

Chapter 8.2

Wall and ceiling finishes



8.2 Wall and ceiling finishes

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SCOPE

This Chapter gives guidance on meeting the Technical Requirements and recommendations for internal wall and ceiling finishes.

DESIGN STANDARDS

8.2 - D1 Design shall meet the Technical Requirements

Design that follows the guidance below will be acceptable for wall and ceiling finishes.

Where a fixed shower or showerhead fixing is provided over a bath at a height that will permit persons to stand under, a screen or other suitable means of containing the water should be provided.

Surfaces which will be subjected to water from the use of a showerhead over a bath should be tiled or have an appropriate alternative water resistant finish.

STATUTORY REQUIREMENTS

8.2 - D2 Design shall comply with all relevant statutory requirements

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

PLASTERING

8.2 - D3 Design shall ensure a suitable substrate for the intended decorative finish

Items to be taken into account include:

(a) background

Backgrounds should be given appropriate treatment before plastering in accordance with BS 5492 Code of Practice for internal plastering.

HIGH DENSITY CLAY OR CONCRETE BRICKS AND BLOCKS AND DENSE CONCRETE (including floor soffits)

- suitable bonding treatment
- hacking
- spatterdash
- stipple.

MIXED BACKGROUNDS, eg CONCRETE WITH BRICKS/BLOCKS

- may require expanded metal, to provide key for plastering and to reduce the effects of differential movement.

LIGHTWEIGHT CONCRETE BLOCKS

- plaster should not be stronger than recommended by the blockwork manufacturer.

AUTOCLAVED AERATED CONCRETE BLOCKS

- plastering should be carried out in accordance with manufacturers' recommendations, with special care taken regarding the moisture condition of the blocks.

NORMAL CLAY BRICKWORK, CONCRETE BLOCK

- may require raked joints or the use of keyed bricks.

PLASTERBOARD

- reference should be made to BS 5492 for plastering on plasterboard.

(b) services

Services to be concealed by plaster should be tested, where possible, before plastering is commenced (reference should be made to Chapter 8.1 'Internal services' (Sitework)).

(c) plaster mix

Plaster mixes should be specified as appropriate for the:

- strength and surface characteristics of the background
- intended quality of the plaster surface
- application of further finishes.

Undercoats, finishing coats and mix proportions should be as recommended by the plaster manufacturer for the particular conditions of use. Portland cement and gypsum plaster should not be used in the same mix.

(d) plaster thickness

DECORATIVE FINISH

The number of plaster coats should be sufficient to achieve a reasonably plane finish in accordance with the following:

Surface to be plastered	Min no of coats	Thickness of plaster
Walls		
Metal lathing	3	13mm (nominal from lathing)
Brickwork	2	up to 13mm
Blockwork	2	up to 13mm
Plasterboard or concrete	1	sufficient to provide a crack-free surface
Ceilings		
Concrete	2	10mm (maximum)
Plasterboard	1	skimcoat

FIRE RESISTANCE AND SOUND INSULATION

Where plaster is intended to contribute to fire resistance or sound insulation, minimum requirements for plaster thickness are specified in the appropriate statutory regulations.

(e) plastic compound finish

Plastic compound finishes containing asbestos should not be specified.

PLASTERBOARD AND DRY LINING

8.2 - D4 Dry lining shall be designed to be suitable for the intended decorative finish

Dry lining work should be in accordance with BS 8212.

Items to be taken into account include:

(a) support of plasterboard

Supports for plasterboard should be designed so that the following span limits are not exceeded:

Board thickness (mm)	Timber support centres (mm)	Intermediate noggings required	Perimeter noggings required
9.5	400	No	Yes
	450	Yes	Yes
12.5	400	No	Yes
	450	No	Yes
	600	Yes	Yes
15	600	No	No

Notes

1. Cut edges should only be used at perimeters. In all other situations cut edges should finish over a support or noggling.
2. Additional intermediate noggings may be required where fire resistance is necessary.

Plasterboard to receive ceramic wall tiling should be supported in accordance with the details given in Appendix 8.2-A.

Where double layers of plasterboard are used, for example for improved sound insulation, board joints should be staggered from one layer to the other and extra noggings provided to support the second layer.

(b) surface facing

Plasterboard should be fixed face side out for both plastering and direct decoration finishes.

Tapered edge boards should be used for surfaces to be decorated directly on the board surface.

(c) fire resistance

Where plasterboard contributes to fire resistance, its thickness and treatment should be as specified in the appropriate statutory regulations.

(d) vapour control layers

Where required to control interstitial condensation, vapour control layers should be incorporated. In timber frame walls, vapour control layers should be in accordance with recommendations detailed in Chapter 6.2 'External timber framed walls' (Design).

In roof constructions, vapour control layers should be in accordance with the following chapters:

7.1 'Flat roofs and balconies' (Design)

7.2 'Pitched roofs' (Design).

(e) fixings

PLASTERBOARD

Plasterboard may be fixed to:

- timber, using plasterboard nails or dry wall screws
- metal, using dry wall screws.

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DRY LINING

Dry lining may be fixed by:

- adhesive dabs
- nailing or screwing to timber battens
- screwing to metal channels
- proprietary fixing systems.

Where insulated dry lining is fixed with adhesive dabs, nailable plugs should also be specified in accordance with manufacturers' recommendations.

(f) gap sealing

Gap sealing should be specified, where necessary, to prevent draughts (see Sitework clause 8.2 - S3(f) for details).

(g) coving

Location, type, size and method of fixing should be specified.

CERAMIC WALL TILING

8.2 - D5 Ceramic wall tiling shall be designed and specified to achieve a surface of acceptable appearance and adequate durability

Items to be taken into account include:

(a) background

EVENNESS

Background surfaces for tiling should be sufficiently even to achieve a plane tiled surface.

STRENGTH

Background surfaces should be strong enough to support tiling of the specified thickness.

BOND

The background should provide adequate mechanical key. Very smooth and dense surfaces may require bonding agents for increased adhesion.

UNIFORMITY

Surfaces should be sufficiently uniform to avoid differential movement. Metal lathing or wire netting may be necessary to cover junctions.

SUCTION

Background surfaces should have adequate porosity for the specified method of fixing the tiles. Where cement mortar is to be used as an adhesive, a background containing soluble salts may require special precautions, such as the use of mortar with sulfate-resisting cement.

(b) tile quality

Tiles should be appropriate for their location and intended use. Specification items may include:

- surface finish
- size and thickness
- colour
- edge shape
- fittings (coves, skirtings, etc)
- accessories (soap tray, paper holder, hooks, etc).

The weight of tiles on lightweight plasters should not exceed 20kg/m² (e.g. not be thicker than 8mm).

(c) fixing

Tiles should be fixed as appropriate for the background, using:

- cement mortar, or
- proprietary adhesive.

Tiles likely to be frequently wetted should be fixed using solid bed fixing method with a water resistant adhesive on a moisture-resistant background.

(d) joint filling

Grouting should be:

- cement-based epoxy resin or a proprietary product
- waterproof in and around shower enclosures where tiling can be saturated.

A sealing method should be specified for the joint between sanitary fittings and adjacent tiling - this is particularly important where movement can take place, eg where timber floors are used.

PROVISION OF INFORMATION

8.2 - D6 Designs and specifications shall be produced in a clearly understandable format and include all relevant information

Design information should include:

- schedule of finishes
- plaster thickness, mix and special requirements
- location of vapour checks behind dry lining
- extent and detail of tiled surfaces
- location of services adjacent to tiled surfaces.

8.2 - D7 All relevant information shall be distributed to appropriate personnel

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

MATERIALS STANDARDS

8.2 - 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 wall and ceiling finishes.

Materials for wall and ceiling finishes should 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).

PLASTERING

8.2 - M2 Materials for plastering shall be adequate for the location and intended use

Items to be taken into account include:

(a) plasters

Relevant standards include:

- BS EN 13279 Gypsum binders and gypsum plasters.
- BS 5270 Part 1 Specification for polyvinyl acetate (PVAC) emulsion bonding agents for indoor use with gypsum building plasters.

(b) materials for render

Relevant standards include:

- BS EN 197 Specification for Portland cements
- BS EN 13139 Aggregates for mortar.

(c) metal laths and beads

Relevant standards include:

- BS 405 Specification for uncoated expanded metal carbon steel sheets for general purposes
- BS EN 13658 Metal lath and beads. Parts 1 and 2 Definitions, requirements and test methods.

PLASTERBOARD AND DRY LINING

8.2 - M3 Materials for plasterboard and dry lining shall be adequate for the location and intended use

Relevant standards include:

- BS 1230 Gypsum plasterboard

Recommendations regarding materials for use in dry lining work are included in:

- BS 8212 Code of Practice for dry lining and partitioning using gypsum plasterboard.

CERAMIC WALL TILING

8.2 - M4 Materials for ceramic tiling shall be adequate for the location and intended use

Relevant standards include:

- BS EN 14411 Ceramic tiles. Definitions, classification, characteristics and marking.
- BS EN 12004 Adhesives for tiles. Definitions and specifications.
- BS EN 13888 Grouts for tiles. Definitions and specifications.

SITWORK STANDARDS

- 8.2 - 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 wall and ceiling finishes.

PLASTERING

8.2 - S2 Plastering shall be suitable for the intended decorative finish

Items to be taken into account include:

(a) background

EVENNESS

Background to be plastered should be sufficiently even to provide a reasonably plane plaster finish and to avoid the necessity for excessive dubbing out before the finish is applied.

BOND

The background should provide a satisfactory key. Backgrounds may be improved by:

- raking out masonry joints
- hacking and scratching
- applying a spatterdash coat or stipple coat
- applying a bonding agent.

SUCTION

Suction of the background should be checked for adequacy and should be reasonably even. Where different materials in the background could cause cracks, eg in floors of precast beams and infill blocks, metal lathing should be used or other precautions taken.

EDGE PROTECTION

Metal beads should be fixed to provide edge protection, where necessary, using zinc-plated fasteners as recommended by the manufacturer.

(b) services

All services to be concealed behind plaster should be completed and protected against any adverse effects of chemical action or thermal movement. Where there appears to be a risk of insufficient plaster cover to avoid surface cracking, fix metal lathing or wire netting.

(c) plaster mix

Plaster should be mixed in the specified proportions or as recommended by the plaster manufacturer for the particular location and use.

Undercoats and finishing coats should be compatible. Portland cement and gypsum plaster should not be used in the same mix.

(d) plaster thickness

DECORATIVE FINISH

Plaster should be applied to a thickness, excluding any dubbing out, sufficient to achieve the required quality of finish, in accordance with the following:

Surface to be plastered	Min no of coats	Thickness of plaster
Walls		
Metal lathing	3	13mm (nominal from lathing)
Brickwork	2	up to 13mm
Blockwork	2	up to 13mm
Plasterboard or concrete	1	sufficient to provide a crack-free surface
Ceilings		
Concrete	2	10mm (maximum)
Plasterboard	1	skimcoat

(e) application

SCHEDULING OF WORK

Plastering should not be carried out in weather which could adversely affect the finished result. Any plaster damaged by frost should be removed and replaced (reference should be made to Chapter 1.4 'Cold weather working').

MIXING

Materials should be mixed thoroughly, but prolonged mixing should be avoided. Avoid mixing more plaster than can be applied before it starts to set. Plaster should not be re-tempered.

PROTECTION

The completed work of other trades, especially timber, chipboard and glazing, should be protected from damp and damage during plastering.

PREPARATION

Before plastering is started, all surfaces should be dry, clean, and free from laitance, grease, loose material or any substance likely to prove harmful to the bond or the intended finished appearance of the plaster.

Joints between boarded or slab surfaces should be scrimmed, paper taped or otherwise treated as recommended by the manufacturer.

Dubbing out should be done well in advance of the application of the first coat.

PLASTERING

The background surface should be fully set for each coat of plaster. The surface should not be overworked and adequate time should be left between coats to allow strength and suction to develop.

(f) quality of finish

All plastered surfaces should be reasonably plane and true and with a quality of finish appropriate for the location and intended use.

Reveals, soffits to openings, external angles and the like, should be reasonably plumb and level, and ceiling lines and corners should be regular.

Particular care should be taken in areas around wall light points, wall light switches and socket outlets.

(g) plastic compound finish

Plastic compound finishes should be applied by suitably trained operatives.

PLASTERBOARD AND DRY LINING

8.2 - S3 Plasterboard and dry lining shall be suitable for the intended decorative finish

Items to be taken into account include:

(a) background

EVENNESS AND STRENGTH

Plasterboard thickness should be correct for the support spacing.

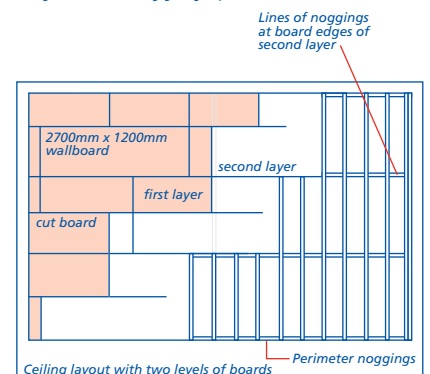
Maximum limits are as follows:

Board thickness (mm)	Timber support centres (mm)	Intermediate noggings required	Perimeter noggings required
9.5	400	No	Yes
	450	Yes	Yes
12.5	400	No	Yes
	450	No	Yes
15	600	Yes	Yes
	600	No	No

Notes

- Cut edges should only be used at perimeters. In all other situations cut edges should finish over a support or noggings.
- Additional intermediate noggings may be required where fire resistance is necessary.

When double layers of plasterboard for ceilings are specified, the joints of one layer should not coincide with those of the other. The first layer should be fully fixed and have all cut edges supported. The second layer should be supported on all edges with noggings provided to suit.



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SERVICES

There should be adequate support for:

- light points
- socket outlets
- other service installations.

Openings in plasterboard for services and electrical outlets should be accurately cut and any gaps in vapour control layers taped and sealed, as detailed in Chapter 6.2 'External timber framed walls'.

WATER VAPOUR RESISTANCE

Install vapour control layers where specified. Edges should be lapped over supports and be taped or sealed.

(b) surface finish

Plasterboard should be fixed face side out for both plastering and direct decoration finishes.

Tapered edge boards should be used for surfaces to be decorated directly on the board surface.

(c) scheduling of work

Plasterboard work should:

- not be started until the building is substantially weatherproof
- be programmed so that finishes are applied as soon as possible after completion.

(d) fixing

Fixing methods should be as follows:

- nails : hot dip galvanised, zinc electroplated or sheradised steel
- screws : zinc electroplated or black phosphate

(or to the board manufacturer's recommendations).

Fixings should be as follows:

Board thickness (mm)	Nail length (mm)	Screw length (mm) into timber	Screw length (mm) into steel
9.5	30	32	22
12.5	40	36	22
15	40	36	25

Nails or screws should be not less than:

- 10mm from paper bound edges
 - 13mm from cut ends of boards
 - 6mm from edges of timber members.
- Nail and screw heads should not project above the board surface.

Fixing centres should be as follows:

- nailing to: walls and ceilings - approximately 150mm centres (8 per linear metre)
- screwing to: walls - approximately 300mm centres (8 per 2 linear metres)
ceilings - approximately 230mm centres (5 per linear metre).

DRY LINING ON ADHESIVE DABS

Boards should be fixed to a pattern of adhesive dabs, at approximately 300mm

centres vertically, and as shown in the following table:

Thickness of wall board [mm]	Width of wall board [mm]	Dabs per board [rows]
9.5	900	3
9.5	1200	4
12.5	1200	3

Dabs should be applied to one board at a time.

MECHANICAL FIXINGS FOR THERMAL WALLBOARDS

At least 2 nailable plugs should be used per board in accordance with the manufacturer's recommendations.

PROPRIETARY SYSTEMS

Proprietary dry lining systems should be fixed in accordance with the manufacturer's recommendations.

(e) jointing

Where surfaces are to receive skim coat plaster, joints should be scrimmed or paper taped in accordance with the manufacturer's recommendations. Ceiling boards should be staggered to minimise any risk of cracking.

For unskimmed surfaces, joints should be filled, taped or finished as recommended by the manufacturer.

(f) gap sealing

A continuous ribbon of adhesive should be applied to the perimeter of external walls, openings and services in drylined walls to prevent air infiltration.

In addition:

- dry linings should be completely taped and filled at board joints and at abutments to ceilings and internal walls
- dry wall lining at door and window openings should be securely fixed and filled. This also applies at external and internal corners
- gaps around service points, electric sockets, light switches, etc should be filled with jointing compound.

(g) appearance

Unless designed otherwise, intersections should be formed at right angles and be flush. Junctions at floors and ceilings should be neat and regular.

Dry lining to be finished fair should be of a quality recommended by the manufacturer. Damaged boards should not be used.

CERAMIC WALL TILING

8.2 - S4 Ceramic wall tiling shall provide a surface adequate for its intended use

Items to be taken into account include:

(a) background

EVENNESS

The background to be tiled should be reasonably true so that a plane tile surface

can be achieved. Under a 2m straight-edge, gaps should not be greater than:

- 3mm - for *thin* bed adhesives
- 6mm - for *thick* bed adhesives.

STRENGTH

The surface should be strong enough to accept the specified adhesive and support the tiling. Separate coats should be well bonded.

BOND

The background should provide a satisfactory key. Backgrounds may be improved by:

- raking out masonry joints
- hacking and scratching
- applying a bonding agent.

UNIFORMITY

Metal lathing or wire netting should be fixed across junctions where differential movement might occur.

SUCTION

Suction of the background should be adequate and reasonably consistent. Where different materials could cause cracks, eg across junctions, appropriate precautions should be taken, eg by fixing metal lathing.

WETTING

Where repeated or persistent wetting may occur, gypsum plasters should not be used. Plasterboard should be moisture resistant grade.

HEATING

Gypsum plasters should not be used where repeated or persistent heating occurs, eg on flues or near heat sources.

(b) adhesives

Tiles should be fixed as specified, using cement mortar or proprietary adhesive in accordance with manufacturers' instructions. Adhesives for tiles subject to frequent wetting should be water resistant.

(c) application

PREPARATION

Before tiling is started, surfaces should be dry, clean, and free from laitance, grease, loose material or any substance likely to prove harmful to the bond or the intended finished appearance of the tiling.

FIXING

In wet areas, tiles should be solidly bedded in adhesive.

Tiles should be fixed in straight and even courses to form a plane surface. Work generally should be of a straight and regular appearance. Take particular care where lighting points are close to the tiled surface, such as above washbasins in bathrooms.

JOINTING

Joints should be even and cutting neatly carried out. Make sure that the spacing is sufficient to allow expansion.

GROUTING

Grouting should be the specified mix and colour. The specified sealing method should be used at junctions between tiling and sanitary fittings.

Proprietary water resisting grouting should be used in accordance with manufacturers' recommendations.

EDGING

There should be no cut or unfinished tiles at exposed edges or external corners.

(d) movement

Properly designed movement joints should be:

- built into tiling at centres not exceeding 4.5m both vertically and horizontally
- at all vertical corners in large tiled areas
- located at junctions with other surfaces or backgrounds.

Tiles without spacer lugs should have a minimum joint width of 1-2mm to relieve local stress.

APPENDIX 8.2-A

Dry lining to receive ceramic wall tiling

Description	Board thickness mm	Support centres mm	Additional support	Max. height mm	Comments
Timber frame	12.5, 15	400 to 450	No	3600	
		600	Timber noggings 600 mm centres vertically	3600	
Timber battens	12.5, 15	400	Battens at head, base and intermediate positions not exceeding 1200 mm centres	3600	
Direct bond	9.5	450 dabs of adhesive in rows	Horizontal dabs at mid-storey height	3600	Complete at least 10 days before tiling
Direct bond (Thermal laminates)	12.5, 15	600 dabs of adhesive in rows	Horizontal dabs at mid-storey height	3600	Complete at least 10 days before tiling
Metal furring	12.5, 15	400 metal furring sections	Metal furring stops at head, base and intermediate positions not exceeding 1200 mm centres	3600	Complete at least 10 days before tiling
Resin base adhesive (Thermal laminates)	All	Blob of sealant	9 nailable plugs per board		
Independent steel stud lining					
48 mm	2 x 12.5	400	Mid-point support	3000	
60 mm	2 x 12.5		Mid-point support	3600	
48 mm metal stud partitions	15	400		2700	
	2 x 12.5 each side 2 x 15 each side	400		3600 3600	
70 mm metal stud partitions	15	400		3600	
	2 x 12.5 each side 2 x 15 each side	400		3600 3600	
146 mm metal stud partitions	2 x 15 each side	600	Additional stud at 300 mm up to tile height	3600	
Prefabricated gypsum wallboard panel partition	57	} Normal specification		2700	
	63				
Laminated partition	50	} Normal specification		2600 2800	Complete at least 10 days before tiling
	65				

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