SLOVENSKI STANDARD
SIST EN 14323:2022

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Nadomešča:
SIST EN 14323:2017

Lesne plošče - Z melaminom oplemenitene plošče za notranje prostore - Preskusne metode

Wood-based panels - Melamine faced boards for interior uses - Test methods

Holzwerkstoffe - Melaminbeschichtete Platten zur Verwendung im Innenbereich - Prüfverfahren

Panneaux à base de bois - Panneaux surfacés mélaminés pour usages intérieurs - Méthodes d'essais

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EUROPEAN STANDARD

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Wood-based panels - Melamine faced boards for interior uses - Test methods

Panneaux à base de bois - Panneaux surfacés mélaminés pour usages intérieurs - Méthodes d'essais

Holzwerkstoffe - Melaminbeschichtete Platten zur Verwendung im Innenbereich - Prüfverfahren

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 14323:2021) has been prepared by Technical Committee CEN/TC 112 “Wood-based panels”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by May 2022, and conflicting national standards shall be withdrawn at the latest by May 2022.

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

This document supersedes EN 14323:2017.

Compared to EN 14323:2017 the following modifications have been made:

a) spectral measurement technology added as an option in 6.8.3 and 6.8.4 to determine colour comparison.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies test methods for the determination of characteristics of melamine faced boards (MFB) in accordance with EN 14322.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 324-1, *Wood-based panels - Determination of dimensions of boards - Part 1: Determination of thickness, width and length*

EN 438-2:2016+A1:2018, *High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 2: Determination of properties*

EN ISO 2813, *Paints and varnishes - Determination of gloss value at 20°, 60° and 85° (ISO 2813)*

EN ISO 3668, *Paints and varnishes - Visual comparison of colour of paints (ISO 3668)*

EN ISO 4892-2:2013, *Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps (ISO 4892-2:2013)*

EN ISO 11664-6, *Colorimetry - Part 6: CIEDE2000 Colour-difference formula (ISO/CIE 11664-6)*

ISO 9352, *Plastics - Determination of resistance to wear by abrasive wheels*

ISO 13655, *Graphic technology - Spectral measurement and colorimetric computation for graphic arts images*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

4 Test pieces

The test pieces for the following tests shall be taken at least 150 mm from the edge of the product. When needed, the longitudinal or transverse direction of the decorative surface shall be specified by the manufacturer for the tests on the products.

5 Conditioning of test pieces

Unless specified otherwise for the individual tests, the test pieces shall be tested in the received state.

In cases of dispute or for type approval, the test pieces shall be conditioned for one week in an atmosphere of (23 ± 2) °C and (50 ± 5) % relative humidity prior to testing.

6 Test methods

6.1 Dimensions (thickness, length and width)

These properties shall be determined in accordance with EN 324-1.

6.2 Flatness

6.2.1 Principle

Flatness is determined by measuring the maximal deviation of the board surface from a metal straight edge placed at two selected positions parallel to the long and short edges of the board or panel.

6.2.2 Apparatus

Straight edge, of (1 000 ± 1) mm length, with dial indicator gauge (comparator) graduated to permit a reading accuracy of 0,1 mm.

6.2.3 Test pieces

The test piece shall be the complete board under test, as received, stored in the conditions recommended by the manufacturer.

6.2.4 Procedure

Place the board in a vertical position free from restraint with one long edge resting on an essentially horizontal floor. Place the flatness gauge on the concave surface at various positions. At each position, measure the greatest distance between board surface and the flatness gauge with an accuracy of 0,1 mm.

6.2.5 Expression of results

The result of the test is the highest recorded reading on the dial gauge in millimetres to the nearest 0,1 mm.

6.3 Edge damage

6.3.1 Principle

Edge damage is determined by placing a graduated mask or tape measure on the board or panel under test and measuring the size of chips of paper removed from the edges.

6.3.2 Apparatus

A metal tape measure or mask graduated in divisions of 1 mm.

6.3.3 Test pieces

The test piece is the board or panel as received.

6.3.4 Procedure

The test piece is laid level on a protective surface. Loose surface contamination is to be removed using a soft brush. Using the metal tape measure or the mask the size of the chip is measured at right angles to the board edge, across the chip towards the centre of the board.

6.3.5 Expression of results

Record the dimensions of the largest chip of paper removed to the nearest millimetre (mm).

6.4 Surface defects

6.4.1 Principle

Inspection of boards for surface appearance under standardized conditions of lighting and viewing.

Surface defects are > 0,8 mm² and those that are identified when the surface texture is viewed from a distance of 0,7 m and at an angle about of 45°.

6.4.2 Apparatus

The light source shall provide a diffused illumination of (1 200 ± 400) lx over the whole area. This shall either be diffused daylight or be diffused artificial light. The daylight shall be unaffected by surrounding trees, etc. When artificial daylight is used, it shall have a correlated colour temperature of (5 000 to 6 500) K and a *Ra* > 92, by using a colour matching booth in accordance with EN ISO 3668.

A convenient distance of the lights from the inspection table is approximately 1,5 m.

6.4.3 Test pieces

The test piece shall be the board under test, as received.

6.4.4 Procedure

Place the board, decorative face uppermost, on the inspection table and wipe it free of any loose contamination, if necessary, with a soft cloth and any suitable cleaning agent if necessary. Inspect it from the distance required (specified in 6.4.1) for defects such as smudges, smears, finger-prints, scratches, foreign particles, damage or any other form of blemish evident within the decorative surface.

In case of cut to size panels the inspection shall be performed on the edges too.

The evaluation of the total area of spot-type defects in square millimetres and of the total length of hair-like defects in millimetres shall be carried out with the help of a Size Estimation Chart[1]. In case of dispute the inspection shall be carried out by three observers using a Chart.

The tester shall have normal eyesight, corrected if necessary No magnifying glass shall be used in viewing the sheet. In cases of doubt or dispute, three observers are required for the visual assessment. All observers shall not have any colour perception impediment. In case of three observers, the reported rating for the test surface shall be the average to the nearest nominal value.

6.4.5 Expression of results

Record all defects identifying type, number and size of defects and sum up surfaces and length.

The admissible size of defects is based on a maximum contamination area equivalent to a unit of defects and is proportional to the standard delivery size of the manufacturer. The total admissible area of contamination shall be concentrated in one spot or dispersed over an amount of smaller defects.

In case of pre-cut panels the cumulative defect is referred to the standard delivery sizes of the manufacturers or amount of delivery.

EXAMPLE Permitted unit of defect (see EN 14322) in this sample is 2 mm²/m²

Standard delivery size of the manufacturer: 5 000 mm × 2 000 mm

[1] The “Tappi Size Estimation Chart” is an example. “Tappi Size Estimation Chart” is the trade name of a product supplied by TAPPI, Technology Park, P.O. Box 105113, Atlanta, GA 30348-5113, USA, tel. +1 770 446 1400, fax +1 770 446 6947. The article reference is: TAPPI - Dirt size estimation chart. “Tappi size estimation chart” is an example of a suitable product available commercially. This information is given for the convenience of users of this European Standard and does not constitute an endorsement by CEN of this product.

Points:

The permissible total error (TE) is calculated as follows:

TE = Board length × Board width × Permitted unit of defect = 5 000 mm × 2 000 mm × 2 mm^2/m^2 = 20 mm^2

The following errors are therefore permitted:

1 × 20 mm^2 defect, or

2 × 10 mm^2 defect, or

3 × 6,6 mm^2 defect etc.

Length:

The permissible total error (TE) is calculated as follows:

TE = Board length × Board width × Permitted unit of defect = 5 000 mm × 2 000 mm × 20 mm/m^2 = 200 mm

The following errors are therefore permitted:

1 × 200 mm defect, or

2 × 100 mm defect, or

3 × 66 mm defect etc.

6.5 Resistance to scratching

6.5.1 Principle

Increasing loads are applied in specified steps to a diamond scratching point of defined geometry.

The resistance to scratching of the melamine faced board under test is expressed as a numerical rating which defines the minimum applied load which is producing a continuous surface scratch. The test result is verified by visually confirming that the next higher load-step produces a continuous scratch.

6.5.2 Apparatus

Scratch testing apparatus and viewing enclosure shall be used as described in EN 438-2:2016+A1:2018, 25.3.

6.5.3 Test pieces

Cut a test piece 100 mm × 100 mm from the board under test. Wipe the surface using cotton fabric impregnated with a solvent such as acetone. Once cleaned, the surface shall not touched in the test area. Before making the scratch test store the test piece for 4 days in the standard atmosphere according to Clause 5.

6.5.4 Procedure

Follow the procedure in EN 438-2:2016+A1:2018, 25.6 with the following modifications.

Start the test by making two scratches at 1,0 N with a spacing of approximately 1 mm between the scratch marks. On the same test piece repeat this procedure with loads in increment of 0,5 N up to a load of 4,0 N leaving a space of approximately 3 mm between each pair of scratches. Place the scratched samples in the standard atmosphere, specified in Clause 5, for 24 h before final inspection.

6.5.5 Expression of results

During the examination, the operator shall ensure that the double circle of scratch marks selected is truly > 90 % continuous.

The examination of the surface should take ≤ 10 s.

Record the minimum load giving a continuous mark visible after 24 h in the standard atmosphere. In cases of dispute, three observers shall view the test piece and report their results independently; the final result shall be the average of the three reported values, rounded to the next 0,1 N.

6.6 Resistance to staining

6.6.1 Principle

Test pieces are left in contact with a series of staining agents which are likely to be encountered in everyday use. The time and conditions of contact are specified for each staining agent. At the end of the specified contact period the test pieces are washed and examined for residual surface marks.

6.6.2 Staining agents

The test is carried out with the two representative staining agents: acetone and black coffee. Acetone is applied at ambient temperature; black coffee of normal drinking strength is applied at approximately 80 °C. If the product under test meets specification requirements then it is deemed to comply with the specification for stain resistance. Other staining agents are included in Table A.1 (see Annex A) for information only and may be used after agreement between supplier and customer.

6.6.3 Apparatus

— Glass covering (e.g. watch glass) to prevent evaporation;

— cleaning agent;

— diffuse light source.

The light source shall provide a diffused illumination of (1 200 ± 400) lx over the whole area. This shall either be diffused daylight or be diffused artificial light. The daylight shall be unaffected by surrounding trees, etc. When artificial daylight is used, it shall have a correlated colour temperature of (5 000 to 6 500) K and a Ra > 92, by using a colour matching booth in accordance with EN ISO 3668.

A convenient distance of the lights from the inspection table is approximately 1,5 m.

6.6.4 Test pieces

Individual test pieces of any suitable size shall be used cut from the board under test. Where surface finishes are different, state the side to be tested.

Alternatively a single piece test specimen, large enough to allow the staining materials to be applied side by side, may be used. Keep the test piece flat during the test. An area of about 100 mm × 100 mm is required for each test.

6.6.5 Procedure

The pieces shall be initially at room temperature. Apply a small quantity (for example 2 or 3 drops) of staining agent to the test area. Cover the staining agents with a glass cover.

After 16 h contact time has elapsed remove the staining agents completely. Then wash the test areas with any suitable cleaning agent.

Leave the test pieces 24 h in normal ambient conditions. Then view from various angles at a distance of 400 mm using normal eyesight, corrected where necessary.

If agreed, another examination can be made after a further specified period of time.

6.6.6 Expression of results

Use following rating scale for evaluation:

— rating 5: No visible change; test area indistinguishable from adjacent surrounding area;

— rating 4: Minor change; test area distinguishable from adjacent surrounding area, only when the light source is mirrored on the test surface and is reflected towards the observer's eye, e.g. discoloration, change in gloss and colour;

— rating 3: Moderate change; test area distinguishable from adjacent surrounding area, visible in several viewing, directions, e.g. discoloration, change in gloss and colour;

— rating 2: Significant change; test area clearly distinguishable from adjacent surrounding area, visible in all viewing directions, e.g. discoloration, change in gloss and colour, and/or structure of the surface slightly changed, e.g. cracking, blistering;

— rating 1: Strong change; the structure of the surface being distinctly changed and/or discoloration, change in gloss and colour, and/or the surface material being totally or partially delaminated.

6.7 Resistance to cracking

6.7.1 Principle

To determine the ability of the decorative surfaces of melamine faced board to resist to cracking under dry heat at 70 °C.

6.7.2 Apparatus

— electrically heated oven, provided with air circulation capable of being controlled at (70 ± 2) °C;

— hand-lens with approximately 6x magnification;

— lighting of intensity (800 to 1 000) Lux.

6.7.3 Test pieces

A 250 mm × 250 mm test piece shall be cut out of the product. The edges which define decorative sides shall be chamfered about 3 mm wide at an angle of about 45° to avoid any notch effect from the edge.

6.7.4 Procedure

The test piece shall be stored in an oven with air turbulence controlled at (70 ± 2) °C for 24 h. After subsequent cooling in standard reference atmosphere 23 °C/50 % relative humidity for 24 h, a magnifier with approximately 6x magnification shall be used to determine whether, and to what extent, cracks have appeared, when examined under a light intensity of (800 to 1 000) Lux.

6.7.5 Expression of results

Cracks are divided into 2 classes. Hairline cracks that are difficult to see by eye and surface cracks that may cut into the surface finish and may reach the board. These can be clearly seen and felt.