstoffplatten (HPL) - Platten auf Basis härtbarer Harze (Schichtpressstoffe) - Teil 3: Klassifizierung und Spezifikationen für Schichtpressstoffe mit einer Dicke kleiner als 2 mm, vorgesehen zum Verkleben auf ein Trägermaterial

Stratifiés décoratifs haute pression (HPL) - Plaques à base de résines thermodurcissables (communément appelées stratifiés) - Partie 3: Classification et spécifications des stratifiés d'épaisseur inférieure à 2 mm destinés à être collés sur des supports

Ta slovenski standard je istoveten z: **EN 438-3:2016**

ICS:

83.140.20	Laminatne plošče	Laminated sheets

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EUROPEAN STANDARD
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English Version

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Dekorative Hochdruck-Schichtpressstoffplatten (HPL) - Platten auf Basis härtbarer Harze (Schichtpressstoffe) - Teil 3: Klassifizierung und Spezifikationen für Platten mit einer Dicke kleiner als 2 mm, vorgesehen zum Verkleben auf ein Trägermaterial

This European Standard was approved by CEN on 13 December 2015.

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European foreword

This document (EN 438-3:2016) 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of an identical text or by endorsement, at the latest by August 2016, and conflicting national standards shall be withdrawn at the latest by August 2016.

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 438-3:2005.

EN 438, *High-pressure decorative laminates (HPL) — Sheets based on thermosetting resins (usually called laminates)*, consists of the following parts:

— *Part 1: Introduction and general information*

— *Part 2: Determination of properties*

— *Part 3: Classification and specifications for laminates less than 2 mm thick intended for bonding to supporting substrates*

— *Part 4: Classification and specifications for Compact laminates of thickness 2 mm and greater*

— *Part 5: Classification and specifications for flooring grade laminates less than 2 mm thick intended for bonding to supporting substrates*

— *Part 6: Classification and specifications for Exterior-grade Compact laminates of thickness 2 mm and greater*

— *Part 7: Compact laminate and HPL composite panels for internal and external wall and ceiling finishes*

— *Part 8: Classification and specifications for design laminates*

— *Part 9: Classification and specifications for alternative core laminates*

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard applies to laminates less than 2 mm thick produced by using an high pressure process, normally intended for bonding to supporting substrates to produce HPL composite panels and establishes a classification system for high-pressure decorative laminates according to their performance and main recommended fields of application, including materials with special characteristics, for example formability or defined reaction to fire. This European Standard also specifies requirements for the properties of the various types of laminates covered by this classification system.

High-pressure decorative laminates are characterised by their qualities, durability and functional performance. HPL sheets are available in a wide variety of colours, patterns and surface finishes; they are resistant to wear, scratching, impact, moisture, heat and staining; and possess good hygienic and anti-static properties, being easy to clean and maintain.

EN 438-2 specifies the methods of test relevant to this European Standard. EN 438-4, EN 438-5, EN 438-6, EN 438-7, EN 438-8 and EN 438-9 are reserved for special types of HPL materials.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 438-2:2016, *High-pressure decorative laminates (HPL) — Sheets based on thermosetting resins (usually called laminates) — Part 2: Determination of properties*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 13722, *Furniture — Assessment of the surface gloss*

EN 61340-4-1, *Electrostatics — Part 4-1: Standard test methods for specific applications — Electrical resistance of floor coverings and installed floors (IEC 61340-4-1)*

EN ISO 1183-1, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pyknometer method and titration method (ISO 1183-1)*

EN ISO 11664-2, *Colorimetry — Part 2: CIE standard illuminants (ISO 11664-2)*

3 Terms and definitions, symbols and abbreviations

3.1 Terms and definitions

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

3.1.1
high-pressure decorative laminate(s)
HPL
sheet(s) consisting of decorative surface layer(s) and core layers bonded together by an high pressure process

Note 1 to entry: Typical values for the high pressure process are a temperature of ≥ 120 °C and a pressure of ≥ 5 MPa.

3.1.2
surface layer
upper decorative layer consisting in one or more sheets of fibrous material (usually paper) impregnated with aminoplastic thermosetting resins (usually melamine based resins)

Note 1 to entry: The back of the sheet(s) is made suitable for adhesive bonding to a substrate.

3.1.3
core layer
fibrous material (usually paper) impregnated with thermosetting resins (usually phenolic based resins)

3.2 Symbols

For the purposes of this document, the following symbol applies.

t nominal thickness

4 Material types

The material types are:

Type S - Standard grade decorative laminates.

Type P - Postformable decorative laminates; similar to type S but can also be formed at elevated temperature.

Type F - Decorative laminates with improved fire retardance; similar to types S or P but also meeting special requirements of specified fire tests which may vary according to the application (e.g. construction, marine, transport) and the country of use (see 6.4.3 and Annex A).

5 Requirements

5.1 General

Two different HPL classification systems are commonly used in Europe, and both have been included in this document as alternatives.

5.2 Numerical classification system

In this system the classification of a letter denoting material type (see Clause 4) followed by three index numbers showing the levels of performance for wear resistance, impact resistance and scratch resistance respectively.

Table 1 shows the performance levels corresponding to the index numbers.

Table 1 — Numerical classification

Initial Point (revs)	**First Index Number - Wear Resistance** [a]		
	2	**3**	**4**
	≥ 50	≥ 150	≥ 350
Small Diameter Ball (N)	**Second Index Number - Impact Resistance** [a]		
	2	**3**	**4**
	≥ 15	≥ 20	≥ 25
Scratch Resistance (Rating)	**Third Index Number - Scratch Resistance** [a]		
	2	**3**	**4**
	2	3	4
[a] Index numbers 2, 3, and 4 are specified to maintain consistency with EN 438:1991. Index number 1 represents a lower quality level that applies only for HPL Type VG (Table 2) with smooth finishes.			

5.3 Alphabetical classification system

This system uses three letters to classify laminates as shown in Table 2.

Table 2 — Alphabetical classification

First letter	Second letter	Third letter
H (horizontal grade) or V (vertical grade)	G (general purpose) or D (heavy duty)	S (standard grade) or P (postformable grade) or F (flame-retardant grade)

Table 3 compares the alternative classification systems and shows how different HPL products relate to some typical applications. The list of typical applications shown for each category is for guidance only and is not intended to be comprehensive.

Table 3 — Classification system and typical applications

Performance category	Material type	Numerical classification index numbers			Equivalent alphabetical classification	Examples of typical applications
		Wear resistance	Impact resistance	scratch resistance		
Very high resistance to surface wear Very high resistance to impact Very high resistance to scratching	S, F or P	4	4	4	HDS (horizontal heavy-duty standard) HDF (horizontal heavy-duty flame-retardant) HDP (horizontal heavy- duty postforming)	counter tops, institutional applications (prisons, military barracks, etc.)
High resistance to surface wear High resistance to impact High resistance to scratching	S, F or P	3	3	3	HGS (horizontal general-purpose standard) HGF (horizontal general-purpose flame-retardant) HGP (horizontal general-purpose postforming)	kitchen and office working surfaces, restaurant and hotel tables, doors and wall coverings in public areas, interior walls of public transport vehicles
Medium resistance to surface wear Medium resistance to impact Medium resistance to scratching	S, F or P	2	2	2	VGS (vertical general-purpose standard), VGF (vertical general- purpose flame-retardant) VGP (verticalgeneral-purpose postforming)	front panels for kitchen, office and bathroom furniture, wall coverings, ceiling panels, shelves , and furniture elements

Combinations of wear, impact and scratch resistance index numbers other than those shown in Table 3 are possible and can be specified using the numerical classification system. In such cases properties other than wear resistance, impact resistance and scratch resistance shall meet the requirements specified for type VG in Table 5.

5.4 Nomenclature

In addition to the abbreviation “HPL” and the number of this document, materials can be specified either by the numerical classification system, or by the alphabetical classification system. For example, horizontal general purpose postformable laminate can be specified as HPL/EN 438-3/P333 or HPL/EN 438-3/HGP.