

Installation of textile floor coverings — Code of practice

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee PRI/3, Textile floor coverings, upon which the following bodies were represented:

- BAMA
- BEAMA Ltd. — Industrial Cleaning Machines
- British Association for Chemical Specialities
- British Institute of Cleaning Science
- British Polyolefin Textiles Association
- British Shops and Stores Association
- British Textile Technology Group
- Carpet Cleaners Association
- Confederation of British Wool Textiles Ltd.
- Consumer Policy Committee of BSI
- Contract Flooring Association
- Entrance Flooring Systems Association
- Fibre Bonded Carpet Manufacturers Association
- Society of Dyers and Colourists
- Textile Institute
- The Carpet Foundation
- Trading Standards Institute
- Wools of New Zealand

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Foreword

This British Standard has been prepared by Technical Committee PRI/3. It is a revision of BS 5325:1996 which is withdrawn.

As a code of practice this British Standard takes the form of guidance and recommendations. It should not be quoted as a specification and particular care should be taken to ensure that claims of compliance are not misleading.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, inside front cover, pages i and ii, pages 1 to 31 and a back cover.

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1 Scope

This British Standard gives recommendations for the installation of textile floor coverings in new or existing buildings. It covers all products composed of textile material with a pile or non-pile use surface, and includes the laying of carpet tiles, either with the use of a permanent adhesive or a tackifier. It details suitable methods of design and installation and advises on the selection of the materials required for their implementation.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 5557, *Textile floor coverings — Vocabulary*. (ISO 2424)

BS 5808, *Specification for underlays for textile floor coverings*.

BS 7916, *Code of practice for the selection and application of particleboard, oriented strand board (OSB), cement-bonded particleboard and wood fibre boards for specific purposes*.

BS 7953, *Entrance flooring systems — Selection, installation and maintenance*.

BS 8204-1:1999, *Screeds, bases and in-situ floorings — Part 1: Code of practice for concrete bases and screeds to receive in-situ floorings*.

BS EN 312-2:1997, *Particleboards — Specifications — Part 2: Requirements for general purpose boards for use in dry conditions*.

BS EN 312-4:1997, *Particleboards — Specifications — Part 4: Requirements for load-bearing boards for use in dry conditions*.

BS EN 622-2:1997, *Fibreboards — Specifications — Part 2: Requirements for hardboards*.

BS EN 622-4:1997, *Fibreboards — Specifications — Part 4: Requirements for softboards*.

BS EN 622-5:1997, *Fibreboards — Specifications — Part 5: Requirements for dry process boards (MDF)*.

BS EN 636-1, *Plywood — Specifications — Part 1: Requirements for plywood for use in dry conditions*.

BS EN 1307, *Textile floor coverings — Classification of pile carpets*.

BS EN 1470, *Textile floor coverings — Classification of needled floor coverings except for needled pile floor coverings*.

BS EN 12825, *Raised access floors*.

BS EN 13297, *Textile floor coverings — Classification of needled pile floor coverings*.

IEC/TS 61340-4-1, *Electrostatics — Part 4: Standard test methods for specific applications — Section 1: Electrostatic behaviour of floor coverings and installed floors*.

IEC/TS 61340-5-1, *Electrostatics — Part 5: Protection of electronic devices from electrostatic phenomena — Section 1: General requirements*.

3 Terms and definitions

For the purposes of this British Standard the following terms and definitions apply.

3.1

fabricated underlay

fabricated substrate (non-preferred)

manufactured board made from wood, wood particles or wood fibres in panel form, or calcium sulfate (gypsum), to provide a suitable surface to receive the specified floor covering

3.2

screed

layer of well-compacted material, commonly a mixture of cement and aggregate, applied in situ to a concrete base

3.3

mastic asphalt

mixture of bitumen and an inert mineral aggregate

3.4

impregnation

treatment of a base or a screed by application of a liquid product intended to penetrate the pores without forming a continuous layer on the surface

3.5

levelling layer

layer applied to compensate for unevenness and differences in height in the base, to accommodate services, or to give a uniform absorbency where water-based adhesives are to be used

3.6

flowing screed

in situ applied material that sets hydraulically or by chemical cure

NOTE This is normally a proprietary compound to be used in accordance with manufacturer's recommendations. It is poured or pumped directly to the concrete slab to form a smooth level surface, ready to receive most floor coverings.

3.7

anhydrite screed

formulated flowing screed based on hydraulically setting calcium sulfate

3.8

underlayment

thin layer applied to a screed to provide a smooth and/or flat surface to receive the floor covering

3.9

interlay

thin flexible sheet, supplied in 1 m to 2 m wide rolls

NOTE This interlay is laid below foam backed carpets to facilitate easy removal and to stop foam adhesion to the subfloor. Dust and other subfloor contamination are stopped from being transferred onto the underfelt or floor covering. The interlay gives enhanced thermal insulation properties to the floor covering.

3.10

carpet underlay

a coherent layer of textile or other material placed beneath an exposed floor covering

NOTE 1 It may be fibrous, non-fibrous or combined. It provides underfoot comfort, sound absorbing and energy absorbing properties.

3.11

electrostatic discharge sensitive device

ESDS

a discrete device, integrated circuit or assembly that may be damaged by electrostatic fields or electrostatic discharge encountered in routine handling, testing or transit
[IEC/TS 61340-5-1]

3.12**electrostatic protected area****EPA**

area in which an ESDS can be handled with accepted risk of damage as a result of electrostatic discharge or fields

[IEC/TS 61340-5-1]

3.13**crotch**

junction of the lower edge of the riser with the rearmost edge of a stair-tread

3.14**shading**

general description given to a number of optical effects in the appearance of textile floor coverings due to localized alterations in the orientation of the fibres, tufts or loops

NOTE This is not a real change in hue, but a difference in light reflection.

4 Exchange of information**4.1 General**

In order for the correct floor covering to be installed in appropriate conditions, and at the right time, it is essential that all parties have a clear understanding of the requirements of the project, e.g. new build or refurbishment, and of the implications for all concerned. To ensure that this is achieved, it is essential that there is wide consultation between all parties involved in the project, including subcontractors and materials suppliers. This consultation should start early in the design stage but should continue throughout the contract, especially if requirements or time-scales change and as new sub-contract work is initiated.

As each project will be unique it is impossible to give a definitive list of the information to be exchanged, but 4.2 to 4.9 give typical examples.

4.2 Project

The name and location of projects and personnel involved in pre-contract negotiations should be identified.

4.3 Contract conditions

A programme for commencement and completion of work should be defined, including any specific requirement for sequenced completion.

4.4 Special attendance

Access, unloading, hoisting and storage facilities, heat, light and power and any additional items considered necessary to expedite the work should be provided.

4.5 Design**4.5.1 General**

The flooring layout and specifications, based on building type and occupational uses, should be provided, for example:

- a) type of use — building, rooms;
- b) type and density of foot and/or wheeled traffic;
- c) specific requirements: fire resistance period, acoustic absorption level, slip resistance;
- d) particulars of use — staining, potentially abrasive conditions.

4.5.2 Floor details

The completed drawings/specification should provide comprehensive information on:

- a) whether upper floor, ground floor or below ground level;
- b) whether ground-supported or suspended construction;
- c) particulars of any underfloor heating installation or security installation;
- d) position and treatment of expansion joints;
- e) curing and drying times of screeds and bases likely to be required before the installation of floor coverings;
- f) screed or base with finished floor level, permissible departure from datum and class of surface regularity required;
- g) in refurbishment work, the type and condition of existing base or floor finish and any type of treatment required;
- h) type of damp-proof membrane and position within the floor construction, in particular, the need for a surface applied membrane where likely drying times for the base exceed the time available in the programme;
- i) choice of substrate, underlayment, adhesives, intermediate products and floor coverings;
- j) requirements for jointing, e.g. seam welding, direction of material and position of seams; or the position and type of expansion joints profiles;
- k) size, position and design of entrance flooring systems (see BS 7953).

4.5.3 Entrance zone

The size, position and design of the entrance zone should be considered at the design stage, in accordance with BS 7953.

NOTE Entrance flooring systems will reduce the dirt, grit and water carried into the building by foot traffic, and hence will reduce wear and the risk of slipping when the building is in service.

4.5.4 Associated details

Details of abutments, skirtings, services (embedded or sleeved), movement joints, separating strips, pattern or border details and junction with other adjacent flooring should be provided.

4.5.5 Shading

“Shading” (see 3.14) cannot usually be attributed to a fault of manufacture or installation, but architects and specifiers should be aware of this phenomenon in certain styles of carpets.

4.6 Testing

Details of any conformity testing of the base, screed and floor covering that is to be conducted, and the party to be responsible for this testing, should be provided. The implications of this also have to be considered in the programme defined in 4.3. For instance, it is essential that the responsibility is defined for ensuring that bases or screeds meet the specified standards of level, smoothness, dryness and soundness (impact crushing resistance) before any subsequent or finishing trades are called to commence work.

NOTE In the case of new-build installations, this will be the responsibility of main contractor.

4.7 Health and safety

Arrangements for liaison and cooperation on health and safety requirements between the different parties in the contract should be established.

4.8 Responsibilities

Responsibilities for cleaning the construction on completion and giving it initial protection should be defined.

4.9 Maintenance

The customer should be left with adequate details of the maintenance required to enable the floor covering to perform satisfactorily in use. The recommendations should include details of the various types of cleaning and maintenance needed and the time scales at which they should be carried out.

NOTE It is preferable that such instructions be in clear, written form, and cover the recommended maintenance methods appropriate for all the types of floor coverings installed.

5 Materials

5.1 Fabricated underlays (see also 6.6)

Fabricated underlays may be selected from the following:

- a) plywood conforming to BS EN 636-1;
- b) particle board Type P2 conforming to BS EN 312-2:1997, or if improved bending strength and stiffness are required, Type P4 conforming to BS EN 312-4:1997 (see 6.7.3 of this standard);
- c) fibreboard: hardboard Type HB conforming to BS EN 622-2:1997, high density medium board Type MBH conforming to BS EN 622-4:1997 and medium density fibreboard Type MDF conforming to BS EN 622-5:1997 (see 6.7.4 of this standard);
- d) gypsum board;
- e) others.

The strength and construction of the fabricated underlay should be such that it is able to function in use without swelling, shrinkage, delamination or disintegration.

5.2 Cementitious based substrates (levelling layer)

A levelling layer should be used where a conventional cement-sand screed is considered unsuitable because of thickness or other limitations.

The levelling layer may be a cementitious underlay consisting of a specially formulated blend of cement and binder and both fine and coarse aggregates.

NOTE The binder is commonly a natural rubber latex or synthetic polymer.

5.3 Anhydrite screed

It is recommended that moisture content is measured according to the manufacturer's instructions, e.g. by the method of Annex A. It is essential to abrade the surface to remove laitance if a flooring adhesive is to be applied, and to provide a barrier primer if cement based products are to be applied. The screed manufacturer should be contacted for advice regarding primers.

5.4 Underlayments

Underlayments may be selected from the following:

- a) cementitious underlayment consisting of a specially formulated blend of cement, binder and fine aggregate;
- NOTE The binder is commonly a natural rubber or synthetic polymer dispersion.
- b) powder/water mixes based on casein/cement or polymer/cement and fine aggregate;
 - c) epoxy or other resin compounds (e.g. primer);
 - d) compatible underlayments that are available for direct contact with an anhydrite screed.

5.5 Interlays

Interlays may be of the following types:

- a) dry felt paper, manufactured as a thin, flexible sheet, approximately 0.5 mm to 1.0 mm thick;
- b) sheet manufactured from lightweight melded textile materials;
- c) sheet manufactured from spun-bonded fibres;
- d) release or delaminatable interlays.

5.6 Carpet underlays

Carpet underlays should be as defined, described and classified in BS 5808.

NOTE Carpet underlays usually improve the walking comfort, impact sound insulation, thermal insulation, carpet life and can smooth minor surface irregularities of subfloors. Work on developing a standard for minimum requirements is in progress in CEN/TC 134.

5.7 Textile floor coverings

For details of the types of construction that are available see BS 5557. For assistance on the selection of textile floor coverings for various areas of use, reference should be made to BS EN 1307, BS EN 1470 and BS EN 13297.

NOTE Different types of floor coverings require specific methods of installation, see Table 1.

5.8 Adhesives

5.8.1 General

The selection of adhesive should be considered at the design stage because it can influence the performance during installation, in use, or later during removal. The recommendations of the textile floor covering manufacturer should be taken into account, and followed precisely if they are specific as to the type of adhesive which should be used.

Adhesives may be used to enable carpet tiles to be moved without damage, using a semi-permanent or tackifier adhesive, or for the permanent installation of the floor covering. When the textile floor covering is being laid by a method involving total adhesion to the substrate, alone, with a carpet underlay or in a strippable system, the adhesives used should be compatible with both the materials used in the system and the substrate. In addition to installation with liquid adhesives, textile floor coverings may be fixed by the use of double-sided tapes, which are normally of the self-adhesive type, and release systems (net).

NOTE 1 Fabric reinforced hot melt tapes can be used for joining or seaming certain types of carpet suitable for installation on grippers.

NOTE 2 None of the adhesives can be considered effective as a damp-proof membrane.

5.8.2 Use of adhesive

Recommendations on the suitability of laying various types of textile floor coverings using different systems of adhesion are given in Table 1.

A health and safety risk assessment should be made before using any adhesive. Any special requirements such as ventilation, limited access or other appropriate action to protect either the installer or those individually involved should be agreed with the main contractor before installation.

The adhesive manufacturer's instructions for the use of the adhesive should be followed with particular emphasis on the application tool, e.g. notched trowel (including the correct size, shape and number of notches) or roller, the coverage rate and any follow on process, such as rolling.

NOTE Conductive adhesives are available for static sensitive areas. These contain carbon black, metalized fibres or particles.

6 Subfloors

6.1 General

The appearance and performance of the floor coverings covered by this British Standard are determined to a large extent by the quality of the prepared base or screed.

Those responsible for the design and construction of the subfloor should ensure that it meets the requirements, i.e. should ensure that it has the necessary characteristics to allow the floor coverings to be installed successfully before the installer of the floor covering is asked to commence work. These characteristics include:

- a) regularity of concrete floors and screeds;
- b) moisture content of concrete floors and screeds;
- c) integrity of screeds;
- d) cracks made good;
- e) construction joints treated;
- f) gaps and changes of level;
- g) moisture content of wooden subfloors;
- h) presence of asbestos in an existing floor covering;
- i) the position and depth of cables, heating elements and water pipes (see BS 8201:1987, 6.6.7 and BS 8204-1:1999, 6.4.5 and A.6.)

6.2 Damp-proofing solid floors and eliminating construction moisture

6.2.1 Damp-proofing solid floors

As the floor coverings included in this British Standard together with many adhesives and smoothing compounds used with them may be adversely affected by moisture, subfloors should be constructed so that they protect the floor covering installation from moisture or water vapour from the ground.

Solid floors should be damp-proofed in accordance with BS 8204-1:1999. It should not be assumed that existing ground supported concrete floors are adequately damp-proofed. Beam and block construction floors whether finished with cement-sand screed or particleboard should incorporate a vapour control layer. Where existing structures do not incorporate adequate moisture protection proprietary surface applied membranes should be used.

NOTE Integral water proofers incorporated in the concrete or screed will not provide adequate damp protection for floor coverings and will retard the drying process.

6.2.2 Eliminating construction moisture

Before the floor covering installation is commenced, it is essential to ensure not only that the floor is constructed to prevent moisture transmission from the ground but also that any excess water used in the construction is eliminated.

Usually the floor covering is fixed directly to the concrete base slab or on to a screed laid above this. In either case the amount of water used is more than that required for hydration of any cement used because extra water is normally required to give adequate workability to the mix. It is essential that the excess water be allowed to evaporate and the time for this to happen should be taken into account at the planning stage.

NOTE Estimated drying times are, of necessity, only very approximate as drying is influenced by ambient conditions, the concrete use, thickness and surface finish.

For cement-sand laid directly over a damp-proof membrane, one day should be allowed for each millimetre of thickness for the first 50 mm, followed by an increasing time for each millimetre above this thickness. It is thus reasonable to expect a screed 50 mm thick drying under good conditions to be sufficiently dry in two months.