INTERNATIONAL STANDARD

ISO 14486

First edition
2012-06-01

Laminate floor coverings — Specification

Revêtements de sol stratifiés — Spécifications

Reference number
ISO 14486:2012(E)

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Published in Switzerland

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 14486 was prepared by Technical Committee ISO/TC 219, *Floor coverings*.

Laminate floor coverings — Specification

1 Scope

This International Standard specifies the characteristics of laminate floor coverings, supplied in either tile or plank form. To encourage the consumer to make an informed choice, the standard includes a classification system (see ISO 10874) based on intensity of use, which shows where these floor coverings should give satisfactory service. It also specifies requirements for marking.

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.

ISO 105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

ISO 16981, *Wood-based panels — Determination of surface soundness*

ISO 10874:2009, *Resilient, textile and laminate floor coverings — Classification*

ISO 4892-2:2009, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps* (as amended by ISO 4892-2:2006/Amd.1:2009)

ISO 4918, *Resilient, textile and laminate floor coverings — Castor chair test*

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

ISO 24335, *Laminate floor coverings — Determination of impact resistance*

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

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

ISO 24338, *Laminate floor coverings — Determination of abrasion resistance*

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

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

ANSI LF-01, *Laminate flooring — Specifications and test methods*

3 Terms and definitions

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

3.1
laminate floor covering
rigid floor covering, typically in a plank or tile format, having a multiple layer product structure, e.g. backer, substrate, décor and overlay

NOTE 1 The planks/tiles have worked edges that allow the product to be joined together to form a larger integral unit. The product may vary in surface texture and gloss level.

NOTE 2 Laminate floor covering does not include products having a resilient, stone, textile, wood, leather or metal top surfacing material(s).

3.2
overlay
top layer of a laminate floor covering, which provides wear resistance and protection

NOTE The overlay consists of aminoplastic, thermosetting resins (usually melamine) or other resins (usually acrylic) that provide wear resistance.

3.3
décor
layer of a laminate floor covering that provides the visual aesthetic properties

3.4
substrate
core layer of a laminate floor covering, which provides thickness, stability and other properties needed

NOTE The substrate generally consists of HDF/MDF (high density fibreboard / medium density fibreboard) material.

3.5
backer
layer of a laminate floor covering that provides balance

3.6
underlayment
material used between the laminate floor covering and the subfloor (e.g. foam padding)

NOTE Some laminate floor covering products have the underlayment integrated into or attached directly to the product.

4 Requirements - general and classification

4.1 General requirements

Floor coverings described in this International Standard shall conform to the appropriate general requirements specified in Table 1 when tested in accordance with the methods given therein.

Table 1 — ISO specifications for laminate floor coverings - general requirements

Test method	Property or characteristic	Requirement
ISO 24337	Geometrical characteristics	
	Thickness, t	$\Delta t_{avg} \leq 0{,}50$ mm, relative to nominal value $t_{max} - t_{min} \leq 0{,}50$ mm
	Length, l	For the nominal values given, no measured value shall exceed: $l \leq 1\,500$ mm: $\Delta l \leq 0{,}5$ mm; $l > 1\,500$ mm: $\Delta l \leq 0{,}3$ mm/m
	Width, w	$\Delta w_{avg} \leq 0{,}10$ mm, relative to nominal value $w_{max} - w_{min} \leq 0{,}20$ mm
	Length and width of squared elements, $l = w$	$\Delta l_{avg} \leq 0{,}10$ mm relative to nominal value $\Delta w_{avg} \leq 0{,}10$ mm, relative to nominal value $l_{max} - l_{min} \leq 0{,}20$ mm $w_{max} - w_{min} \leq 0{,}20$ mm
	Squareness, q	$q_{max} \leq 0{,}20$ mm
	Straightness, s	$s_{max} \leq 0{,}30$ mm/m
	Flatness, f	Maximum single values: $f_{w,concave} \leq 0{,}15$ % $f_{w,convex} \leq 0{,}20$ % $f_{l,concave} \leq 0{,}50$ % $f_{l,convex} \leq 1{,}00$ %
	Openings[a], o	Openings measured from the surface between vertical contacting edges: $o_{avg} \leq 0{,}15$ mm $o_{max} \leq 0{,}20$ mm
	Height difference, h	$h_{avg} \leq 0{,}10$ mm $h_{max} \leq 0{,}15$ mm
ISO 24343-1	Residual indentation	After 150 min, residual indentation must be $\leq 0{,}05$ mm.
ISO 4892-2: 2009[b] Method B Cycle 5 or Cycle 6	Light resistance (100 ± 0,5) h exposure Total radiance level (396 ± 2) kJ/m^2	No more than slight change according to ANSI LF-01, or ≥ Grade 4 per grey scale according to ISO 105-A02 NOTE Allow sample (24 ± 1) h recovery time without light exposure at 23 °C and 50 % relative humidity before taking final measurement.

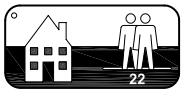
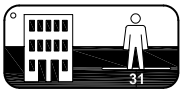
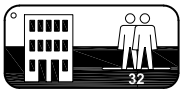
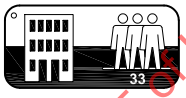
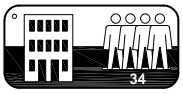
[a] Openings between vertical contacting edges of laminate floor coverings measured from the surface.

[b] As amended by ISO 4892-2:2006/Amd.1:2009.

4.2 Classification requirements

Floor coverings described in this International Standard shall conform to the appropriate classification requirements specified in Table 2 when tested in accordance with the methods given therein.

Table 2 — ISO specifications for laminate floor coverings - classification requirements

Property or characteristic test method	Requirement				
Classification ISO 10874	Moderate/ Light,General/ Medium Domestic Class 21/22	Heavy Domestic, Moderate Commercial Class 23/31	General Commercial Class 32	Heavy Commercial Class 33	Very Heavy Commercial Class 34
Symbol ISO 10874					
Wear resistance ISO 24338	IP ≥ 1 000 cycles	IP ≥ 2 000 cycles	IP ≥ 4 000 cycles	IP ≥ 6 000 cycles	IP ≥ 8 500 cycles
Castor chair resistance[1] ISO 4918	—	10 000 cycles, No damage	25 000 cycles, No damage	25 000 cycles, No damage	25 000 cycles, No damage, with type H wheels
Impact resistance ISO 24335	—	Large ball ≥ 400 mm	Large ball ≥ 800 mm	Large ball ≥ 1000 mm	Large ball ≥ 1600 mm
	—	Small ball ≥ 8N	Small ball ≥ 12N	Small ball ≥ 15N	Small ball ≥ 24N
Thickness swelling ISO 24336	≤ 20 %	≤ 18 %	≤ 18 %	≤ 15 %	≤ 8 %
Surface soundness ISO 16981	≥ 1,0 N/mm^2	≥ 1,0 N/mm^2	≥ 1,25 N/mm^2	≥ 1,25 N/mm^2	≥ 1,5 N/mm^2
Dimensional stability ISO 24339	—	—	—	—	Δw_{avg}, Δl_{avg}: ≤ 0,10 % -0,30mm ≤ C_{max} ≤ 0,40mm $J_{L,max}$, $J_{S,max}$: ≤ 0,10mm $h_{L,max}$, $h_{S,max}$: ≤ 0,15mm
Locking strength[2] ISO 24334	—	—	$F_{L0,2}$ ≥ 1 kN/m $F_{S0,2}$ ≥ 2 kN/m	$F_{L0,2}$ ≥ 1 kN/m $F_{S0,2}$ ≥ 2 kN/m	$F_{L0,2}$ ≥ 3,5 kN/m $F_{S0,2}$ ≥ 3,5 kN/m

[1] Using soft castor wheels W PU (95 ± 5) Shore A except for class 34 wheels H PA (95 ± 5) Shore A.

[2] For push-down flooring systems on the short side, needing long-side locking, neither the test method nor the requirements are applicable. If panel width is < 100 mm or if a push-down flooring system needing no long-side locking is being evaluated, carry out test using the whole panel width as the sample width, then convert the result into kN/m.

5 Marking, labelling and packing

Floor coverings covered by this International Standard and/or their packaging/literature shall bear the following marking:

a) number and date of this International Standard, i.e. ISO 14486;

b) manufacturer's or supplier's identification;

c) product name;

d) colour/pattern, batch/lot number and, if applicable, carton number;

e) classes/symbols appropriate for the product;

f) dimensions, including nominal thickness, length and width of the product, and the area in square metres contained in the package.

Annex A
(informative)

Operational properties

Where the following properties are required for specific applications, the floor covering may be tested in accordance with the appropriate methods:

— Determination of the body voltage (EN 1815, ANSI/ESD STM97.2).

— Reaction to fire: determination of the burning behaviour using a radiant heat source (ISO 9239-1, ASTM E 648).

— Reaction to fire: ignitability when subject to direct impingement of flame (ISO 11925-2).

— Reaction to fire: specific optical density of smoke generated (ASTM E 662).

— Wood based panels: determination of tensile strength perpendicular to the plane of the panel (internal bond) (ISO 16984).

— Laminate floor covering: determination of long side friction for mechanically assembled panels (ISO 25620).

— Thermal performance of building materials and products – determination of thermal resistance by means of guarded hot plate and heat flow meter methods – dry and moist products of medium and low thermal resistance (EN 12664).

— Resilient, laminate and textile floor coverings – measurement of dynamic coefficient of friction on dry floor surfaces (EN 13893).

— Standard test method for determining formaldehyde concentrations in air and emission rates from wood products using a chamber (ASTM E 1333, EN 717-1).

— Resilient, textile and laminate floor coverings – essential characteristics (EN 14041).

Bibliography

[1] ISO 9239-1, *Reaction to fire tests for floorings — Part 1: Determination of the burning behaviour using a radiant heat source*

[2] ISO 11925-2, *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Part 2: Single-flame source test*

[3] ISO 16984, *Wood-based panels — Determination of tensile strength perpendicular to the plane of the panel*

[4] ISO 25620, *Laminate floor coverings — Determination of long-side friction for mechanically assembled panels*

[5] ANSI/ESD S7.1, *Resistive Characterization of Materials — Floor Materials*

[6] ANSI/ESD STM97.1, *Floor Materials and Footwear — Resistance Measurement in Combination with a Person*

[7] ANSI/ESD STM97.2, *Floor Materials and Footwear — Voltage Measurement in Combination with a Person*

[8] ASTM E 90, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements*

[9] ASTM E 284, *Standard Terminology of Appearance*

[10] ASTM E 413, *Classification for Rating Sound Insulation*

[11] ASTM E 492, *Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine*

[12] ASTM E 648, *Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source*

[13] ASTM E 662, *Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials*

[14] ASTM E 1333, *Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber*

[15] ASTM F 925, *Standard Test Method for Resistance to Chemicals of Resilient Flooring*

[16] EN 717-1, *Wood-based panels — Determination of formaldehyde release — Part 1: Formaldehyde emission by the chamber method*

[17] EN 717-2, *Wood-based panels — Determination of formaldehyde release — Part 2: Formaldehyde emission by the gas analysis method*

[18] EN 1815, *Resilient and textile floor coverings — Assessment of static electrical propensity*

[19] EN 12664, *Thermal performance of building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Dry and moist products of medium and low thermal resistance*

[20] EN 13329, *Laminate floor coverings — Elements with a surface layer based on aminoplastic thermosetting resins — Specifications, requirements and test methods*

[21] EN 13893, *Resilient, laminate and textile floor coverings — Measurement of dynamic coefficient of friction on dry floor surfaces*

[22] EN 14041, *Resilient, textile and laminate floor coverings — Essential characteristics*

[23] EN 14978, *Laminate floor coverings — Elements with acrylic based surface layer, electron beam cured — Specifications, requirements and test methods*