



# SLOVENSKI STANDARD

## SIST EN 16511:2014

01-julij-2014

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**Prosto položene plošče - Večslojne poltoge talne obloge plošč z odpornim zgornjim delom proti obrabi**

Loose-laid panels - Multi-layer semi-rigid floor covering (MSF) panels with wear resistant top layer

Lose verlegte Platten - Mehrlagige, halbstarre Bodenbelagsplatten (MSF) mit abriebbeständiger Decklage

Panneaux pour pose flottante - Panneaux de revêtement de sol multicouches semi-rigides avec couche supérieure résistante à l'usure

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**Ta slovenski standard je istoveten z: EN 16511:2014**

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**ICS:**

97.150            Netekstilne talne obloge            Non-textile floor coverings

**SIST EN 16511:2014**

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EUROPEAN STANDARD

EN 16511

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2014

ICS 97.150

English Version

## Loose-laid panels - Semi-rigid multilayer modular floor covering (MMF) panels with wear resistant top layer

Panneaux pour pose flottante - Panneaux de revêtement de sol semi-rigides, multicouches et modulaires (MMF) avec couche supérieure résistante à l'usure

Paneele für schwimmende Verlegung - Halbstarre, mehrlagige, modulare Fußbodenbeläge (MMF) mit abriebbeständiger Decklage

This European Standard was approved by CEN on 28 February 2014.

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

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## Foreword

This document (EN 16511:2014) has been prepared by Technical Committee CEN/TC 134 “Resilient, textile and laminate floor coverings”, 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of an identical text or by endorsement, at the latest by November 2014 and conflicting national standards shall be withdrawn at the latest by November 2014.

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.

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**EN 16511:2014 (E)****1 Scope**

This European Standard specifies the characteristics of semi-rigid multilayer modular floor covering with a wear-resistant and decorative surface layer supplied in panels (either tile or plank form). The floor panels are considered suitable for domestic and commercial levels of use and designed for floating installation.

This European Standard does not apply to resilient floor panels for loose-laying according to EN 14085, to multilayer wood floorings according to EN 13489, nor to products specified in EN ISO 10581, EN ISO 10582, EN ISO 24011, EN 12104 and ISO 14486.

This European Standard applies to areas which are subject to frequent wetting, e.g. bathrooms, laundry rooms or saunas, only if recommended by the producer.

This European Standard also includes requirements for marking and packaging.

**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 424, *Resilient floor coverings - Determination of the effect of simulated movement of a furniture leg*

EN 425, *Resilient and laminate floor coverings - Castor chair test*

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

EN 13329:2006+A1:2008, *Laminate floor coverings - Elements with a surface layer based on aminoplastic thermosetting resins - Specifications, requirements and test methods*

EN 16094, *Laminate floor coverings - Test method for the determination of micro-scratch resistance*

prEN 15468:2013, *Laminate floor coverings - Elements with directly applied printing and resin surface layer - Specifications, requirements and test methods*

EN ISO 10874, *Resilient, textile and laminate floor coverings - Classification (ISO 10874)*

EN ISO 23999, *Resilient floor coverings - Determination of dimensional stability and curling after exposure to heat (ISO 23999)*

EN ISO 24343-1, *Resilient and laminate floor coverings - Determination of indentation and residual indentation - Part 1: Residual indentation (ISO 24343-1)*

ISO 24334, *Laminate floor coverings - Determination of locking strength for mechanically assembled panels*

ISO 24336, *Laminate floor coverings - Determination of thickness swelling after partial immersion in water*

ISO 24337, *Laminate floor coverings - Determination of geometrical characteristics*

ISO 24339, *Laminate and textile floor coverings - Determination of dimensional variations after exposure to humid and dry climate conditions*

### 3 Terms and definitions

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

#### 3.1

##### **floor panel**

semi-rigid decorative floor covering in plank or tile form, with a multiple layer structure and worked edges that allow joining products together to form a larger integral unit

Note 1 to entry The multi-layer structure consists of a wear-resistant top layer, a decorative surface layer, a substrate and usually a backer.

#### 3.2

##### **substrate**

core layer providing thickness, stability and other properties needed

#### 3.3

##### **top layer**

layer providing wear resistance and protection

#### 3.4

##### **surface layer**

layer providing visual and esthetical properties, intended to be the visible side when the floor is installed

#### 3.5

##### **backer**

layer opposite to the surface layer

#### 3.6

##### **modular**

elements supplied in single sheets or tiles with worked edges that allow the product to be joint together to form a layer integral unit

#### 3.7

##### **semi-rigid**

element consisting of materials or layers for the core which allow the floor panel to have worked edges with surface and/or top layers giving resiliency to a surface

#### 3.8

##### **underlayment**

material used between the floor covering and the subfloor

### 4 Requirements

#### 4.1 General requirements for the panels

All classes of the MMF panels shall meet the requirements specified in Table 1 when tested in accordance with ISO 24337.

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Table 1 — General requirements

| Geometrical characteristics                   | Requirements (testing in accordance with ISO 24337)   |
|---|---|
| Thickness, $t$                                | $\Delta t_{\text{avg}} \leq 0,50$ mm, relative to nominal value<br>$t_{\text{max}} - t_{\text{min}} \leq 0,50$ mm   |
| Length, $l$                                   | For the nominal values given, no measured value shall exceed:<br>$l \leq 1\,500$ mm: $\Delta l \leq 0,5$ mm<br>$l > 1\,500$ mm: $\Delta l \leq 0,3$ mm/m  |
| Width, $w$                                    | $\Delta w_{\text{avg}} \leq 0,10$ mm, relative to nominal value<br>$w_{\text{max}} - w_{\text{min}} \leq 0,20$ mm   |
| Length and width of squared elements, $l = w$ | $\Delta l_{\text{avg}} \leq 0,10$ mm relative to nominal value<br>$\Delta w_{\text{avg}} \leq 0,10$ mm, relative to nominal value<br>$l_{\text{max}} - l_{\text{min}} \leq 0,20$ mm<br>$w_{\text{max}} - w_{\text{min}} \leq 0,20$ mm |
| Squareness, $q$                               | $q_{\text{max}} \leq 0,20$ mm   |
| Straightness, $s$                             | $s_{\text{max}} \leq 0,30$ mm/m   |
| Flatness, $f$                                 | Maximum single values:<br>$f_{w, \text{concave}} \leq 0,15$ %, $f_{w, \text{convex}} \leq 0,20$ %<br>$f_{l, \text{concave}} \leq 0,50$ %, $f_{l, \text{convex}} \leq 1,00$ %  |
| Openings, $o$                                 | Openings measured from the surface between vertical contacting edges:<br>$o_{\text{avg}} \leq 0,15$ mm<br>$o_{\text{max}} \leq 0,20$ mm   |
| Height difference, $h$                        | $h_{\text{avg}} \leq 0,10$ mm<br>$h_{\text{max}} \leq 0,15$ mm  |

## 4.2 Classification requirements

The classification scheme and use intensity symbols are described in EN ISO 10874. The requirements are valid for all types of floor panels except for panels without coatings (see Table 2).

The producer shall indicate with which method (method A or B) wear resistance shall be tested.



Table 2 — Classification

| Class (EN ISO 10874)<br>→  | 21/22   | 23  | 31  | 32   | 33   | 34   | Reference test method            |
|--|---|---|---|--|--|--|----------------------------------|
| Characteristic ↓   |   |   |   |  |  |  |                                  |
| Wear resistance IP, method A or  | ≥ 200 cycles  | ≥ 400 cycles  | ≥ 600 cycles                                | ≥ 1 200 cycles   | ≥ 2 000 cycles   | ≥ 4 000 cycles   | EN 13329, Annex E                |
| Wear resistance IP, method B   | ≥ 500 cycles  | ≥ 1 000 cycles  | ≥ 1 500 cycles                              | ≥ 3 000 cycles   | ≥ 5 000 cycles   | ≥ 7 000 cycles   | prEN 15468:2013, Annex A         |
| Impact resistance [mm] (big ball)  | ≥ 400 mm  | ≥ 600 mm  | ≥ 800 mm                                    | ≥ 1 200 mm   | ≥ 1 600 mm   | ≥ 1 800 mm   | EN 13329:2006+A1:2008, Annex F   |
| Micro-scratch resistance [class]   |   |   |   | ≤ MSR-A3, ≤ MSR-B3   | ≤ MSR-A2, ≤ MSR-B2   | ≤ MSR-A2, ≤ MSR-B2   | EN 16094                         |
| Castor chair resistance  |   |   | 10 000 cycles <sup>a, c</sup>               | 25 000 cycles <sup>a, c</sup>  | 25 000 cycles <sup>a, c</sup>  | 25 000 cycles <sup>a, c</sup>  | EN 425                           |
| Effect of furniture leg  |   |   |   | No visible damage  | No visible damage  | No visible damage  | EN 424 (tested with foot type 0) |
| Residual indentation   | ≤ 0,3 mm  | ≤ 0,3 mm  | ≤ 0,3 mm                                    | ≤ 0,2 mm   | ≤ 0,2 mm   | ≤ 0,15 mm  | EN ISO 24343-1                   |
| Resistance to staining [grade, per group]                                    | Water, coffee and cleaning solution (10 min): grade 4 | Water, coffee and cleaning solution (10 min): grade 4 | Groups 1 and 2: grade 4<br>Group 3: grade 3 | Groups 1 and 2: grade 5<br>Group 3: grade 4                                | Groups 1 and 2: grade 5<br>Group 3: grade 4                                | Groups 1 and 2: grade 5<br>Group 3: grade 4  | EN 438-2: Group 1 only 10 min    |
| Swelling * [%]   | ≤ 20  | ≤ 20  | ≤ 20  | ≤ 18   | ≤ 18   | ≤ 12   | ISO 24336                        |
| Locking strength <sup>b, **</sup> [kN/m]<br>Locking strength <sup>b, *</sup> |   |   |   | Long side ≥ 1,0<br>Short side ≥ 1,5<br>Long side ≥ 1,0<br>Short side ≥ 2,0 | Long side ≥ 1,0<br>Short side ≥ 1,5<br>Long side ≥ 1,0<br>Short side ≥ 2,0 | Long side ≥ 2,0<br>Short side ≥ 3,5<br>Long side ≥ 1,0<br>Short side ≥ 3,5   | ISO 24334                        |
| Dimensional variations due to variation of climate*                          |   |   |   |  |  | $\Delta W_{avg}, \Delta l_{avg}: \leq 0,15 \%$<br>$- 0,20 \% \leq C_{avg} \leq 0,25 \%$ <sup>d</sup><br>$J_{L, avg}, J_{S, avg} \leq 0,15 \text{ mm}$<br>$h_{L, avg}, h_{S, avg} \leq 0,15 \text{ mm}$ | ISO 24339                        |