Chapter 8.3

Floor finishes

8.3 Floor finishes

CONTENTS

SCOPE

This Chapter gives guidance on meeting the Technical Requirements and recommendations for floor finishes, including integral insulation, screeds, ceramic, concrete and similar tiles, flexible sheet and tiles, wood block and asphalt.

DESIGN STANDARDS

8.3 - D1 Design shall meet the Technical Requirements

Design that follows the guidance below will be acceptable for floor finishes.

STATUTORY REQUIREMENTS

8.3 - D2 Design shall comply with all relevant statutory requirements

Designs should be in accordance with relevant Building Regulations and other statutory requirements.

SCREEDING

8.3 - D3 Floor screeds shall be suitable for their intended use

Items to be taken into account include:

(a) background

BOND

Background surfaces for bonded screeds should provide an adequate mechanical key. If necessary, cement grouting or a bonding agent should be specified to provide adequate adhesion.

MOISTURE PROTECTION

The floor design should ensure that moisture from the ground does not enter the dwelling. For details, reference should be made to Chapters 5.1 'Substructure and ground bearing floors' (Design) and 5.2 'Suspended ground floors' (Design).

(b) services

Provision should be made for:

- thermal movement of water pipes
- protection against chemical attack, for example by using purpose-made pipe sleeves or ducts.

(c) screed mix

Cement and sand screeds should normally be a mix between 1 : 3 and 1 : 4½. Screeds more than 40mm thick may be of concrete.

Proprietary additives should have been assessed in accordance with Technical Requirement R3.

(d) screed thickness

Cement and sand screeds should be not less than the following thickness:

Method of laying	Minimum thickness at any point(mm)
Laid monolithically with base	12
Laid on and bonded to a set and hardened base	20
Laid on a separating membrane (eg 1000g polyethylene)	50
Laid on resilient slabs or quilts (screed reinforced with galvanized wire mesh)	65
Above services, reinforcement or insulation toservices	25

For concrete ground bearing floors, up to 20mm thickness of monolithic screed may be acceptable as part of the required thickness.

Where service pipes are bedded in the screed, the screed should be deep enough to provide at least 25mm of cover over pipes and insulation.

(e) bay size

Screeds over underfloor heating should be sub-divided into bays not exceeding 40m² in area. Otherwise, room size laying is preferable. Expansion joints in screeds should be consistent with joints in the slab.

(f) curing

A curing period should be allowed until the screed achieves sufficient strength to resist shrinkage stresses and other damage.

(g) surface quality

SCREEDS UNDER FINISHES

Screeds intended to be covered with floor finishes should provide an even surface as appropriate.

Recommendations for screeds suitable for various floor finishes are given in the British Standards referred to in Materials clause 8.3 - M2. BS 8204 gives recommendations for screeds to receive in-situ floorings.

POWER FLOATED FINISH

Concrete floor slabs may be suitably finished to serve directly as a wearing surface without the need for an additional topping, in accordance with recommendations of BS 8204.

USE OF SEALERS OR HARDENERS

If required, surface sealers or hardeners should only be used in accordance with manufacturers' instructions.

(h) moisture content

The moisture content of screeds to receive other finishes, should be:

- generally in accordance with relevant British Standards
- in accordance with floor finish manufacturers' recommendations, where available.

(i) thermal insulation material below screeds

Insulation below screeds should provide adequate compressive strength to support wet construction screeds and floor loads.

Suitable materials are described in clause M8. Insulants should be compatible with any dpm in contact with the insulation.

(j) sound insulation material below screeds

Screeds above compressible material in sound insulating floating floors should be laid on an isolating membrane (for

example building paper) and reinforced with galvanized wire mesh.

Suitable insulation materials are described in clause M7.

CERAMIC, CONCRETE, TERRAZZO AND SIMILAR TILE FINISHES

8.3 - D4 Tile floorings shall provide a suitable surface for the intended use

Items to be taken into account include:

(a) background

EVENNESS

The substrate should provide a plane surface. Falls should be specified where required.

MOISTURE PROTECTION

Where floor tiling is laid above ground bearing floor slabs, a dpm should be incorporated below or above the floor slab.

(b) application

Floor tiling should be in accordance with the recommendations of BS 5385 : Part 3. Care should be taken to ensure that:

- the concrete base or screed is true and level
- sufficient drying time has been allowed, ie at least 6 weeks for concrete base, 3 weeks for screed.

TILES ON WOOD-BASED SUBSTRATE

The floor should be designed to take the additional loads of tiles and any other materials (e.g. overlays). Tiles should be suitable for laying over a timber base.

The floor decking should be:

- plywood for use in exterior conditions (minimum 15mm for joists at 400/450mm centres and minmum 18mm for joists at 600mm centres) screwed to the joists at 300mm centres with all square edges supported on joists or noggins. Plywood should be laid with a 1.5-2mm movement gap between boards and at abutments
- chipboard floor decking overlaid with minimum 10mm plywood suitable for exterior conditions and fixed as above, or proprietary separating/de-coupling layers, tile backer boards or tile bedding reinforcement sheets used in accordance with the manufacturer's recommendations.

Deformable (flexible) tile adhesive (e.g. C2S1) and grout should be used in accordance with the adhesive manufactuer's recommendations.

ASPHALT FINISHES

8.3 - D5 Asphalt finishes shall be suitable for their intended use

Asphalt floor finishes should be in accordance with BS 6925 (limestone aggregate). Suitable thicknesses and grades include:

Use	Thickness (mm)	Grade
Floorfinish	15 to20	I or II
Underlay for other finishes (in one coat)	15to 20	I or II

Suspended floor system manufacturers should be consulted where mastic asphalt floor finishes are to be used with such systems.

FLEXIBLE SHEET AND TILE FINISHES

8.3 - D6 Flexible sheet and tile flooring shall provide a suitable surface for the intended use

Items to be taken into account include:

(a) background
BS 8203 gives recommendations on the use of flexible sheet and tile floorings.

EVENNESS

Substrates should be sufficiently level to achieve an acceptable floor surface. If necessary, a levelling underlay should be provided.

Acceptable types of underlay for boarded surfaces include the following:

Type of underlay	Minimum thickness (mm)
Hardboard	3.2
Plywood	4.0
Chipboard	9.0
Oriented strand board	6.0

MOISTURE PROTECTION

Where flexible sheet or tile flooring is laid on ground bearing concrete floors, a dpm should be incorporated to prevent rising moisture adversely affecting floor finishes.

Screeds or concrete surfaces should be sufficiently dry to avoid any adverse effects on the flooring.

Where there is a risk of trapping moisture from spillage or interstitial condensation, permeable finishes should be used.

(b) laying and fixing
Flexible tiles and sheets should be laid, using the adhesive and the method recommended by the manufacturer.

Special precautions, such as welded seams, may need to be specified to prevent curling, bubbling and lifting.

(c) accessories
Skirtings should be specified, where appropriate.

WOOD FINISHES

8.3 - D7 Wood and wood-based flooring shall be designed to provide a suitable wearing surface for the intended use

Items to be taken into account include:

(a) background
BS 8201 gives recommendations on the use of wood and wood-based floorings for directly and indirectly applied finishes.

BS 5250 gives recommendations on the use of vapour control layers with wood and wood-based floorings.

Screeds or concrete to receive wood flooring should be sufficiently dry to avoid any adverse effects. Tests for moisture content are given in BS 8201.

A damp-proof membrane should be incorporated as appropriate.

DIRECTLY APPLIED FINISHES

(wood blocks, parquet, wood mosaic, etc)
Floor finishes should be applied with the correct adhesives, for example:

- bitumen rubber emulsion (in accordance with BS 8201)
- proprietary adhesives (assessed in accordance with Technical Requirement R3) in accordance with manufacturers' instructions.

Screeds or concrete surfaces to receive wood finishes:

- should be treated with a suitable primer where recommended by the adhesive manufacturer.

INDIRECTLY APPLIED FINISHES

(softwood boarding, wood-based panel products)
The following precautions should be taken:

- vapour control layers may need to be incorporated above the insulation
- battens should be preservative treated in accordance with recommendations given in Chapter 2.3 'Timber preservation (natural solid timber)'
- provision should be made for local support for heavy items such as storage heaters, boilers, etc
- battens should be at appropriate centres, generally in accordance with the following:

Thickness of finish (mm)	Maximum batten centres (mm)
Chipboard (type P5)	
18/19	450
22	600
Plywood	
15	450
18	600
Oriented strand board (type OSB3)	
15	450
18-19	600

- fixings to battens should prevent excessive movement and should be in accordance with manufacturers' recommendations.

(b) services
Wherever possible, services beneath the floor finish should be tested before floor laying is commenced.

(c) sound insulation
Floating floor finishes should be designed to:

- isolate the floor finish from the supporting floor and all walls
- avoid excessive movement or squeaking
- avoid the use of fixings which penetrate the insulation layer.

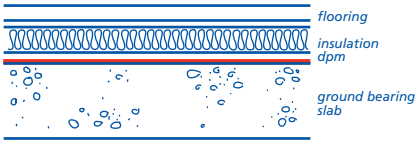
Floors should be designed so that there are no airpaths, especially at the perimeter. This limits the transfer of airborne sound and avoids flanking transmission.

SOFT FLOOR COVERING

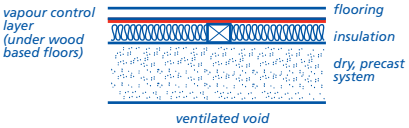
Where a floor relies on a soft floor covering to provide the minimum standard of sound insulation, the covering should be fixed permanently in position.

(d) thermal insulation
Methods of providing insulation include the following:

- insulation above in-situ concrete slab *(dpm required)*



- insulation above dry, precast system *(dpm NOT required).*



Proprietary insulated flooring should be assessed in accordance with Technical Requirement R3. Manufacturers' recommendations regarding provision of vapour control layers and damp-proof membranes should be followed.

Further information can be found in BS 5250 and the BRE Report 'Thermal insulation: avoiding risks'.

STAIRCASE FINISHES

8.3 - D8 Staircase finishes shall allow safe use of the staircase

Items to be taken into account include:

(a) rise and going
Staircase pitch and tread dimensions are specified in Chapter 6.6 'Staircases' (Design). It is important that rise and going remain consistent and are not affected by the staircase finish, particularly at the top and bottom of the flight.

(b) slip resistance
Guidance on staircase finishes of flexible sheet or tiles is included in BS 8203.

Communal staircases, such as those providing means of escape in fire, should be provided with a non-slip surface or nosing.

PROVISION OF INFORMATION

8.3 - D9 Designs and specifications shall be produced in a clearly understandable format and include all necessary information

Drawings and specifications should cover at least:

- schedule of finishes
- screed thickness and mix
- details of sound insulating floors
- extent and detail of tiled surfaces
- location of services adjacent to tiled surfaces
- details of staircase finishes.

8.3 - D10 All relevant information shall be distributed to appropriate personnel

Ensure that design and specification information is issued to site supervisors and relevant specialist sub-contractors and/or suppliers.

MATERIALS STANDARDS

8.3 - M1 All materials shall:
(a) meet the Technical Requirements
(b) take account of the design

Materials that comply with the design and the guidance below will be acceptable for floor finishes.

Materials for floor finishes shall comply with all relevant standards, including those listed below. Where no standard exists, Technical Requirement R3 applies (see Chapter 1.1 'Introduction to the Standards and Technical Requirements').

References to British Standards and Codes of Practice include those made under the Construction Products Directive (89/106/EEC) and, in particular, appropriate European Technical Specifications approved by a European Committee for Standardisation (CEN).

SCREEDING MATERIALS

8.3 - M2 Materials selected for screeding shall be adequate for the location and intended use

Relevant standards include:

BS 8204	In-situ floorings

The following standards include references to concrete and screed as sub-base:

BS 8201	Code of Practice for flooring of timber, timber products and wood-based panel products
BS8203	Code of Practice for installation of sheet and tile flooring
BS5385	Wall and floor tiling.

CERAMIC, CONCRETE, TERRAZZO AND SIMILAR TILE FINISHES

8.3 - M3 Materials for tile flooring shall be adequate for the location and intended use

BS 5385 Wall and floor tiling contains references to materials for ceramic, concrete and similar floor tiles.

Items to be taken into account include:

(a) ceramic tiles

Relevant standards include:

BS 5385 Part 3	Code of Practice for the design and installation of ceramic floortiles and mosaics.
BS EN14411	Ceramic tiles. Definitions, classification, characteristics and marking.

(b) terrazzo tiles

Relevant standards include:

BS EN 13748: Parts 1 and 2	Terrazzo tiles
BS8204	Screeds, bases and in situ floorings. Concrete bases and cement sand levelling screeds to receive floorings.

ASPHALT FINISHES

8.3 - M4 Materials for asphalt flooring shall be adequate for the location and intended use

Relevant standards include:

BS 6925	Specification for mastic asphalt for building and civil engineering (limestone aggregate).

FLEXIBLE SHEET AND TILE FINISHES

8.3 - M5 Materials for flexible sheet and tile flooring shall be adequate for the location and intended use

Relevant standards include:

BS EN 649	Resilient floor coverings. Homogenous and heterogenous polyvinyl chloride floor coverings.
BS EN654	Resilient floor coverings. Semi-flexible polyvinyl chloride tiles.
BS EN650	Resilient floor coverings. Polyvinyl chloride floor coverings on jute backing or on polyester felt backing or on polyester felt with polyvinyl chloride backing.
BS EN651	Resilient floor coverings. Polyvinyl chloride floor coverings with foam layer.
BS EN12104	Resilient floor coverings. Cork floor tiles.

The following standard contains further specification details for flexible sheet and tile flooring:

BS 8203	Code of Practice for installation of resilient floor coverings.

WOOD FINISHES

8.3 - M6 Materials for wood flooring shall be adequate for the location and intended use

ALL WOOD AND WOOD-BASED MATERIALS

Relevant standards include:

BS 8201	Code of Practice for flooring of timber, timber products and wood-based panel products.

DIRECTLY APPLIED FINISHES

(wood blocks, parquet, wood mosaic, etc)

Relevant standards include:

BS 1187	Specification for wood blocks for floors
BS4050	Specification for mosaic parquet panels.

INDIRECTLY APPLIED FINISHES

(softwood and hardwood boarding, wood-based panel products, etc)

Relevant standards include:

BS 1202	Specification for nails
BS1210	Specification for wood screws
BS1297	Specification for tongued and grooved softwood flooring
BS EN312 Part 2:	Specification for wood chipboard Particleboard
BS EN300 Part 3:	Specification for oriented strand Particleboard board (OSB)
BS EN636	Plywood.

SOUND INSULATION

8.3 - M7 Sound insulation materials shall provide adequate insulation standards in their intended location

Information concerning materials and constructions that will generally be acceptable is given in statutory regulations.

Proprietary products should have been assessed in accordance with Technical Requirement R3.

Sound insulation materials include:

- flexible material
- mineral fibre quilt insulation
- board material (for use under screeds)

- pre-compressed expanded polystyrene - impact sound duty (ISD) grade
- proprietary materials which have been assessed in accordance with Technical Requirement R3.

THERMAL INSULATION

8.3 - M8 Thermal insulation materials shall provide adequate insulation standards in their intended location

Floor insulation materials should include the following:

Material	BS	Grade or description
EPS (expanded polystyrene)	EN13163	70
PUR (rigid polyurethane)		for useunder screeds
PIR (rigid polyisocyanurate)	4841	
Fibre building board	1142 Part 3	insulating board (softboard)
Proprietary materials assessed in accordance withTechnical Requirement R3	-	-

Insulation materials for use below screeds should:

- have adequate compressive strength to support wet construction screeds and floor loads
- be compatible with any dpm, where appropriate.

STRUCTURAL FLOOR DECKING

8.3 - M9 Structural floor decking materials shall be suitable for their purpose and location

Decking materials should be selected in accordance with the relevant parts of Chapter 6.4 'Timber and concrete upper floors' (Design and Materials).

SITEWORK STANDARDS

8.3 - S1 All sitework shall:
(a) meet the Technical Requirements
(b) take account of the design
(c) follow established good practice and workmanship

Sitework that complies with the design and the guidance below will be acceptable for floor finishes.

SCREEDING

8.3 - S2 Floor screeds shall be laid to provide a suitable background for the intended floor finishes

Items to be taken into account include:

(a) background

MOISTURE PROTECTION

Check that any specified damp-proofing treatment has been completed before screeding is commenced.

SURFACE PREPARATION

All surfaces should be clean and dust free. In particular, any traces of gypsum should have been removed. Concrete surfaces should be wetted and brushed before screeding.

BOND

Where screeds are to be bonded to the substrate, the surface should provide adequate bond. If necessary, the surface should be improved by:

- hacking
- roughening
- grouting
- application of a bonding agent.

(b) services

Provision should be made for:

- thermal movement of water pipes
- protection against chemical attack, for example by using purpose-made sleeves or ducts, see Chapter 8.1 'Internal services' (Design and Sitework).

There should be at least 25mm thickness of screed above the highest point of any service pipe or insulation placed around the pipe.

(c) mixing

Cement and sand screeds should be mixed in the specified proportions.

Proprietary screeds should be mixed in accordance with the manufacturer's recommendations.

(d) laying

WEATHER CONDITIONS

Screeding should not be carried out under weather conditions which could adversely affect the result. The following precautions should be taken:

- hot or dry weather - screeds should not be laid in hot or dry weather unless precautions are taken to prevent the screed surface drying out too quickly
- frost - screeds should not be laid if there is a risk of freezing.

Any screeds damaged by frost should be removed and replaced (reference should be made to Chapter 1.4 'Cold weather working').

TIMING

Monolithic screeds should be laid within three hours of the concrete sub-floor being poured.

Wet screeding should be programmed to allow sufficient drying out time before dry lining is to commence.

BAY SIZE

Screeds above underfloor heating should not exceed 40m2 with a maximum length of 8m.

THICKNESS

Screeds should be laid to the specified thickness.

COMPACTION

Screeds should be thoroughly compacted, using a heavy tamper or a mechanical compactor or vibrator.

Proprietary screeds should be laid in accordance with manufacturers' recommendations.

(e) protection, curing

Screed surfaces should be protected against damage from traffic and be kept continuously moist until sufficient strength has been attained to resist shrinkage stresses (at least 7 days).

(f) surface finish

SCREEDS PROVIDING A WEARING SURFACE

Floor screeds to be left as a wearing surface should be either treated with a surface hardener in accordance with manufacturers' recommendations or be power floated to a smooth and durable surface.

SCREEDS TO RECEIVE A FLOOR FINISH

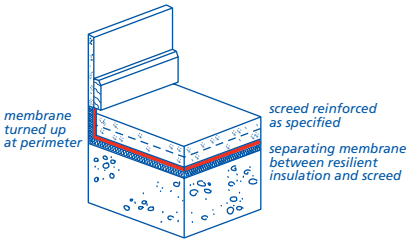
Where a screed is to be used as a sub-base for a floor finish, the surface should be suitable for the required finish as specified in the design.

(g) screeds on resilient insulation materials

Screeds above resilient insulating materials should be laid on a separating membrane and reinforced as specified.

The slabs of resilient material should be tightly butted, and turned up at the room perimeter to prevent contact between the screed and the structure which could create sound transmission paths.

Joints in the isolating membrane should be lapped and taped. The membrane should be turned up at the perimeter to prevent grout seeping through.



(h) screeds on thermal insulation

The procedure for laying screeds on resilient materials should be followed. Turning up insulation at perimeters prevents cold bridging.

CERAMIC, CONCRETE, TERRAZZO AND SIMILAR TILE FINISHES

8.3 - S3 Tile flooring shall provide a suitable surface for the intended use

Items to be taken into account include:

(a) background

EVENNESS

The background to be tiled should be reasonably even and laid to falls where required.

PREPARATION

Before bedding is commenced, the following precautions should be taken:

- the surface should be clean and free from all laitance, dirt, dust, grease and any other material incompatible with the adhesive
- where appropriate, a damp-proof membrane should have been incorporated
- differences in level should be dubbed out
- the screed or concrete surface should be true and level (±3mm under a 3m straight edge)
- the screed or base should be sufficiently dry.

(b) bedding

Cement and sand mortar should normally be a mix between 1 : 3 and 1 : 4½.

Where proprietary mortars or adhesives are used, manufacturers' recommendations should be followed.

(c) laying

Floor tiles should be bedded in a solid bed of mortar or proprietary adhesive of a thickness appropriate for the material. The tiles should be arranged to minimise cutting with straight joints of even width. Any cutting necessary should be done neatly and accurately.

(d) jointing

For ceramic tiles, joints should be not less than 3mm wide.

Movement joints should be provided around the floor perimeter and at rigid upstands. In large areas tiling should be divided into bays at 8-10m centres.

(e) grouting

Grout should be a cement based epoxy resin or a proprietary product. Where tiles may become saturated the grout should be water resistant.

TILES ON WOOD-BASED SUBSTRATE

The floor decking should be:

- plywood for use in exterior conditions (minimum 15mm for joists at 400/450mm centres and minimum 18mm for joists at 600mm centres) screwed to the joists at 300mm centres with all square edges supported on joists or noggins. Plywood should be laid with a 1.5-2mm movement gap between boards and at abutments, and be acclimatised to the room conditions and sealed on the underside and square edges, before laying, with a suitable sealer such as polyurethane varnish
- chipboard floor decking overlaid with minimum 10mm plywood suitable for exterior conditions, acclimatised, sealed and fixed as above, or proprietary separating/de-coupling layers, tile backer boards or tile bedding reinforcement sheets used in accordance with the manufacturer's recommendations.

Floor tiles on wood based substrates should be bedded with deformable (flexible) tile adhesive (e.g. C2S1) and grouted in accordance with the manufacturer's recommendations.

Tiles should be laid with minimum 3mm joints unless otherwise specified by the manufacturer. Movement joints should be provided at rigid abutments where tiled areas exceed 2m in length.

(f) accessories

Any accessories, such as covings, skirtings, etc, should match the tile pattern and be fixed so that joints are aligned with those in the floor.

(g) protection

Where necessary, tile flooring should be protected until the dwelling is handed over. Temporary covering should be building paper or an alternative material which will withstand traffic from other trades and any plaster droppings or other spillage.

ASPHALT FINISHES

8.3 - S4 Asphalt and pitch mastic shall be suitable for its use

Suitable thicknesses and grades include:

Use	Thickness (mm)	Grade
Floorfinish	15 to20	I orII
Underlay for other finishes in one coat	15to 20	I orII

Suspended floor system manufacturers should be consulted where mastic asphalt floor finishes are to be used with such systems.

FLEXIBLE SHEET AND TILE FINISHES

8.3 - S5 Flexible sheet and tile floor finishes shall be laid to provide a suitable wearing surface

Items to be taken into account include:

(a) background

MOISTURE PROTECTION

The substrate should be sufficiently dry to prevent any adverse effect on the flooring.

Where applicable, manufacturers' recommendations should be followed.

EVENNESS

The surface should be even and without high spots or cracks. Where a levelling underlay is needed, it should be of a type and thickness recommended by the flooring manufacturer.

Boarded surfaces may be covered by a sheet underlay.

The following types are acceptable:

Type of underlay	Minimum thickness (mm)
Hardboard	3.2
Plywood	4.0
Chipboard	9.0
Oriented strand board	6.0

(b) laying

CONDITIONING

Flexible and sheet flooring materials should be stored in a clean and ventilated place. Unless specifically permitted by the manufacturer, materials should not be stored in cold conditions. The temperature should be not less than 18°C for at least 24 hours before and during laying.

UNDERLAYS

Plywood or hardboard underlays should be fixed with ring shank nails or staples; and chipboard and oriented strand board with ring shank nails or screws, 2½ times the thickness of the boards.

Fixings for plywood or hardboard should be at 100mm centres at perimeters (12mm from edges) and 150mm centres across the sheets; and for chipboard and oriented strand board, at 300mm centres at perimeters (9mm from edges) and 400mm centres across the boards.

Measures should be taken to prevent damage to underfloor services.

FLOORING

Sheet or tile flooring should be fixed with the specified adhesives and in accordance with manufacturers' instructions.

Flooring should be fully bonded, where appropriate. Adhesives should be spread evenly, and dry and contact adhesives left for the correct period of time to ensure full bonding. Provision for adjustment after initial contraction or expansion should be made where necessary.

Welded joints should be provided, where specified, in accordance with manufacturers' recommendations.

The flooring should be pressed down firmly where appropriate, surplus adhesive removed, and the completed surface loaded or rolled as necessary to prevent curling or bubbling.

(c) fittings

Where specified, skirtings, coves, coverstrips and other pre-formed components should be fixed in accordance with manufacturers' recommendations.

(d) quality of finish

The floor finish should be reasonably level and smooth. Particular care should be taken at doorways and junctions. Flooring should be cut so that it fits neatly around fittings, pipes, etc.

(e) protection
All sheet or tile flooring should be kept protected until handover of the dwelling. Temporary covering should be building paper or other material, which will withstand traffic from other trades and any dampness caused by plaster droppings or spillage.

WOOD FINISHES

8.3 - S6 Wood flooring shall be laid so as to be suitable for the intended use

Items to be taken into account include:

(a) moisture protection
For wood finishes to be laid directly on concrete slabs or screeds, the substrate should be sufficiently dry to prevent any adverse effects. To become sufficiently dry, a 50mm screed requires at least 2 months and a concrete slab requires at least 6 months. Alternatively, it should be tested for moisture content in accordance with BS 8201.

Where the above times are not practical a dpm or vcl should be incorporated in the floor construction to protect the wood finishes but not in such a way as to trap moisture between the two.

Wood finishes should be conditioned to the appropriate moisture content before laying.

(b) services
Underfloor heating, where installed, should be kept on before and during the floor laying.

(c) laying and fixing

PREPARATION OF SCREEDS OR CONCRETE SURFACES
Preparation should be as follows:

- high spots, nibs and major irregularities should be removed
- differences in level should be dubbed out.

DIRECTLY APPLIED FINISHES
(wood block and strip flooring)
Wood block and strip flooring should be laid and fixed in accordance with manufacturers' recommendations, using the specified or recommended adhesive as appropriate.

Adhesive should be evenly spread, and blocks laid to the specified pattern, leaving gaps around the perimeter for movement.

INDIRECTLY APPLIED FINISHES
(softwood boarding, wood-based panel products)

- *batten spacing* - battens should be at centres appropriate to the floor finish material, and generally in accordance with the following:

Thickness of finish (mm)	Maximum batten centres (mm)
Chipboard (type P5)	
18/19	450
22	600
Plywood	
15	450
18	600
Oriented strand board (type OSB3)	
15	450
18-19	600

- *batten fixing to substrate*- battens may be shot-fired or fixed with suitable clips.
- *chipboard and oriented strand board fixed to battens*

Fixing	Length	Centres
Flatheaded ring shank nails or screws	2½x board thickness	200mm to 300mm centres around perimeters
		400mm to 500mm centres on intermediate supports

or in accordance with manufacturers' recommendations.

- *plywood fixed to battens*

Fixing	Centres
10 gaugenails or screws	150mm centres around perimeter
	300mm centres on intermediate supports
	nails/screws at least 10mm from edge of panel

or in accordance with manufacturers' recommendations.

FLOOR COVERINGS LAID ON RESILIENT MATERIALS
Where flooring is to be laid on resilient materials on a separating floor, it is important that edges are isolated from walls and skirtings by a resilient layer.

STRUCTURAL DECKING
Floor boards and decking should be laid and fixed as described in Chapter 6.4 'Timber and concrete upper floors' (Sitework).

(d) protection
All wood flooring should be kept protected until handover of the dwelling. Temporary covering should be building paper or other material, which will withstand traffic from other trades and any dampness caused by plaster droppings or spillage.

STAIRCASE FINISHES

8.3 - S7 Staircase finishes shall be suitable for their intended use

Items to be taken into account include:

(a) provision of slip resistant nosings
For communal stairs, eg in escape routes in blocks of flats, non-slip nosings or inserts should be provided where specified, and fixed in accordance with the manufacturer's recommendations.

(b) consistent rise and going
The rise and going should remain uniform after application of the staircase finish. Reference should also be made to Chapter 6.6 'Staircases' (Design and Sitework).

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