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Third edition
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Textile floor coverings — Determination of number of tufts and/or loops per unit length and per unit area

Revêtements de sol textiles — Détermination du nombre de touffes et/ou de boucles par unité de longueur et par unité de surface

Reference number
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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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

This third edition cancels and replaces the second edition (ISO 1763:1986), which has been technically revised.

The main changes compared to the previous edition are as follows:

— addition of specific methodology for measuring artificial turf products.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Textile floor coverings — Determination of number of tufts and/or loops per unit length and per unit area

1 Scope

This document specifies a method for the determination of the number of tufts and/or loops per unit length and per unit area of a textile floor covering. It is applicable to textile floor coverings with the pile of which consists of tufts and/or loops.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1957, *Machine-made textile floor coverings — Selection and cutting of specimens for physical tests*

ISO 2424, *Textile floor coverings — Vocabulary*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
tuft
J-shaped, U-shaped or W-shaped length of yarn, or length of yarn in the form of a knot, of which the leg or legs form the pile of a carpet

Note 1 to entry: See Figure 1 and Figure 2 for examples.

a) U-tuft **b) W-tuft**

Figure 1 — Example of tufts

a) Knot 1 b) Knot 2

Figure 2 — Example of knots

3.2
loop
length of the pile-forming yarn between two successive lowest points of fixation in the backing of a carpet

Note 1 to entry: See Figure 3.

Figure 3 — Diagram of two successive loops of a pile

3.3
number of tufts and/or loops per unit length
count of tufts and/or loops occupying 100 mm when counted longitudinally, i.e. parallel to the selvedge (denoted by S), and when counted transversely, i.e. at right angles to the selvedge (denoted by G)

Note 1 to entry: S and G refer respectively to the stitch rate and gauge typically used for tufted carpets. Woven textile floor coverings are included in the scope of this document. Typically, other terms are used for S and G that are different from those used in this document, e.g. beat-up (S) and pitch (G).

4 Principle

The number of complete tufts and/or loops is counted over a distance L which is at least 100 mm and contains at least 41 complete tufts and/or loops. The number of tufts and/or loops is counted in directions parallel to and at right angles to the selvedge, and the number per unit area calculated.

5 Apparatus

5.1 Ruler, graduated in millimetres.

6 Conditioning of test specimens

Lay the specimens out flat, singly and with the use-surface uppermost in an atmosphere having a temperature of (20 ± 2) °C and a relative humidity of (65 ± 4) %, for at least 24 h. Measure the specimens in the same atmosphere.

7 Test specimens

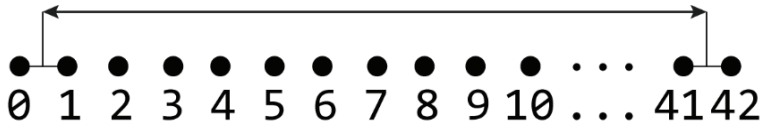
Select four areas representative of the sample, such that each edge contains at least 41 tufts and/or loops and is not less than 100 mm in length. Avoid selecting any area within 100 mm of any boundary of the sample.

For machine-made products, follow the procedure in ISO 1957.

Ensure that the specimens are marked clearly in the directions parallel to and at right angles to the selvedge.

8 Procedure

Measure the distance (with the ruler) between (the middle of tufts/loops numbers 0 and 1) and (the middle of the tufts/loops numbers 41 and 42) and count 41 tufts and/or loops (See Figure 4).



Key

⊥ measured distance

Figure 4 — Measuring of distance

If the distance covered by 41 tufts/loops is less than 100 mm, continue to count until the number of complete tufts and/or loops extends over at least 100 mm. Where two or more pile yarns lie side by side but are not twisted together, count them as one tuft. If the carpet is not of uniform construction, note the form of construction.

Repeat this measurement on each specimen in directions parallel to and at right angles to the selvedge.

For some carpets, it can be difficult to count the number of tufts. In this case, it is allowed to shear the pile material before counting the number of tufts (see 3.1 for the definition of tuft).

For artificial turf, the count shall be done at the backside of the product, if it only consists out of a primary backing or a woven backing. In that case, the counting starts where a tuft row begins and stops where the tuft row ends as illustrated in Figure 5: start counting at the beginning of a red block on the figure and stop counting at the beginning of the next red block.

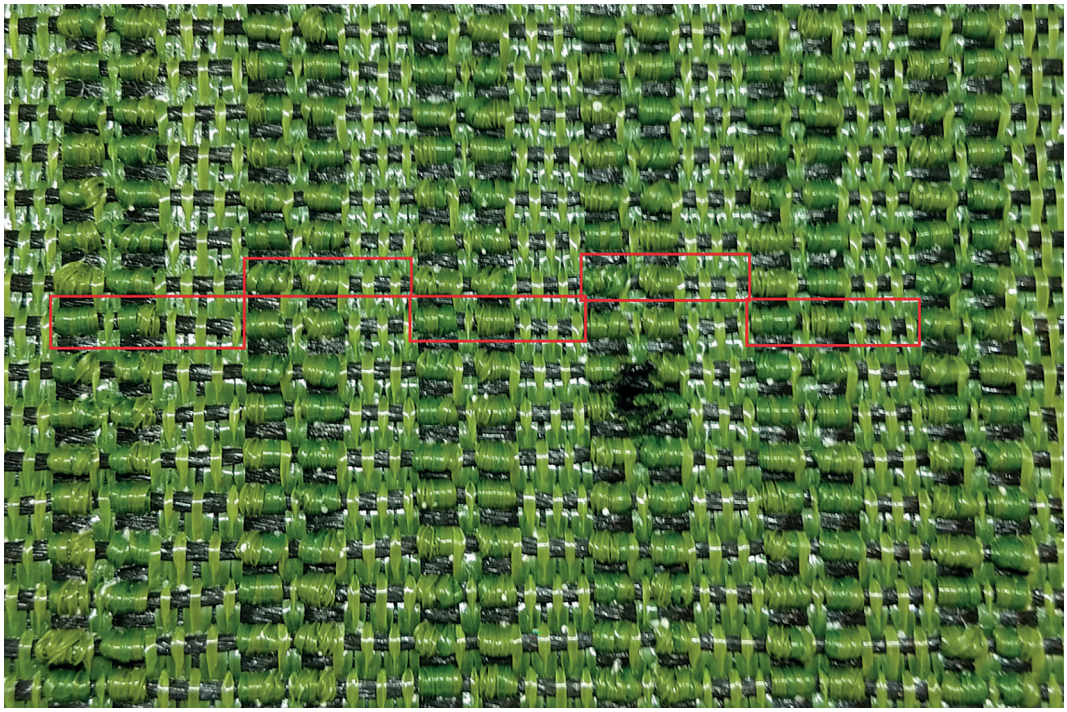


Figure 5 — Example of counting

9 Expression of results

9.1 Number per unit length

Calculate the number of tufts and/or loops S and G per unit length L in each direction, using the following formulae:

$$S = 100\frac{\sum N_s}{\sum L_s}$$

$$G = 100\frac{\sum N_g}{\sum L_g}$$

where

N_s and N_g equal the number of tufts and/or loops in each specimen in directions parallel to and at right angles to the selvedge respectively;

L_s and L_g equal the actual lengths in millimetres measured in directions parallel to and at right angles to the selvedge respectively.

9.2 Number per unit area

If required, calculate the number of tufts and/or loops per 10 000 mm^2, 1 dm^2 or 0,01 m^2 by multiplying the values of S and G obtained as described in 9.1.

10 Test report

The test report shall include the following information:

a) a statement that the test was conducted in accordance with this document, i.e. ISO 1763;

b) the values of *S* and *G* calculated per unit length as described in 9.1 to an accuracy of one decimal place;

c) if required, the number of tufts and/or loops per 10 000 mm^2, 1 dm^2 or 0,01 m^2, calculated as described in 9.2;

d) the type of tuft and the form of construction if it is not uniform.