



SLOVENSKI STANDARD SIST EN 438-5:2005

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High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (Usually called Laminates) - Part 5: Classification and specifications for flooring grade laminates less than 2 mm thick intended for bonding to supporting substrates

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Dekorative Hochdruck-Schichtpressstoffplatten (HPL) - Platten auf Basis härtbarer Harze (Schichtpressstoffe) - Teil 5: Klassifizierung und Spezifikationen für Schichtpressstoffe für Fußböden mit einer Dicke kleiner 2 mm, vorgesehen zum Verkleben auf ein Trägermaterial

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Stratifiés décoratifs haute pression (HPL) - Plaques a base de résines thermodurcissables (communément appelées stratifiés) - Partie 5 : Classification et spécifications des stratifiés pour revêtement de sols d'épaisseur inférieure a 2 mm destinés a etre collés sur des supports

Ta slovenski standard je istoveten z: EN 438-5:2005

ICS:

83.140.20 Šæ ð æ ^ Á || z ^ Laminated sheets

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EUROPEAN STANDARD

EN 438-5

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 83.140.20

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English version

High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (Usually called Laminates) - Part 5: Classification and specifications for flooring grade laminates less than 2 mm thick intended for bonding to supporting substrates

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This European Standard was approved by CEN on 16 August 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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Foreword

This document (EN 438-5:2005) 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 July 2005, and conflicting national standards shall be withdrawn at the latest by July 2005.

This document supersedes EN 438-1:1991 and EN 438-2:1991.

This Standard consists of seven 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*

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 438-5:2005 (E)**1 Scope**

This Part of EN 438 applies to five classes of flooring grade laminates less than 2 mm thick intended for bonding to supporting substrates, to produce HPL flooring elements. For laminate floor covering applications they meet the surface property requirements specified in EN 13329.

High-pressure decorative flooring laminates are characterised by their high resistance to abrasion, aesthetic qualities and durability. They have good hygienic and anti-static properties and are easy to clean and maintain.

The requirements in this document apply only to the high-pressure laminate, and additional properties will need to be specified in order to define the functional performance of the finished flooring product.

This Part of EN 438 applies only to decorative laminates as defined in Clause 3.

EN 438-2 specifies the methods of test relevant to this part of EN 438.

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, *High-pressure decorative laminates (HPL) — Sheets based on thermosetting resins (Usually called Laminates) - Part 2: Determination of properties*

EN 13329, *Laminate floor coverings - Specifications, requirements and test methods*

EN 316:, *Wood fibreboards - Definitions, classification and symbols*

EN 685:1995, *Resilient floor coverings — Classification*

EN 12721:1997, *Furniture — Assessment of surface resistance to wet heat (ISO 4211-2:1993 modified)*

EN ISO 1183-1:2004, *Plastics — Methods for determining the density of non-cellular plastics - Part 1: Immersion method, liquid pycnometer method and titration method (ISO 1183-1:2004).*

3 Term and definition

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

3.1**high-pressure decorative flooring grade laminate(s) (HPL)**

sheet(s) consisting of layers of cellulosic fibrous material (normally paper) impregnated with thermosetting resins and bonded together by the high pressure process described below. The surface layer(s) on one side, having decorative colours or designs, are impregnated with melamine based resins and may contain special surface additives to improve abrasion resistance. The core layers are impregnated with phenolic based resins. The back of the sheet(s) is made suitable for adhesive bonding to a substrate.

The high pressure process is defined as the simultaneous application of heat (temperature ≥ 120 °C) and high specific pressure (≥ 5 MPa), to provide flowing and subsequent curing of the thermosetting resins to obtain a homogeneous non-porous material with increased density ($\geq 1,35$ g/cm³), and with the required surface finish.

4 Classification system

The classification system makes reference to EN 685 (level of use) in combination with the abrasion class (AC) given by a numerical rating of 1 to 5 defining the level of abrasion resistance, 5 being the highest and 1 the lowest performance.

Table 1 shows how the five abrasion classes of flooring grade laminate relate to level of use and some examples of typical applications.

Flooring grade laminates are specified according to abrasion class e.g. HPL/EN 438-5/AC1.

Table 1 — Classification system and typical applications

EN 685:1995 classification	Level of use	Description	Examples of applications	Abrasion class
21	Moderate domestic	Residential areas with low or intermittent use	Bedrooms	AC1
22	General domestic	Residential areas with medium use	Living rooms entrance halls	AC2
23	Heavy domestic	Residential areas with intense use	Living rooms entrance halls	AC3
31	Moderate commercial	Commercial areas with low or intermittent use	Hotel rooms small offices hotels boutiques	
32	General commercial	Commercial areas with medium use	Classrooms small offices hotel boutiques	AC4
33	Heavy commercial	Commercial areas with heavy use	Corridors department stores schools multi-purpose halls open plan offices	AC5

5 Requirements

5.1 Compliance

Laminates classified in Table 1 shall meet all appropriate requirements specified in Clauses 5.2, 5.3, and 5.4. This applies to both full-size sheets and cut-to-size panels.

EN 438-5:2005 (E)**5.2 Inspection requirements****5.2.1 General**

Inspection shall be carried out in accordance with EN 438-2, Test Method 4 at a distance of 1,5 m.

5.2.2 Colour and pattern

When inspected in daylight or D65 standard illuminate and again under tungsten illuminate F, there shall be no significant difference between the corresponding colour reference sample held by the supplier and the specimen under test.

NOTE Where colour and surface finish are critical, it is recommended that sheets be checked for colour and surface-finish compatibility before fabrication or installation.

5.2.3 Surface finish

When inspected at different viewing angles, there shall be no significant difference between the corresponding surface-finish reference sample held by the supplier and the specimen under test.

NOTE Where colour and surface finish are critical, it is recommended that sheets be checked for colour and surface-finish compatibility before fabrication or installation.

5.2.4 Reverse side

The reverse side of sheets shall be suitable for adhesive bonding (e.g. sanded). In the case of sanded backs, slight chatter marks are permitted.

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5.2.5 Visual inspection

The following inspection requirements are intended as a general guide, indicating the minimum acceptable quality for laminates. It should be noted that only a small percentage of sheets in a batch (the level to be agreed with the customer) should contain defects of the minimum acceptable level.

5.2.5.1 Surface quality

The following surface defects are permissible:

Dirt, spots and similar surface defects

The admissible size of such defects is based on a maximum contamination area equivalent to 1,0 mm²/m² of laminate and is proportional to the sheet size under inspection.

The total admissible area of contamination may be concentrated in one spot or dispersed over an unlimited amount of smaller defects.

Fibres, hairs and scratches

The admissible size of defects is based on a maximum contamination length equivalent to 10 mm/m² of laminate and is proportional to the sheet size under inspection.

The total admissible length of contamination may be concentrated in one defect or dispersed over an unlimited amount of smaller defects.

5.2.5.2 Edge quality

Visual defects (e.g. moisture marks, lack of gloss, corner damage, etc.) can be present on all four edges of the laminate, providing the defect-free length and width are at least the nominal size minus 10 mm.

5.3 Dimensional tolerance requirements

Dimensional tolerance requirements are specified in Table 2.

Table 2 — Dimensional tolerances

Property	Test method (EN 438-2Clause no.)	Requirement
Thickness	5	0,5 ≤ t ≤ 1,0 mm : ± 0,10 mm maximum variation 1,0 < t < 2,0 mm: ± 0,15 mm maximum variation (where t = nominal thickness)
Flatness ^{a)}	9	60 mm/m maximum deviation
Length and width ^{b)}	6	+ 10 mm/– 0 mm
Straightness of edges ^{b)}	7	1,5 mm/m maximum deviation
Squareness ^{b)}	8	1,5 mm/m maximum deviation

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^{a)} Provided that the laminates are stored in the manner and conditions recommended by the manufacturer they shall comply with the flatness requirements specified in Table 4 when measured in accordance with EN 438-2Clause 9.

^{b)} Tolerances for cut-to-size panels shall be agreed between supplier and purchaser.

5.4 Test requirements

5.4.1 General requirements

General requirements are specified in Table 3.