SLOVENSKI STANDARD
SIST EN 438-4:2016

01-april-2016

Nadomešča:
SIST EN 438-4:2005

Dekorativni visokotlačni laminati (HPL) - Plošče na osnovi duromernih smol - 4. del: Razvrstitev in specifikacije za 2 mm in več debele kompaktne laminate

High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (Usually called Laminates) - Part 4: Classification and specifications for compact laminates of thickness 2 mm and greater

Dekorative Hochdruck-Schichtpressstoffplatten (HPL) - Platten auf Basis härtbarer Harze (Schichtpressstoffe) - Teil 4: Klassifizierung und Spezifikationen für Kompakt-Schichtpressstoffe mit einer Dicke von 2 mm und größer

Stratifiés décoratifs haute pression (HPL) - Plaques à base de résines thermodurcissables (communément appelées stratifiés) - Partie 4: Classification et spécifications des stratifiés compacts d'épaisseur égale ou supérieure à 2 mm

Ta slovenski standard je istoveten z: **EN 438-4:2016**

ICS:

83.140.20	Laminatne plošče	Laminated sheets

SIST EN 438-4:2016 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 438-4

February 2016

ICS 83.140.20

Supersedes EN 438-4:2005

English Version

High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 4: Classification and specifications for compact laminates of thickness 2 mm and greater

Stratifiés décoratifs haute pression (HPL) - Plaques à base de résines thermodurcissables (communément appelées stratifiés) - Partie 4: Classification et spécifications des stratifiés compacts d'épaisseur égale ou supérieure à 2 mm

Dekorative Hochdruck-Schichtpressstoffplatten (HPL) - Platten auf Basis härtbarer Harze (Schichtpressstoffe) - Teil 4: Klassifizierung und Spezifikationen für Kompakt-Schichtpressstoffe mit einer Dicke von 2 mm und größer

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

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-CENELEC 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-CENELEC 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, 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 United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

European foreword

This document (EN 438-4:2016) 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 438-4:2005.

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 specifies performance requirements for two types of compact laminate of thickness 2 mm or greater produced by using a high pressure process intended for interior use .

High-pressure decorative Compact laminates are characterised by their aesthetic qualities, strength, durability and functional performance. Compact HPL sheets are available in a wide variety of colours, patterns and surface finishes; they are extremely strong, and resistant to wear, impact, scratching, 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.

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

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, 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 surface layers can appear on one or both side(s) of the laminate(s). In case of one-sided laminates, the back of the sheet(s) may be 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 and classification system

Compact laminates are defined using a three letter classification system as shown in Table 1

Table 1 — Compact laminate classification system

First letter	Second letter	Third letter
C (compact grade)	G (general purpose)	S (standard grade) or F (flame-retardant grade)

Type CGS Standard grade decorative Compact laminates are specified as HPL/EN 438-4/CGS.

Type CGF Decorative Compact laminates with improved fire retardance are similar to type CGS but also meeting special requirements of specified tests which may vary according to the application (e.g. construction, marine, transport) and the country of use (see 6.4.2 and Annex A). Specified as HPL/EN 438-4/CGF.

Other laminates having special characteristics are also available but these products are outside the scope of this part of the standard.

5 Characteristics and applications

HPL Compact laminates have the following characteristics:

— Attractive aesthetic qualities;

— High mechanical strength;

— Durability (high resistance to impact, wear and scratching);

— Good dimensional stability;

— High resistance to the effects of water, steam, heat and frost;

— Non-corrosive;

— Good colour fastness;

— Easy to clean and maintain (good anti-graffiti properties);

— Hygienic;

— Good chemical resistance;

— No dust attraction;

— Ease of installation;

— Good fire performance.

Typical applications include wall cladding, partitions, doors, cubicles, lockers, laboratory bench tops, and various self-supporting components in construction, marine and transport industries.

When Compact laminates are self-supporting they are ready for installation and only require cutting to size, drilling, etc. to suit the application.

6 Requirements

6.1 Compliance

Compact laminate types CGS and CGF shall meet all appropriate requirements specified in 6.2, 6.3, and 6.4. This applies to both full-size sheets and cut-to-size panels.

6.2 Inspection requirements

6.2.1 General

Inspection shall be carried out in accordance with EN 438-2:2016, Clause 4 at a distance between 750 mm to 1500 mm.

6.2.2 Colour and pattern

When inspected in daylight or D65 standard illuminant, as specified in EN ISO 11664-2, and also under tungsten filament lightning illuminant A as specified in EN ISO 11664-2, a slight difference between the corresponding colour reference sample held by the supplier and the specimen under test is acceptable.

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

6.2.3 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.

The maximum permitted deviations for the gloss value determined according to EN 13722 are

Gloss surface	> 70	GU	maximum deviation ± 15 GU
Semi Gloss surface	30 – 70	GU	maximum deviation ± 10 GU
Semi Matt surface	10 – 30	GU	maximum deviation ± 5 GU
Matt surface	< 10	GU	maximum deviation ± 3 GU

GU = gloss units

The measurement shall be carried out with the same device as comparison between reference sample and specimen or between different lots of specimen.

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

6.2.4 Visual inspection

6.2.4.1 General

The following inspection requirements are intended as a general guide, indicating the minimum acceptable quality for each decorative face of a laminate supplied as a full-size sheet.

Cut-to-size panels and certain applications involving full-size sheets may call for special quality requirements which can be negotiated between supplier and purchaser; in such cases the following requirements may be used as a basis for agreement.

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.

It may be agreed between purchaser and supplier that the visual quality standard applies to one decorative face only.

6.2.4.2 Surface quality

The following surface defects are permissible:

a) dirt, spots and similar surface defects.

The admissible size of such defects is based on a maximum contamination area equivalent to 1,0 mm^2/m^2 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.

b) fibres, hairs and scratches.

The admissible size of defects is based on a maximum contamination length equivalent to 10 mm/m^2 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.

6.2.4.3 Edge quality

Edge chipping up to 3 mm on each side is permissible.

6.3 Dimensional tolerance requirements

Dimensional tolerance requirements are specified in Table 2.