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Textile floor coverings — Installation practices — General

Revêtements de sol textiles — Pratiques d'installation — Généralités

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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.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 219, *Floor coverings*.

This first edition of ISO 18167 cancels and replaces ISO/PAS 18167:2014, which has been technically revised.

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

— update of methods and standards referenced in Annex E.

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.

Introduction

The objective of this document is to provide the contractors, manufacturers, suppliers, and purchasers of textile floor coverings and others, for example technical educators, with procedures to enable the provision of correctly installed textile floor coverings.

Textile floor coverings — Installation practices — General

1 Scope

This document sets out the requirements for installing textile floor coverings (carpets). It gives details of the work necessary in preparing subfloor surfaces together with the procedures that are to be adopted where textile floor coverings are laid over various types of subfloors and underlays and where subfloor heating units are installed.

NOTE This document addresses needle insertion tufted, woven, fusion bonded, fibre bonded, knitted, non-woven, felted, and flocked textile floor coverings.

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

ISO 1765, *Machine-made textile floor coverings — Determination of thickness*

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

ISO 2094, *Textile floor coverings — Determination of thickness loss under dynamic loading*

ISO 2424, *Textile floor coverings — Vocabulary*

ISO 3415, *Textile floor coverings — Determination of thickness loss after brief, moderate static loading*

ISO 9073-3, *Textiles — Test methods for nonwovens — Part 3: Determination of tensile strength and elongation*

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
adhesive
substance that dries to a film capable of holding materials together by surface attachment

Note 1 to entry: Applying adhesive to the floor is normally accomplished with a *trowel* (3.17), airless spray, or roller

3.2
contractor
firm or person authorized by the *purchaser* (3.9) to carry out the laying of the textile floor covering

3.3
crotch
junction of the lower edge of the riser with the rearmost edge of the stair tread

3.4
fill-out
installed length of textile floor covering of a width dimension less than its usable manufactured width

3.5
laitance
layer of material formed from the constituents of concrete which can collect on the surface soon after pouring

3.6
pH
value representing the concentration of hydrogen ions in gram-equivalents per litre used to indicate the acidity or alkalinity (base) of a substance on a scale from 0 to 14 with 7 representing neutrality, numbers less than 7 increasing acidity, and numbers greater than 7 increasing alkalinity

Note 1 to entry: For laboratory and field testing of pH, distilled water should be used.

3.7
plane
<surface> condition such that when a straightedge 3,0 m long is placed on the surface at any position, no part is more than 5 mm above or below the straightedge

3.8
power stretcher
mechanical stretching device
carpet installation tool used to stretch carpet for installation on the tack strip which consists of a pinned plate that grips the carpet, tubular extensions, a padded end used to brace against an opposing wall or other structure, and a lever system that multiplies the installer's applied stretching force

3.9
purchaser
principal to the contract or person authorized by the principal to superintend the work on his/her behalf

3.10
seam
joints or interface of two pieces of carpet using various securing techniques in a carpet installation

3.11
seam sealing
edge sealing
application of *seam adhesive* (3.16) to secure and protect cut edges of carpet to be seamed from edge ravelling and delamination

3.12
seaming tape
tape used for joining two sections of the carpet

Note 1 to entry: Hot-melt tape is pre-coated with a thermoplastic adhesive and *adhesives* (3.1) can be applied separately to other types of seaming tapes.

3.13
smooth
<surface> condition such that, when a straightedge 150 mm long is placed on the surface at any position, no part of it is more than 1 mm below the straightedge

3.14
stair nosing
leading edge of a stair thread

Note 1 to entry: For carpet installation, it is required that this edge be rounded.

3.15
subfloor
surface on which the textile floor covering or the underlay is to be laid

Note 1 to entry: See Figure 1.

3.16
subfloor heating
underfloor heating
any panel heating appliance or system whereby the *subfloor* (3.15) structure is warmed intentionally for space heating purposes

3.17
trowel
hand implement used for metering and spreading *adhesive* (3.1) to the floor or other substrate

3.18
work of compression
work done on the underlay when the pressure is increased from 2 kPa to 100 kPa, i.e. the area under the *load-deflection curve* (3.20)

Note 1 to entry: A value of *deflection* (3.21) alone does not indicate the shape of the load-deflection curve. However, work of compression does distinguish between soft underlays, although they can have the same value for deflection, have different energy absorbing characteristics, and hence, differently shaped load-deflection curves.

3.19
initial thickness of underlay
thickness of the underlay measured under a pressure of 2 kPa

3.20
load-deflection curve
plot of decreasing thickness against increasing pressure from 2 kPa to 100 kPa

3.21
deflection
compression
change in thickness of the underlay when the pressure is increased from 2 kPa to 100 kPa

3.22
fibrous underlay
underlay made of fibrous material consolidated by impregnation with a binding agent

3.23
needlefelt underlay
underlay made wholly of fibres entangled or matted together by needling of a fibre batt

Note 1 to entry: A woven, non-woven, or film scrim may be included in a *fibrous underlay* (3.22) for support during manufacture.

3.24
cellular plastics (polymeric) underlay
cellular polymeric underlay
underlay formed essentially of a vulcanized rubber foam, with or without a carrier or backing materials bonded thereto

4 Materials

4.1 Textile floor coverings

Textile floor coverings shall comply with the requirements of the relevant International Standards. Where applicable, the textile floor covering referred to in this document shall be suitable for use above subfloor heating where the temperature of the upper surface of the subfloor does not exceed 29 °C.

4.2 Underlays

4.2.1 Underlays

Unless the subfloor is substantially free from grooves, ridges, gaps, holes, and similar imperfections, the use of a hard underlay is recommended.

Where a hard underlay is used, the following requirements apply:

a) the underlay shall have an estimated service life not shorter than that of the textile floor covering;

b) the underlay shall be compatible with the textile floor covering and the adhesive(s) to be used;

c) the underlay shall be non-staining, non-exuding, and sufficiently dense to withstand normal traffic load on the floor without becoming indented or deformed;

d) the underlay shall be capable of being bonded to the subfloor in such a manner that the bonding is not affected by normal traffic loading;

e) the underlay shall be non-shrinking to the extent that when the textile floor covering is laid, no evidence of gaps shall be visible;

f) the maximum variation in length between the diagonals of underlay sheet shall not exceed 1,0 mm;

g) for timber subfloors, the underlay shall be either reduced density hardboard flooring underlay or medium density fibreboard or medium density fibre cement sheet known to manufacturers as hard underlay.

NOTE Other products can be used if agreed between the contractor and the purchaser.

4.2.2 Soft underlays

The soft underlay shall have a service life no shorter than that of the textile floor covering in accordance with the recommendations of the underlay manufacturer and the carpet manufacturer. The requirements for soft underlays are detailed in Annex E of this document, supplemented by the related test methods in Annexes F and G that shall be followed.

In commercial applications, soft underlays shall have a total thickness not greater than 10 mm. For installation of soft underlays, see 6.7 and 6.8.

Carpet should never be laid over existing carpet and/or existing underlay as this can cause permanent damage to the new floor covering installation.

4.3 Adhesives

The choice of adhesives shall be made by consultation between the contractor and the manufacturer/supplier of the selected underlay, manufacturer/supplier of the textile floor covering, and the manufacturer/supplier of the adhesive and the purchaser shall be advised if requested.

Adhesives used shall be such that they ensure minimal hazardous risk to both personnel and property involved with the installation and site.

Safety data sheets which should be easily obtainable from manufacturers of all chemical products should be provided on-site whenever adhesives are being used.

Where the relative humidity of the atmosphere in the building is 75 % or more, only adhesives suitable for such conditions shall be used. Any such adhesive shall be used in accordance with the instructions of the manufacturers of the textile floor covering and of the adhesive.

NOTE 1 In high humidity, condensation can form on the surface of the substrate and/or adhesive and prevent adhesion of the flooring.

Where subfloor heating units are installed, the adhesive shall be such that it is not affected adversely by the temperature at which the heating units are to be operated.

Where additives such as curing agents, parting agents, and surface treatments which can have a deleterious effect on an adhesive are present on the subfloor, the adhesive shall be isolated from the deleterious material/s with the use of appropriate trowelled-on compounds.

NOTE 2 Some curing agents might need to be removed by grinding or sanding. Some parting agents can be removed by washing with sugar soap, water blasting, and/or grinding.

4.4 Carpet gripper

The carpet gripper shall be constructed of five even thickness plywood layers.

The carpet gripper shall be constructed of sufficient pins and nails so as to withstand a minimum stretching force of 6 580 N over a 1 220 mm length.

5 Pre-installation requirements

5.1 Site inspection and report — Commercial installations

5.1.1 Inspection by contractor

For textile floor coverings to be installed, a state of cleanliness for concrete/timber floors is required. Cleanliness of floors can require, as a minimum, sanding, grinding, power washing, wet/dry vacuuming, or similar.

If dry clean processes are used, remove all residual waste materials by vacuuming. If wet clean processes are used, ensure that the floors are dry enough to vacuum waste surface materials before installing the textile floor coverings.

The contractor shall obtain the site information on the subfloor outlined in Annex A and inspect the following:

a) each of the relevant particulars required in Annex A;

b) whether any repairs to the subfloor are required and whether the surface of timber subfloors needs to be sanded;

c) whether the surface of the subfloor requires cleaning to remove existing floor covering, any deleterious materials such as grease, oil, paint curing or parting agents, or any surface treatment which could adversely affect adhesion.

5.1.2 Report by contractor

If the contractor considers the subfloor under inspection to be unsuitable, the contractor shall submit a report in writing to the purchaser, and where appropriate, the builder.

The report shall state the following:

a) whether the subfloor over which the floor covering is to be laid is in suitable condition;

b) any and all conditions that, in the contractor's opinion, will affect the satisfactory execution of the installation work or impair the durability and serviceability of the textile floor covering or installation systems.

Where the contractor indicates that the subfloor is not in a suitable condition for laying of the floor coverings, the contractor shall specify reasons for the unsuitability of the subfloor.

Where the contractor indicates that removal or rectification work on the subfloor, doors, quads, or scotia moulding is needed, the contractor shall advise the purchaser that this work is the responsibility of other parties or as otherwise agreed.

5.2 Installation site — Residential installations

The contractor shall advise the purchaser, prior to installation, of the factors which can make the subfloor unsuitable to receive the new floor covering(s). Where the condition of the subfloor can be practically determined, the contractor shall advise the purchaser of necessary remedial work.

5.3 Exchange of information

5.3.1 General

The information to be exchanged between the contractor and the purchaser shall include advice as to whether the installation should be in accordance with the commercial or residential laying requirements of this document.

Where, because of economics or aesthetics, compliance with part of the content of this document is not practical, the contractor shall discuss the effects of non-compliance with the purchaser and reach an understanding on the effects of non-compliance.

5.3.2 Commercial installations

In addition to the information required to be provided by the contractor, elsewhere specified in this document, there shall be consultation, preferably early in the design stage and generally throughout the whole course of the contract between all parties concerned with the work. Information to be exchanged shall include the following as applicable:

a) site factors such as location, access, other contractors on site, unloading, hoisting and storage facilities, air conditioning, heating, lighting and power supply, floor loading, and security arrangements;

b) building factors such as the nature of the building, assessment of type and density of traffic, particulars of corrosive conditions, or other potentially damaging conditions;

c) specifications for or details of

   1) the floor structure,

   2) the damp-proof membrane and its location within the floor construction,

   3) screed curing and drying times,

   4) floor warming installations,

   5) underlays,

   6) adhesives and accessories including floor preservation treatments,

