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Resilient, textile and laminate floor coverings — Castor chair test

Revêtements de sol textiles, résilients ou stratifiés — Essai à l'appareil à roulettes

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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 4918 was prepared by Technical Committee ISO/TC 219, *Floor coverings*.

It cancels and replaces ISO/TR 4918:1990, which has been technically revised.

Resilient, textile and laminate floor coverings — Castor chair test

1 Scope

This International Standard specifies methods for

a) assessment of the wear behaviour of textile floor coverings,

b) assessment of the change in colour (glossing) of needled floor coverings without a pile,

c) assessment of the general structural integrity of textile floor coverings,

d) determination of susceptibility to surface crazing, of construction integrity and of joint stability for resilient or laminate floor coverings, including joints.

The methods involve subjecting a test specimen to the movement of a castor chair.

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 139, *Textiles — Standard atmospheres for conditioning and testing*

ISO 1957, *Machine-made textile floor coverings — Selection and cutting of specimens for physical tests*

ISO 2424, *Textile floor coverings — Vocabulary*

ISO 9405, *Textile floor coverings — Assessment of changes in appearance*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2424 apply.

4 Principle

A floor covering, including one or more joints, treated or welded where necessary, is submitted for a prescribed number of cycles to the action of three castors. The castors move in epicyclical paths with multiple changes of direction, stops and starts, and the frequency of passage varies from area to area.

For textile floor coverings, three different tests are specified:

a) the change in appearance of a textile floor covering is assessed after 5 000 cycles and 25 000 cycles, in accordance with ISO 9405 (Test A),

b) the change in colour is assessed by means of grey scales after 750 cycles (Test B),

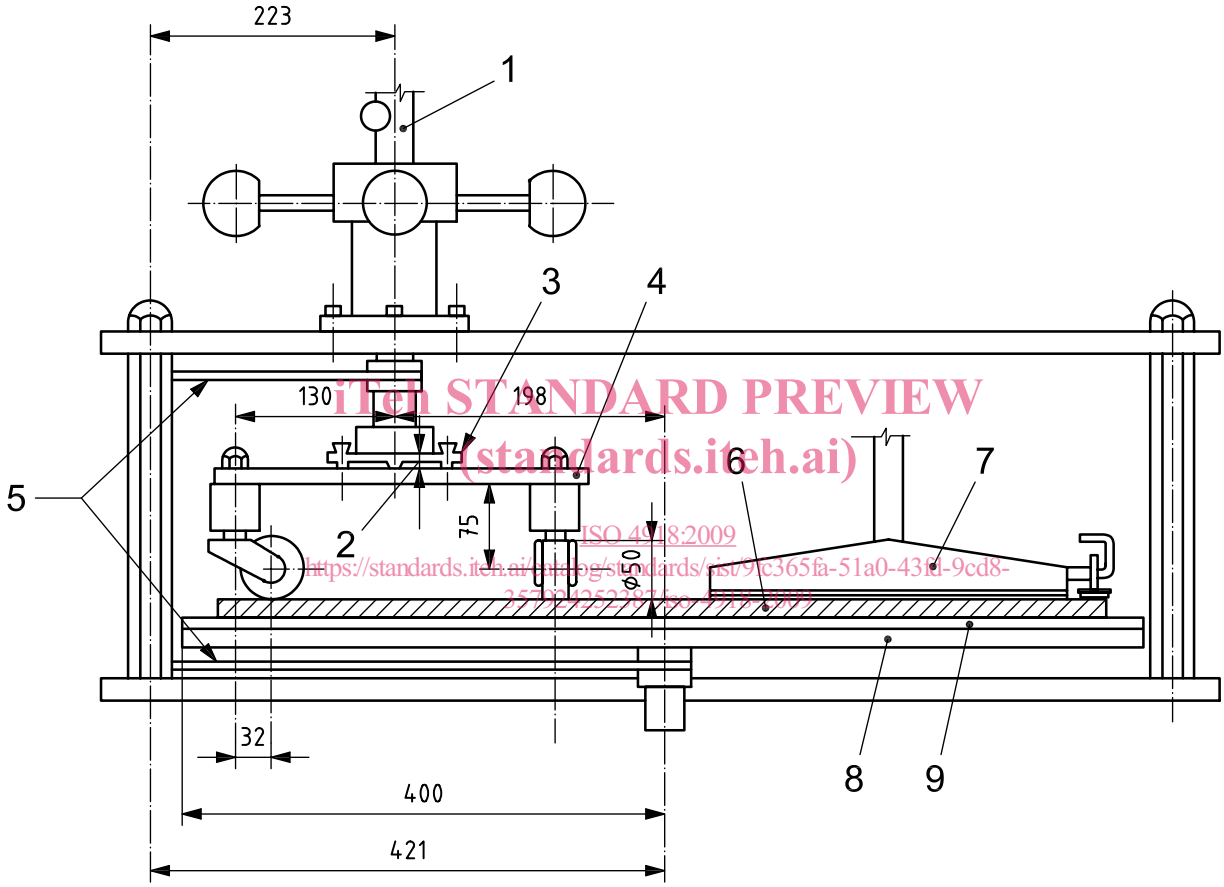
c) the extent of deterioration of the specimen is assessed after 10 000 or 25 000 cycles (Test C).

5 Apparatus (see Figure 1)

5.1 Rotating circular test platform, on which the test specimens are placed.

The diameter of the platform shall be a minimum of 750 mm.

Dimensions in millimetres



Key

1 total mass 90 kg
2 distance > 3 mm
3 load/drive plate
4 castor mounting plate
5 chain
6 specimen
7 suction device with height regulation
8 testing platform
9 specimen support

Figure 1 — Typical castor chair apparatus

5.2 Castor assembly (see Figures 1 and 2).

This assembly is comprised of a vertical shaft, set in a bearing, and a plate on which the castors are mounted (item 1 in Figure 2). This castor assembly is offset at a distance of (198 ± 1) mm from the centre of the rotating test platform.

The three castors are each arranged concentrically at 120° intervals around the centre of the plate at a distance of (130 ± 1) mm from the centre of the plate, and are free to rotate, so that they follow the rotation of the castor assembly.

The stressed area of the specimen under test is determined by the distance between the axes of revolution of the castor chair assembly and the specimen table, and by the distance of the castors from the centre of the plate. This area is approximately 0,3 m^2.

The apparatus is provided with a lifting device to raise the castor assembly above the testing platform when the apparatus is stopped.

The castor assembly is loaded with a mass of (90 ± 1) kg equally divided over the three castors.

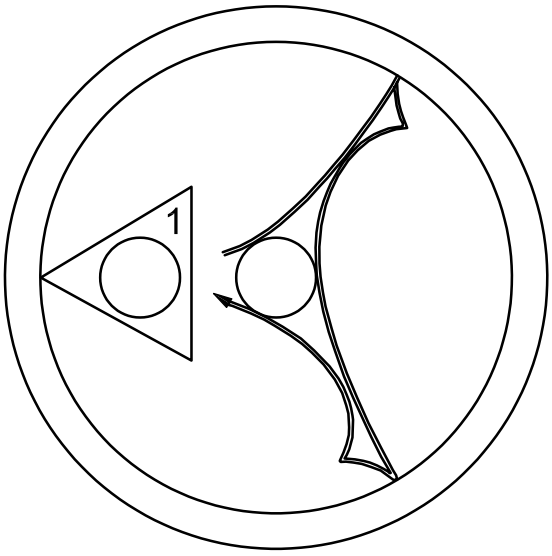
The distance (under load) between the castor mounting plate and the load/drive plate shall be > 3 mm.

5.3 Drive mechanism.

The drive to the specimen plate and to the castor assembly is interlocked and fitted with a reversing mechanism. The number of cycles is set by means of a pre-set counter. The rotational speed of the rotating platform shall be (19 ± 1) r/min and that of the castor assembly (50 ± 1) r/min.

After (180 ± 10) s of rotation, the platform shall stop and remain in the stop position for (5 ± 2) s, after which time the direction of rotation of the rotating platform shall reverse.

The relationship between the rotational speed of the specimen plate and that of the castor assembly causes a sharp reverse movement of the castors within the stressed area (see Figure 2).



Key

1 castor assembly

Figure 2 — Path of castors

5.4 Suction device.

A suction device (item 7 in Figure 1) is mounted over the entire width of the stressed area, the height of this device above the specimen being adjustable. The suction capacity shall be at least 25 l/s to 30 l/s.

5.5 Castors.

5.5.1 General

Single-wheel swivel castors shall be used, having the following dimensions (see Figure 3):

— diameter: (50 ± 2) mm;

— width: (20 ± 2) mm;

— radius of curvature R of castor tread: (130 ± 5) mm;

— crank distance: (32 ± 2) mm.

The distance between any two castor mountings shall be (225 ± 5) mm.

Dimensions in millimetres

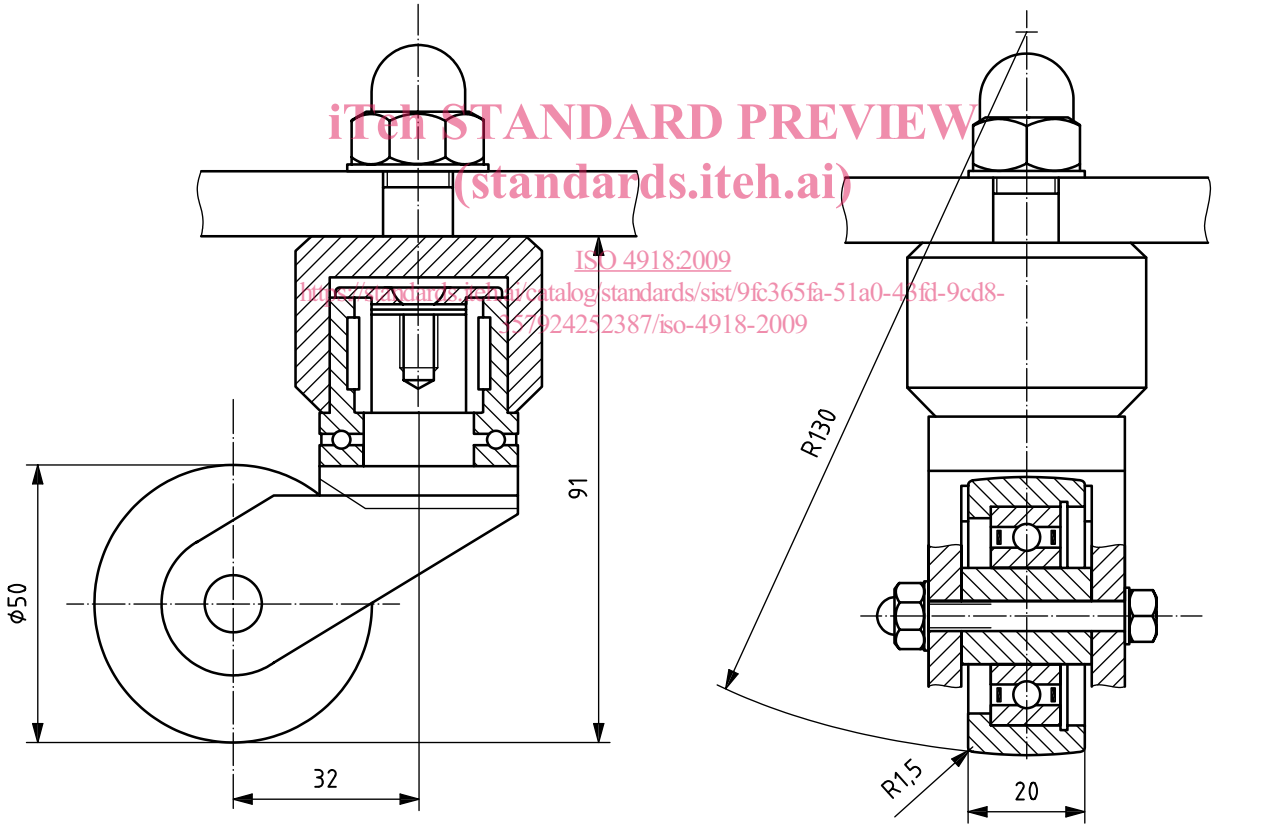


Figure 3 — Single-wheel swivel castors

5.5.2 **Type H castors**, suitable for textile, resilient and laminate floor coverings.

Type H castors have plain wheels and a hard tread. The wheels shall be one colour over their entire surface. The castor treads are made from polyamide having a Shore A hardness of (95 ± 5), and shall be replaced after 2 000 000 cycles of the test platform.

The castor treads shall be examined after each test to verify that they are still smooth, without any deep scoring or encrusted hard particles. The tread shall be replaced if the dimensions of the wheel fall outside the tolerances given in 5.5.1.

5.5.3 Type W castors, suitable for resilient and laminate floor coverings.

Type W castors have resilient-tyred wheels and a soft tread. The castor treads are made from polyurethane, with surface hardness of (95 ± 5) Shore A. The surface of the castor wheels shall be replaced after 1 000 000 cycles of the test platform.

The castor treads shall be examined after each test to verify that they are still smooth, without any deep scoring or encrusted hard particles. The tread shall be replaced if the dimensions of the wheel fall outside the tolerances given in 5.5.1.

5.6 Lifting device, to raise the castor assembly above the testing platform when the apparatus is stationary.

5.7 Cycle counter, for setting the number of cycles of the testing platform.

5.8 Fastening system, such as metal taping or a metal ring (for loose-laid installation) at the outer perimeter to secure specimens in position during the test.

5.9 Specimen support.

The specimen shall be placed on a circular sheet of rigid plastic [e.g. poly(methyl methacrylate)] or suitable substrate with a thickness of (7 ± 2) mm and a diameter of (800 ± 5) mm.

The support itself shall be laid on the test platform and holes made in the support in order to engage the platform studs, to prevent slippage.

5.10 Vacuum cleaner, upright, with rotating brush driven by an independent motor for textile floor coverings, and without rotating brush for resilient and laminate floor coverings.

5.11 Illumination device.

Illumination shall be provided by sufficient fluorescent tubes mounted at a height above the viewing table to give an intensity of light across the viewing platform of (1 500 ± 300) lx and in such a way as to illuminate the specimen vertically from above and allow uninterrupted viewing of the table (minimum height 1 600 mm above table). The surroundings shall be neutral and darkened.

The intensity of the light shall be checked prior to each assessment series by the use of a luxmeter. The lifetime of the fluorescent tubes, as given by the manufacturer, shall not be exceeded.

5.12 Rotary viewing table, enabling the specimens to be rotated so that they may be viewed from all directions under the standard illumination.

The diameter of the viewing table shall be at least 1 000 mm to enable the test specimens and the reference scales to be laid side-by-side. The table colour shall be matt dark grey or matt black. The table shall be constructed in such a way that its surface is as close as possible to the floor, in order to achieve a 45° angle to the eyes of the assessor.

6 Materials

6.1 White cotton, in pad, cloth or paper form.

6.2 Adhesive scrim, double-sided adhesive tape or adhesive.

6.3 Denatured ethanol.