
**Resilient floor coverings —
Specification for rubber sheet floor
coverings without backing**

*Revêtements de sol résilients — Specifications pour les revêtements de
sol en caoutchouc sans dossier*

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Foreword

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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 10577 was prepared by Technical Committee ISO/TC 219, *Floor coverings*.

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Resilient floor coverings — Specification for rubber sheet floor coverings without backing

1 Scope

This International Standard specifies the characteristics of rubber sheet floor coverings without backing.

This International Standard includes a classification system based on intensity of use, which shows where resilient floor coverings should provide satisfactory service.

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-B02, *Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light: Xenon arc fading lamp test*

ISO 4649:2010, *Rubber, vulcanized or thermoplastic — Determination of abrasion resistance using a rotating cylindrical drum device*

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

ISO 7619-1, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness — Part 1: Durometer method (Shore hardness)*

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

ISO 23999, *Resilient floor coverings — Determination of dimensional stability and curling after exposure to heat*

ISO 24341, *Resilient and textile floor coverings — Determination of length, width and straightness of sheet*

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

ISO 24344, *Resilient floor coverings — Determination of flexibility and deflection*

ISO 24346, *Resilient floor coverings — Determination of overall thickness*

ASTM D883, *Standard Terminology Relating to Plastics*

ASTM D1566, *Standard Terminology Relating to Rubber*

ASTM D3389, *Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform Abrader)*

ASTM F1515, *Standard Test Method for Measuring Light Stability of Resilient Flooring by Colour Change*

EN 663, *Resilient floor coverings — Determination of conventional pattern depth*

3 Terms and definitions

3.1

rubber material

polymeric binder in the rubber sheet floor covering without backing satisfying the definition of rubber in ASTM D1566, and having been vulcanized such that it became thermoset as defined in ASTM D883

3.2

relieved

having a permanent multi-level surface produced by mechanical means, with a minimal differential in height of 0,25 mm

4 Categories of rubber floor coverings without backing

Category A: Homogeneous rubber floor covering without backing — Floor covering based on natural and/or synthetic rubber with one or more layers of the same composition and colour, patterned throughout its thickness.

Category B: Heterogeneous rubber floor covering without backing — Floor covering based on natural and/or synthetic rubber consisting of a wear layer and other compact layers which differ in composition and/or design and can contain a reinforcement.

Category C: Heterogeneous rubber floor covering without backing with a decorative layer — Floor covering based on natural and/or synthetic rubber consisting of a decorative layer and other compact layers which differ in composition and/or design and can contain a reinforcement.

The thickness of the decorative layer shall at least reach the values given in Table 2. These values are based on the relationship of the appearance retaining after removing a specified thickness and the abrasion value measured.

The floor covering may have either smooth, embossed or relieved pattern wearing surfaces.

5 Requirements

All rubber floors without backing shall conform to the appropriate general requirements specified in Table 1, when tested in accordance with the test methods given therein.

Table 1 — General requirements

Characteristic	Requirements		Test method
Roll form: Length m Width m	not less than the nominal values		ISO 24341
Overall thickness; Tolerance on nominal total gauge mm relieved smooth or embossed	average	individual results	ISO 24346
	Nominal value ± 0,20 mm	Nominal ± 0,25 mm	
	Nominal value ± 0,20 mm	Nominal ± 0,25 mm	
Dimensional stability	Tolerance allowed ± 0,4 %		ISO 23999
Flexibility: diameter of mandrel < 3,0 mm: 20 mm ≥ 3,0 mm: 40 mm	no cracking		ISO 24344 Method A
Residual indentation (after static loading) Nominal thickness < 2,5 mm ≥ 2,5 mm ≥ 3,0 mm	≤ 0,15 mm ≤ 0,20 mm ≤ 0,25 mm		ISO 24343-1
Abrasion resistance of wear layer or	≤ 250 mm ³		ISO 4649:2010 Method A, vertical load (5 ± 0,1) N
	< 1 g		ASTM D3389 H18/500 g
Colour fastness to artificial light ^a or	6 minimum on blue wool scale ≥ 3 on grey scale		ISO 105-B02 Method 3
	ΔE not greater than 8,0 after 300 h exposure		ASTM F1515
^a Expose a full size test specimen. Store a further test specimen in the dark, which will constitute the reference standard for assessment of colour change.			

6 Classification

The classification scheme for resilient floor coverings is described in ISO 10874. The requirements for rubber sheet floor coverings without backing in accordance with this scheme are specified in Table 2.

Table 2 — Classification minimum requirements

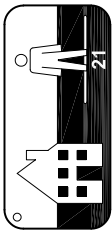
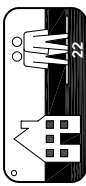
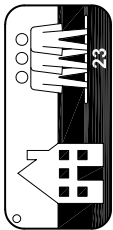
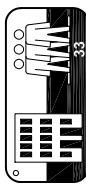
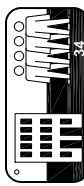
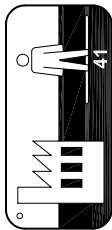
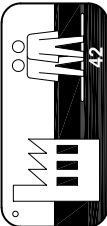
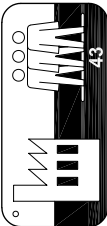
Class	Symbol	Level of use	Overall thickness nominal value (mm)			Minimum thickness of wear layer Category B, C	Relation PD ^a /TL ^b Category C EN 663	Resistance to castor chair for smooth or embossed pattern ISO 4918	Hardness of wear layer ISO 7619-1 Shore A
			Category A, B, C						
			Relieved pattern	Smooth or embossed					
21		domestic moderate	2,5	1,8	1,0	≥ 0,6	No requirement	≥ 60	
22		domestic general/medium							
23		domestic heavy							
31		commercial moderate	2,0		1,0	≥ 0,8	No disturbance to the surface other than slight change in appearance and no delamination shall occur after 25 000 cycles	≥ 75	
32		commercial general							
33		commercial heavy							
34		commercial very heavy							
41		light industrial moderate							

Table 2 (continued)

Class	Symbol	Level of use	Overall thickness nominal value			Minimum thickness of wear layer Category B, C	Relation PD ^a /TL ^b Category C EN 663	Resistance to castor chair for smooth or embossed pattern ISO 4918	Hardness of wear layer ISO 7619-1 Shore A
			(mm)						
			Reliefed pattern	Smooth or embossed					
42		light industrial general	3,5	2,0	1,0	≥ 1,0	No disturbance to the surface other than slight change in appearance and no delamination shall occur after 25 000 cycles	≥ 75	
43		light industrial heavy		2,5		≥ 1,5			

a PD = Pattern depth in mm.

b TL = Thickness loss in mm, calculated according to the formula below (EN 663).

^a PD = Pattern depth in mm.

^b TL = Thickness loss in mm, calculated according to the formula below (EN 663).

$$TL = \frac{m_L}{\rho \cdot A_a}$$

where:

TL is thickness loss in mm;

m_L is weight loss in mg;

ρ is density in mg/mm³ (ISO 23996);

A_a is abraded area in mm² ($A_a = 3\,200\text{ mm}^2$, Taber-Test ASTM D3389).

7 Marking, labelling and packaging

Rubber sheet floor covering with backing and/or their packaging shall be marked as follows:

- a) number and date of this International Standard, i.e. ISO 10577:2012;
- b) manufacturer's or supplier's identification;
- c) product name;
- d) colour/pattern, and batch number if applicable;
- e) classes/symbols appropriate for the product.

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Annex A

(informative)

Optional properties

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

- electrical resistance (see EN 1081 and ASTM F150);
- electrostatic propensity/static dissipation (see EN 1815);
- effect of stains/resistance to chemicals (see ISO 26987);
- cigarette resistance (see EN 1399): In general use, a rubber floor covering, depending on the colour and/or pattern, is expected to have the following rating when tested in accordance with EN 1399: Method A, stubbed cigarettes: rating 4 or higher; Method B, burning cigarettes: rating 3 or higher;
- reaction to fire; determination of the burning behaviour using a radiant heat source (see ISO 9239-1 and ASTM E648);
- reaction to fire; ignitability when subject to direct impingement of flame (ISO 11925-2);
- reaction to fire; specific optical density of smoke generated (ASTM E662).