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Resilient floor-covering tiles — Determination of side length, edge straightness and squareness

Dalles pour revêtements de sol résilients — Détermination de la longueur des bords, de la rectitude des arêtes et de l'équerrage

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Foreword

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ISO 24342 was prepared by Technical Committee ISO/TC 219, *Floor coverings*.

Resilient floor-covering tiles — Determination of side length, edge straightness and squareness

1 Scope

This International Standard describes methods for determining side lengths, straightness of edges and squareness of resilient floor tiles.

The side lengths, straightness and squareness of resilient floor tile are important considerations because installed flooring will have an objectionable appearance if these performance criteria are not followed. This may cause the installed tiles to line up unevenly, producing unsightly seams and corners that do not match.

2 Terms and definitions

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

2.1
squareness
measurement of the amount each corner of the tile deviates from 90°

See Figure 1.

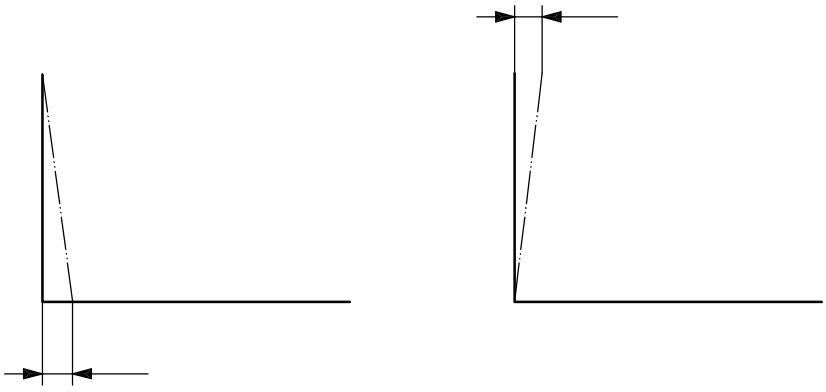


Figure 1 — Definition of squareness

2.2
straightness
property of an edge to be straight, unbent

See Figure 2.

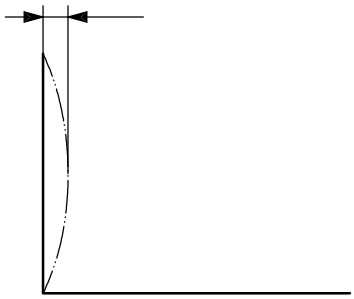


Figure 2 — Definition of straightness

2.3
tile
type of resilient flooring of predetermined shape intended to be used in a modular mode

NOTE Tiles are usually square, but can also be rectangular, e.g. “plank”, “panel”.

3 Principle

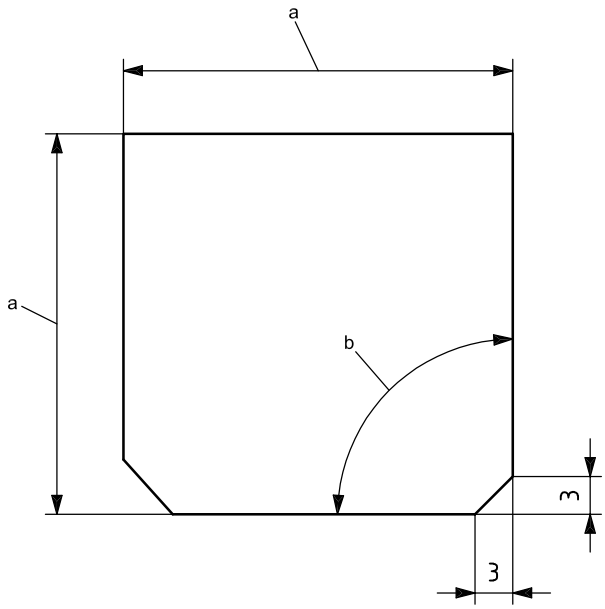
The surface dimensions of a tile are measured by a contact method at defined positions in each direction. To assess the squareness, each corner of a right-angled tile is fitted into the dihedral angle of a precision square and the maximum gap between the arm of the square and the ends of the tile is measured. The maximum opening between the arm and the edge is measured at defined points along the edge to assess the straightness.

4 Apparatus

4.1 Reference plate (calibration plate), made to the target dimensions of the manufactured tile.

The length and width dimensions shall be within 0,02 mm of the specified dimensions of the resilient tiles. The reference plate shall contain at least two sides that are perpendicular to ± 0,000 05 rad (0,003 °) to one or another and are used to set squareness gauge to zero (see Figure 3).

Dimensions in millimetres



[a] Tile target dimension ± 0,02 mm.

[b] 1,570 80 rad ± 0,000 05 rad.

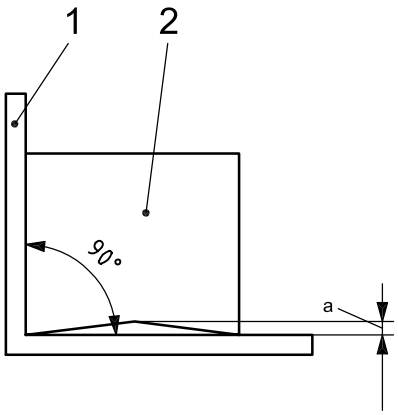
Figure 3 — Reference plate

4.2 Rigid metal or glass plate, squared and finished, with dimensions 5 mm to 10 mm less than those of the tile, for the thickness gauge method.

The mass per unit area of the plate shall be approximately 20 kg/m^2.

4.3 Flat bedplate apparatus, for measuring squareness and straightness of floor tiles.

This apparatus shall be an “L” shaped steel device having an angle of 1,570 80 rad (90 °) with a tolerance of ± 0,000 05 rad (0,003 °), as shown in Figures 4 and 5 with the length of both reference strips larger than the largest dimension of the tile. For measuring side length, a dial gauge is also placed on the flat bedplate according to Figure 6.



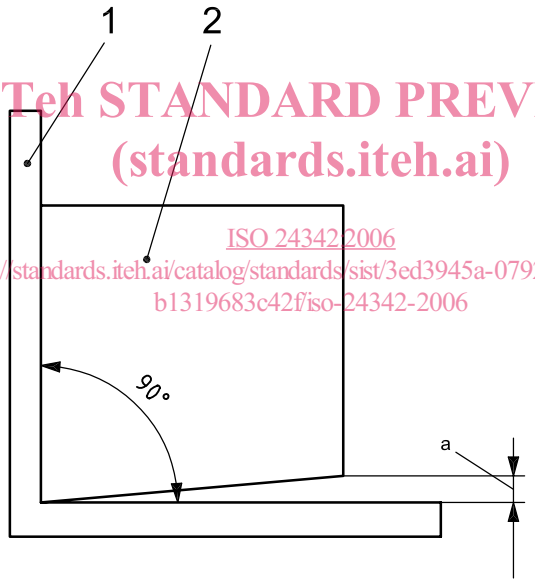
Key

1 measuring tool

2 tile

a Maximum length of gap.

Figure 4 — Apparatus and position of tile for measuring straightness



Key

1 measuring tool

2 tile

a Out-of-squareness.

Figure 5 — Apparatus and position of tile for measuring squareness

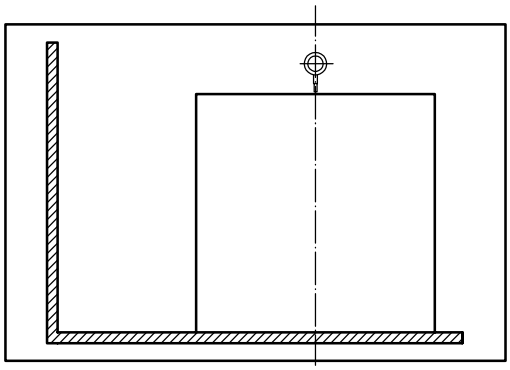


Figure 6 — Apparatus for measuring side length

4.4 Gauge and/or calliper, for the measurement of the length of the tiles up to 610 mm.

A dial gauge, a sliding calliper gauge or equivalent device with an accuracy of 0,05 mm or a set of thickness gauges in steps of 0,05 mm that can be easily inserted at any point between the “L” shaped steel device and the edge of the tile.

4.5 Movable dial gauges apparatus, containing two fixed index strips according to Figure 7.

A horizontal index strip shall be mounted parallel to and just inside the lower edge of the bedplate. It shall be 38 mm ± 3 mm greater in length and a minimum of twice the thickness of the largest resilient tile to be tested. A second index strip shall be mounted 1,570 80 ± 0,000 05 rad to the horizontal index strip. The lower end of this index strip shall be 3,1 mm ± 0,25 mm above the right end of the horizontal index strip and is used to locate one corner of the sample tile. The length of the second index strip shall be maximum 10 mm.

The four dial gauges are mounted allowing for measurement of various tiles side lengths while remaining within 10 % of the corner of the tile edge (for the two corner gauges and one squareness gauge) or within the central 10 % of the tile edge (for the centre gauge only). Dial gauges may report measurements using electrical or mechanical means, but they shall be graduated to read 0,02 mm and have a stem travel greater than 6 mm. The contact foot of the dial gauge stem shall be flat, 12,7 mm to 19,1 mm in diameter and exert a total force of not more than 1,0 N. Dial gauges shall be securely positioned so that when the reference plate is in place, the contact foot is extended approximately 50 % of its full travel.