7 Finishing Plasterboard

7.1 Levels of Finish

Plasterboard is finished using jointing compounds, which are sanded and then painted to achieve an even appearance.

No building lining system has a surface that is perfectly flat and totally free of imperfections. By paying attention to framing, plasterboard sheet orientation, paint finishes and lighting conditions, it is possible to attain the perception of flatness.

Careful workmanship is required at each stage of construction to achieve a high quality finish. If faults are not corrected at the earliest opportunity it may be impossible to disguise them afterwards. In addition, there are some key design principles that should be followed to avoid conditions known to highlight imperfections.

Australian Standard Requirements

The plasterboard installation standard *AS/NZS 2589:2017, Gypsum linings – Application and finishing*, refers to three 'Levels of Finish' (Levels 3, 4 and 5). The standard nominates Level 4 as the default finish unless otherwise specified.

Installation in accordance with Siniat instructions will achieve a Level 4 Finish.

Framing Requirements for Each Level of Finish

Australian Standard 2589 defines allowable deviations in the flatness of the framing surface to achieve the required level of finish. Framing members must have a minimum fixing face width of 32mm for screw fixing and 35mm for nail fixing. Framing should be true, plumb and level. Before installing plasterboard, the frame must be flat enough for the required level of finish. Over a 1.8m straight edge the frame must not deviate more than the values listed in Table 1.

Level 3 Finish

A Level 3 Finish is recommended where no decoration is required such as walls above ceilings and concealed storage areas. The requirements for a Level 3 Finish are:

- Framing as per the requirements in Table 1
- A bedding coat and second coat on all face layer joints and corners.

Level 4 Finish

Level 4 is the default finish and is recommended for most applications when lighting is favourable and light colour, matt or low sheen paints are used. The requirements for a Level 4 Finish are:

- Framing and back-blocking as per the requirements in Table 1
- Face layer joints finished as detailed in Section 7.3 Three Coat Jointing System
- A quality three coat paint system as detailed in Section 7.5 Painting Plasterboard.

Level 5 Finish

A Level 5 Finish is the highest level of finish defined in the Australian Standard. Installation of the frame and plasterboard, finishing with compounds and the correct application of paint all contribute to a Level 5 Finish. Even if completed correctly, a Level 5 Finish may not result in all surface deviations being concealed, only minimised.

A Level 5 Finish is recommended where gloss, semi-gloss or dark colour paints are used, or in harsh or critical lighting conditions which are referred to as glancing light.Higher standards are required for frame flatness, jointing and back-blocking. It involves coating the entire wall or ceiling to provide an even surface texture and porosity, which helps conceal joints and fixing points. The coating may be sprayed, rolled or trowelled over the surface.

The requirements for a Level 5 Finish are:

- Framing as per requirements in Table 1
- Back-blocking of all ceiling joints and wall butt joints
- Joints finished as detailed in Section 7.3 Three Coat Jointing System
- Application of an additional coating over the entire surface to provide uniform texture and porosity
- A quality three coat paint system as detailed in Section 7.5 Painting Plasterboard.

For a premium Level 4 Finish use **opal**.

Table 1 Level of Finish Requirements for Non-Fire Rated Systems

Level of Finish Requirements	Level 3	Level 4	Level 5
Back-block recessed joints on ceilings with 3 or more recessed joints	Optional	✓[1]	✓
Back-block recessed joints on ceilings with less than 3 recessed joints	Optional	Optional [1]	✓
Ceiling butt joints permitted on framing members	✓	✗[2]	✗[2]
Wall butt joints permitted on framing members	✓	✗[2]	✗[2]
Minimum number of coats for jointing	2	3	3 plus skim coat
Maximum frame deviation of 90% of area (mm) [3]	4	4	3
Maximum frame deviation of remaining area (mm) [3]	5	5	4

1. Back-blocking not required for recessed joints on suspended ceiling with no rigid connection at wall/ceiling junction.
2. Back-blocking is required on these joints. [For more information, Refer to Section 7.2]
3. Over a 1.8m straight edge the frame must not deviate by more than these values.

7.2 Back-Blocking

Back-blocking is a method for reinforcing plasterboard joints to minimise joint cracking and peaking.

Back-blocked joints use strips of plasterboard adhered to the back of the joint between the framing members. backblocking adhesive must be set before commencing jointing.

Table 2 Back Blocking Requirements

Back Blocking Requirements	
Butt joints not made on a framing member	✓
Ceiling joints in balconies and breezeways	✓
Joints using masta**line**, masta**lite** or masta**coat3** for all three coats except those made over a framing member	✓
Joints using self-adhesive fibreglass tape except those made over a framing member	✓
Joints made over a framing member	✗
Multi-layer systems	✗
Wall butt joints less than 400mm in length and more than 2 metres above the floor	✗

Back-Blocking Ceiling Recessed Joints

It is strongly recommended to back-block all ceiling recessed joints.

Method

- Ensure the back of the plasterboard is free of dust and dirt.
- Cut back-blocking strips 200mm minimum wide and long enough to fit loosely between the framing members with a gap not greater than 30mm at each end.
- Use a notched spreader to apply masta**block** to the back-blocking strips to form 6mm beads at right angles to the joint.
- Apply back-blocking strips firmly to the back of the joint.
- Where there is no access to the back of the ceiling, fix the first ceiling sheet, apply masta**block** to the back-blocking strip and place it midway on the board, then fix the next board.
- Allow masta**block** to set before commencing any jointing.

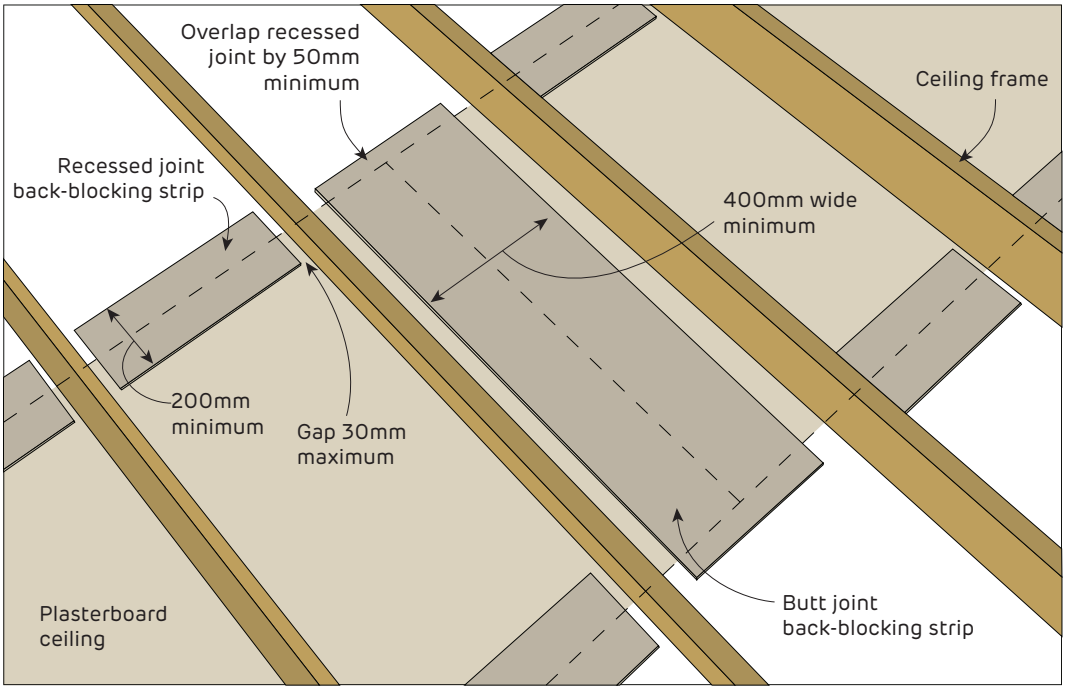


FIGURE 1 Placement of Back-Blocking Strips For Recessed and Butt Joints

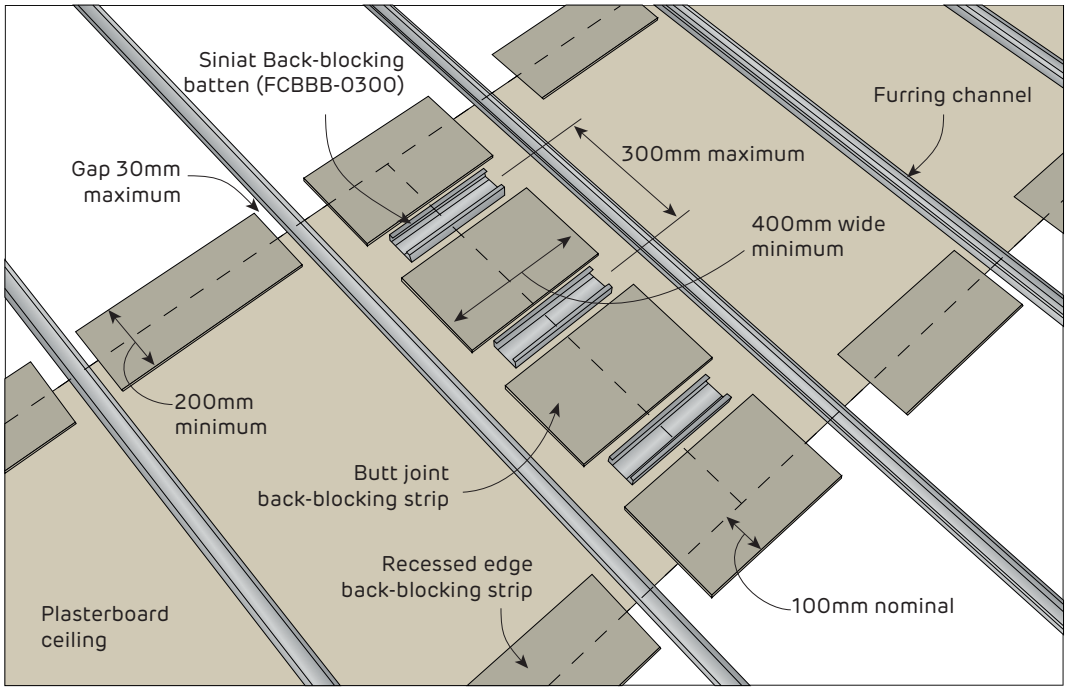


FIGURE 2 Placement of Back-Blocking Batten and Back-Blocking Strips for Recessed and Butt Joints

Back-Blocking Butt Joints

Butt joints are more difficult to conceal than recessed joints so they should be minimised. If butt joints are unavoidable, concealing them can be made easier by creating the joint mid-way between framing members, forming a recess and back-blocking.

Butt joint requirements differ for each level of finish [Refer to Table 1].

Method

- Create a recess by using either back-blocking battens as shown in Figure 3 or packers as shown in Figure 4 and 5.
- Ensure the back of the plasterboard is free of dust and dirt.
- Cut back-blocking strips 400mm minimum wide and long enough to fit loosely between the framing members. Back-blocking strips are to overlap recessed joints by 50mm minimum.
- Wall butt joints need support for the back-blocking strips as shown in Figure 5.
- Use a notched spreader to apply masta**block** to the back-blocking strips to form 6mm beads at right angles to the joint.
- Apply back-blocking strips firmly to the back of the joint.
- Where there is no access to the back of the ceiling, fix the first ceiling sheet. Apply masta**block** to the back-blocking strip and place it midway on the board, then fix the next board.
- Allow masta**block** to set before commencing any jointing.
- Where possible, avoid wall butt joints over single doors and cavity sliding doors to minimise joint cracking from vibration.

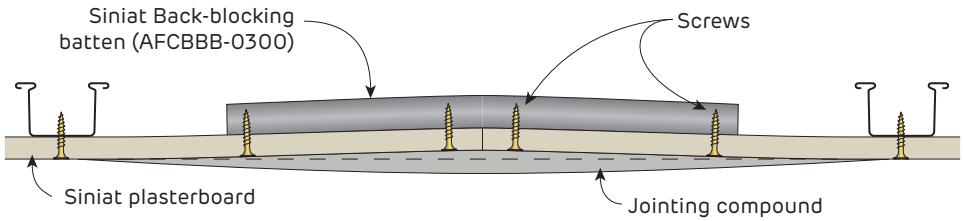


FIGURE 3 **Creating a Recess on a Ceiling Butt Joint using Back-Blocking Battens**
Section

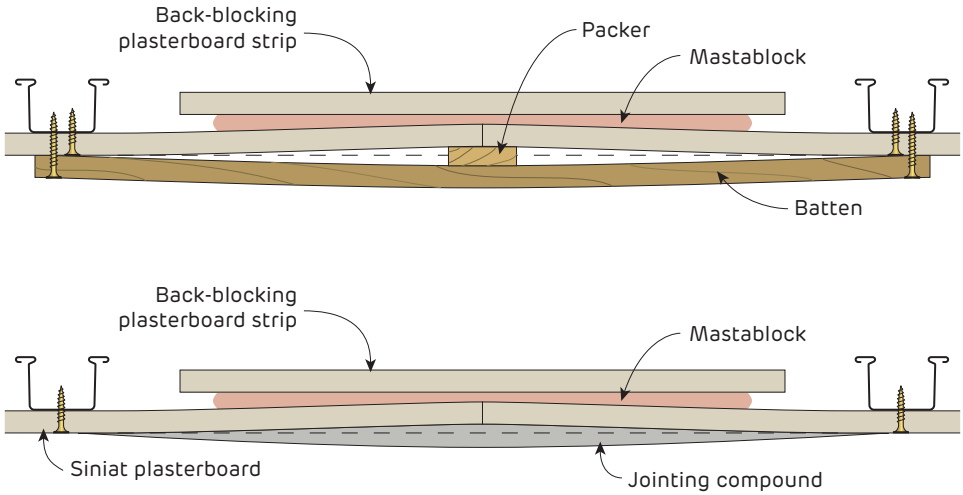


FIGURE 4 **Creating a Recess on a Ceiling Butt Joint using a Temporary Packer**
Sections

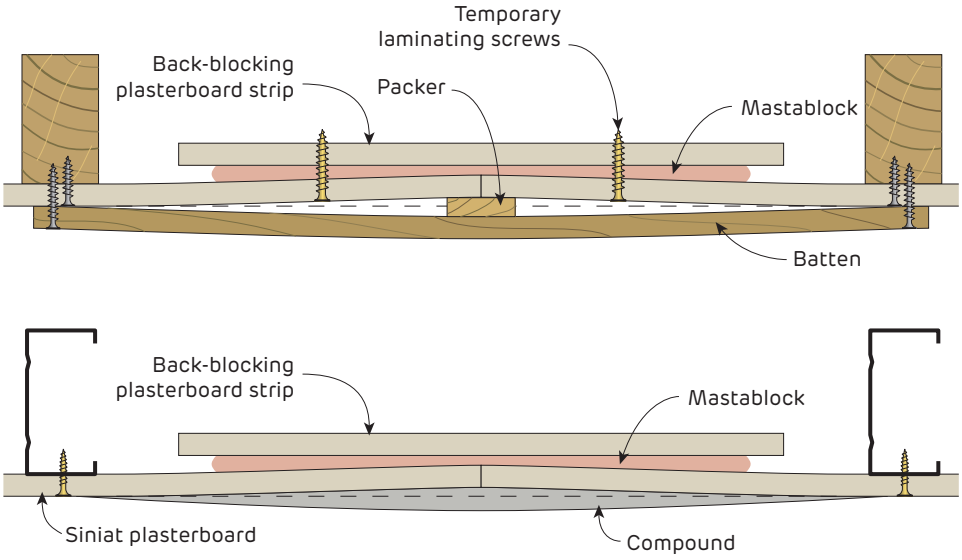


FIGURE 5 **Creating a Recess on a Wall Butt Joint using a Temporary Packer**
Section

7.3 Jointing Plasterboard

Plasterboard walls and ceilings are jointed using compounds and reinforced with paper tape or corner beads.

All joints, internal and external corners and fastener heads must be evenly finished with compounds and lightly sanded to remove tool marks and ridges prior to decoration.

Compounds

Use Siniat compounds with Siniat plasterboard systems. Performance of all systems in this guide rely on using nominated Siniat compounds. Use of non-Siniat compounds may reduce a system's fire rating, appearance or other aspects of performance.

To achieve the FRL, fire rated systems require as a minimum, paper tape and two coats of masta**base**/ masta**longset** or three coats of any Siniat all purpose air-drying compound. Alternatively use **bindex** fire and acoustic sealant as permitted and detailed in the Bindex Product Data Sheet.

Joints in wet areas must use paper tape. Areas to be tiled must only use masta**base** or masta**longset**. Multi-layer systems only require face layer joints to be set, except GIB X-Block systems where all layers must be set.

There are two types of products used for jointing plasterboard: chemical setting compounds and air-drying compounds.

Chemical Setting Compounds

Chemical setting compounds are plaster based, supplied in powder form and when combined with water harden by chemical reaction. They create the strongest joint. Chemical setting compounds can be completely set but still damp. In cold and humid conditions, additional coats of chemical setting compounds can be applied to the joints when the compound is hard but before it is completely dry.

Hot and dry conditions may dry out a setting compound before it sets resulting in reduced strength and tape adhesion issues. Accelerating and retarding additives must not be used as they can also reduce strength. Chemical setting compounds must not be applied over air-drying compounds.

Air-Drying Compounds

Air-drying compounds are premixed and harden by drying out.

Previous coats of air-drying compound or chemical setting compounds must be completely dry before applying the next coat and before sanding.

In cold and humid conditions air-drying compounds may take longer to dry. Ventilation such as open windows or an exhaust fan may be required. Air-drying compounds must not be used in temperatures lower than 10°C.

Table 3 Type and Use of Finishing Compounds

Compound	Type	Application			Wet Areas Under Tiles	Fire Rated Systems
		Bedding	Second	Finish		
Bedding Cements						
masta**base**	Chemical setting powder	✓	✓	✗	✓	✓
masta**longset**	Chemical setting powder	✓	✓	✗	✓	✓
Finishing Compounds						
masta**glide**	Air-drying premixed	✗	✗	✓	✗	✓
All Purpose Compounds						
masta**lite**	Air-drying premixed	✓	✓	✓	✗	✓
masta**line**	Air-drying premixed	✓	✓	✓	✗	✓
box ready masta**line**	Air-drying premixed	✓	✓	✓	✗	✓
masta**tape-in**	Air-drying premixed	✓	✓	✗	✗	✓
masta**coat3**	Air-drying premixed	✓	✓	✓	✗	✓

Three Coat Jointing System

The Three Coat Jointing System consists of a Bedding Coat, a Second Coat and a Finish Coat of compound. Level 4 Finish and Level 5 Finish must use the Three Coat Jointing System for all joints and external corners.

Internal corners only require a Bedding Coat and a Finish Coat.

Bedding (First) Coat

Method

- Fill any gaps more at the joint and allow compound to set or dry
- Using a broadknife, evenly fill the recess with compound [Refer to Figure 10 for minimum coat widths]
- Place tape along the joint and bed it into the compound, removing excess compound and any air bubbles from behind the tape [Refer to Figure 7]
- Apply a skim coat of compound over the tape.

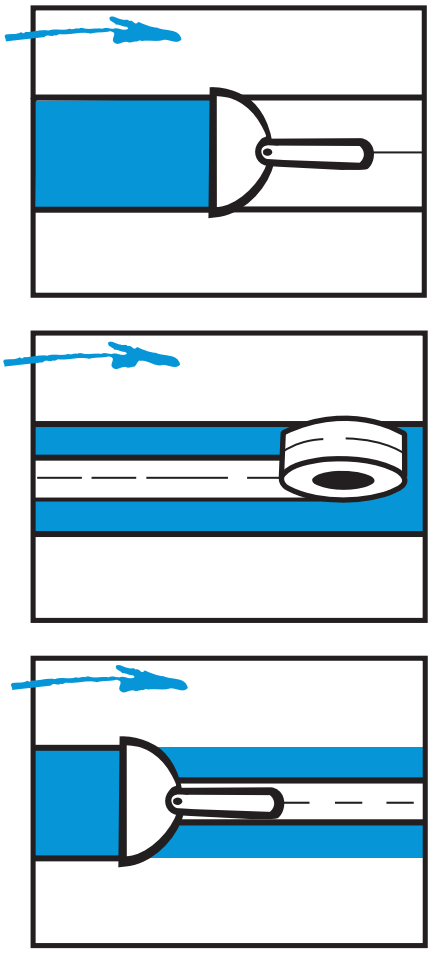


FIGURE 6 Bedding Coat

Second Coat

Method

- Allow the first coat of compound to set or dry
- Using a 200mm trowel to apply a second coat of compound [Refer to Figure 7 and to Figure 10 for minimum coat widths]
- Feather the joint edges to remove excess.

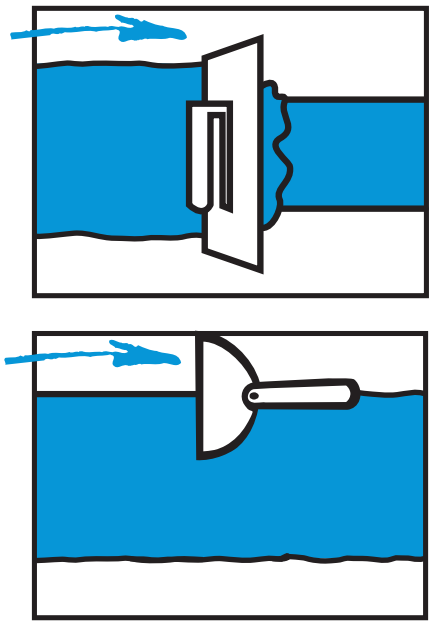


FIGURE 7 Second Coat

- Paper tape is strongly recommended for all joints.
- Joints made using paper tape are stronger and less prone to defects than those made with fibreglass tape. For the strongest joint, paper tape is recommended with two coats of masta**base**, masta**longset** or masta**tape-in** and a final coat of masta**glide**, masta**lite** or masta**line**.
- If fibreglass tape is used, all joints must be back-blocked or backed by a framing member. Fibreglass tape is not permitted for use in wet areas or fire rated systems.
- If an air-drying compound is used for 3 coats, then all joints must be back-blocked or backed by a framing member.

Finishing (Third) Coat

Method

- Allow the second coat to set and dry, then lightly scrape off any lumps and high spots of compound
- Use a 280mm trowel to apply a third coat of compound [Refer to Figure 8 and to Figure 10 for minimum coat widths]
- Feather the joint edges to a smooth even surface, removing any excess
- Allow the compound to fully dry before sanding.

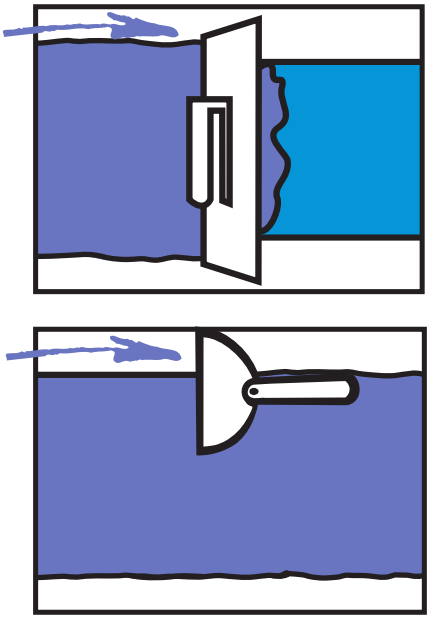


FIGURE 8 Finishing Coat

Fasteners

- For level 4 and 5 finishes, cover fastener heads with two coats of compound. Apply each coat in a different direction.
- For a level 3 finish, cover with one coat of compound.
- For fire rated systems, the setting of fasteners is not required for a level 3 finish.

Sanding

Method

- Lightly sand to a smooth even surface using 180 to 220 grit sandpaper or sanding mesh. [Figure 9]
- Do not expose or scuff the paper linerboard while sanding
- Use power sanders with care as they can easily over sand the joint
- A finished joint should have a slight crown.

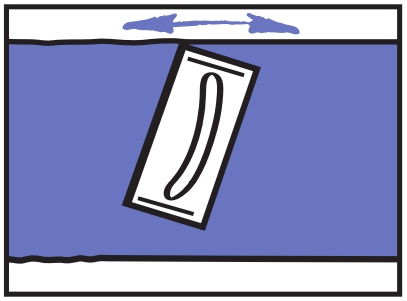
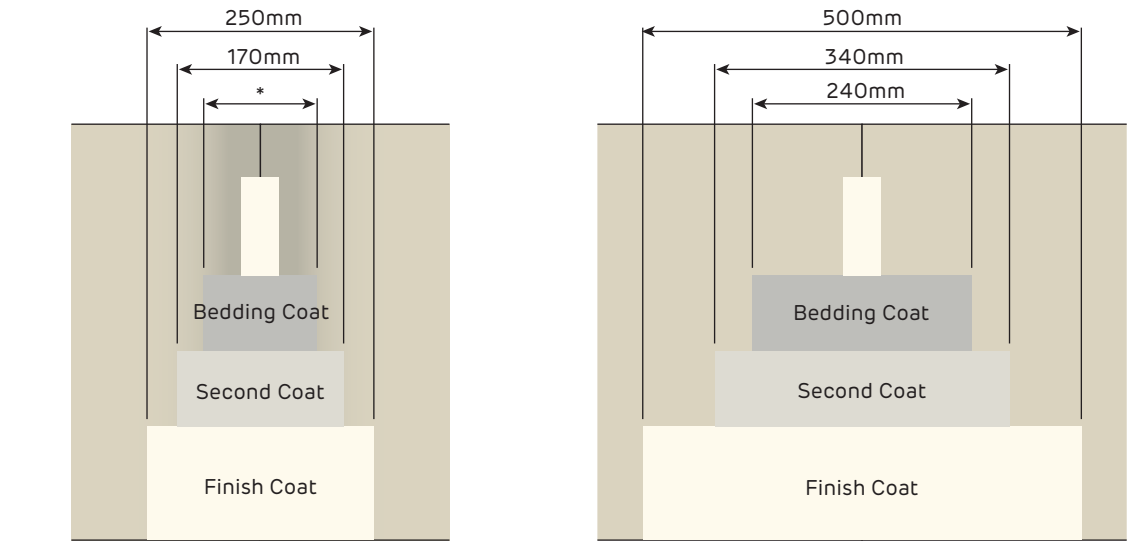


FIGURE 9 Sanding



Recessed Joint and back-blocked Butt Joints
* Fill recess completely

Butt Joint made over a framing member

FIGURE 10 Minimum Coat Widths

Internal Corners

Method

- Use a 75mm broadknife to apply compound to the corner
- Fold paper tape in half and bed it into the compound using a corner taping tool
- Cover the tape with a thin coat of bedding compound and remove any excess. Allow to set or dry
- Apply a finish coat with a 100mm broadknife to both sides of the angle
- Feather the edges and finish the joint with an internal angle finishing tool. Allow to dry
- Lightly sand to a smooth finish before painting.

External Corners

Method

Position the Siniat corner bead ensuring that it is plumb and straight [Figure 11]

Fix the bead in place using fasteners or staples at 300mm centres on both sides.

For PVC corner beads, follow the manufacturer;s installation instructions.

Treat external corner beads with the three coat jointing system as described previously. The minimum width of the three coats on both sides of the external corner is:

- Bedding coat 200mm
- Second coat 230mm
- Finish coat 250mm.

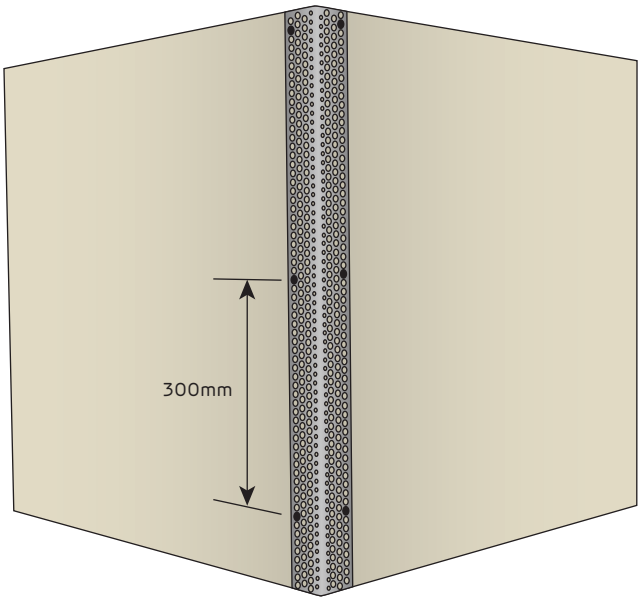


FIGURE 11 External Corner

7.4 Cornice Installation

Cornice is used to complete the decoration of the building. Cornice is fixed to walls and ceilings using cornice cements, which are chemical setting compounds available in powder form.

Cornice cements are selected depending on the length and stability of the setting time, as well as their features for practical application, such as the ability to work back the cornice cement, polish mitres and the instant grab strength.

Method

- Ensure that wall and ceiling surfaces are free of dust and dirt
- Measure and cut all cornices to the required lengths. Cut internal and external mitres using a mitre box
- Avoid joints in straight runs where possible. If necessary, mitred joints are recommended
- Measure and mark cornice projection on wall and ceiling to ensure accurate placement
- Mix only the quantity of cornice cement that can be used within the setting time
- Spread a 10mm continuous bead of cement along both back edges and the mitred end of the cornice [Figure 12]
- Press the cornice into place and if necessary hold with temporary nails in the wall and ceiling along the edges of the cornice [Figure 13]
- Clean off excess and remove nails when cement has partially set [Figure 14]
- Straight stop along cornice edge at wall and ceiling. Finish mitres using a small cornice tool [Figure 15]
- Wipe down the cornice with a wet sponge [Figure 16].

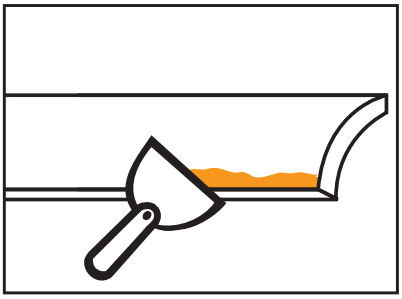


FIGURE 12 Butter Up

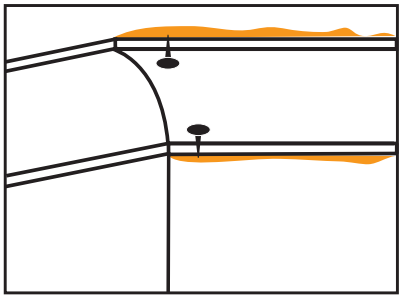


FIGURE 13 Position Cornice

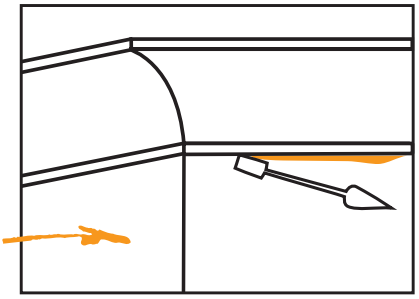


FIGURE 14 Clean Off Excess

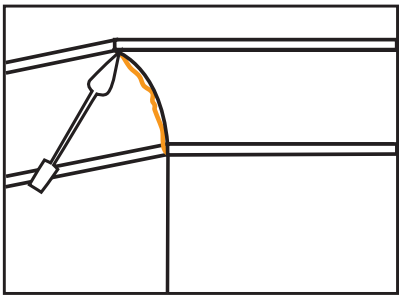


FIGURE 15 Mitres

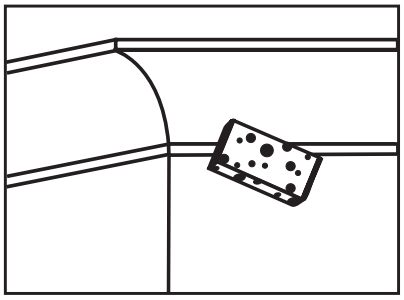


FIGURE 16 Wipe Down

Control joints in cornices shall coincide with control joints in linings

Table 4 Type and Use of Compounds - Cornice Cements

Compound	Type	Setting Time	Application		
		Minutes	Cornicing	Patching	Jointing (1st and 2nd coat)
Cornice Cements					
masta**cove45**	Chemical setting powder	45	✓	✓	
masta**cove75**	Chemical setting powder	75	✓	✓	
3-in-1 Specialty Compounds					
masta**fix20**	Chemical setting powder	20	✓	✓	✓

7.5 Painting Plasterboard

Australian Standard Requirements

Painting systems and methods are detailed in Australian Standard AS/NZS 2311, Guide to the painting of buildings.

If painting plasterboard, a **Three Coat Paint System** must be applied to achieve the best finish. This consists of a sealer undercoat followed by two top coats. Both the quality of the paint and how it is applied have a large effect on the finished appearance of the plasterboard.

Two coat paint systems are not nominated by AS/NZS 2311 as they often do not meet the customer's expectations by showing up joints through texture and sheen variations.

Sealer Undercoat Application

Recommendations

- Ensure surfaces are set and dry
- Lightly sand any minor surface defects and brush down surfaces to remove dust
- Apply a sealer undercoat suitable for plasterboard, preferably with a roller. Plasterboard that has been exposed to sunlight and/or is discoloured will require a stain sealer undercoat
- Ensure the quality sealer undercoat is rolled so all plasterboard paper fibres are flat
- Check for any unsuitable surface imperfections and repair
- Lightly sand with fine to medium grade paper before applying top coats

Paint Application

Recommendations

- Ensure surfaces are dry
- Lightly sand any minor surface defects and brush down surfaces to remove dust
- Apply paint to the broad areas with an appropriate 10-14 mm nap synthetic roller. The roller nap gives a slight texture that improves the overall evenness of finish
- Ensure each paint film is dry and manufacturer's recoat times are followed before applying the next coat.

If plasterboard is to be spray painted, the paint must not be diluted more than the manufacturer recommends. While the sealer undercoat is still wet, the surface should be back rolled to leave a 'roller finish'. This helps to equalise the surface texture between the plasterboard and the set joints. For best results also back roll 2nd and 3rd coats. Any minor paint touch-ups can then be done with a roller rather than having to re-spray.

Inspection

The final inspection of a plasterboard wall or ceiling occurs after painting. AS/NZS 2589 and AS/NZS 2311 recommend that visual inspection of finished surfaces of plasterboard be carried out in ordinary lighting, sighting from a distance of at least 1.5 metres from the surface. If differences of appearance are not clearly discernible the finish is usually considered acceptable.

To achieve a good quality painted finish, the following recommendations in addition to the three coat paint system should be followed:

- Apply paint according to the manufacturer's recommendations
- Avoid spraying or brushing which require advanced application techniques
- Choose white or light colours, flats for ceilings and matt or low sheen paints for walls
- Select a Level 5 Finish when using medium to high gloss or dark coloured paints, or in areas of glancing light in accordance with AS2589. These paints highlight any minor imperfections in the plasterboard and make the joints more visible.

For more information on glancing light, painting and other subjects affecting the appearance of plasterboard walls and ceilings, refer to:

- www.awci.org.au (Association of Wall and Ceiling Industries – Australia and New Zealand)
- www.apmf.asn.au (Australian Paint Manufacturers Association).

OnBoard - Painting Plasterboard

Read Siniat's OnBoard Technical Newsletter on Painting Plasterboard by clicking on the link or by using your phone's camera on the QR code.

7.6 Glancing Light

Glancing Light refers to natural or artificial light being cast along the face of a surface showing any minute undulation. As a result of this light being cast, a shadow is produced on the other side of the undulation. This draws attention to surface texture variations, such as plasterboard joints and patches, which under more diffused light would not be visible.

The glancing light condition can occur even when the wall or ceiling has been built according to AS/NZS 2589. Glancing light effects are directly linked to the type and placement of light sources relative to ceilings and walls.

Glancing light can highlight the following surface conditions:

- Sheet joints
- Surface irregularities
- Patches
- Variations in paint application technique.

Attention can also be drawn to minor deviations inherent in the manufacture and installation of plasterboard.

Minimising Glancing Light

Interior Design

The following are recommendations to reduce the effect of glancing light:

- Avoid full length windows in direct sunlight
- Avoid locating windows close to perpendicular wall and ceiling surfaces during design phase
- Diffuse light entering a room by using curtains, blinds or other window treatments
- Introduce curtains or blinds where windows are close to wall and ceiling surfaces
- Use low gloss, light coloured paints applied with a brush or roller.

Framing

Framing members should be straight and aligned.

Sheet Orientation

Plasterboard sheets should be fixed parallel to the light source. Also arrange the sheets to minimise the number of joints.

Lighting

Glancing light caused by artificial lighting can be addressed by changing the type and/or positioning of the light fittings. Natural lighting problems are normally caused by building geometry. An example is running windows right to the edge of the ceiling or wall line.

The following are recommendations for design of light fittings:

- Use recessed downlights and fluorescent tubes with a diffuser
- Shade batten-fixed bulbs on the ceiling and table lamps
- Avoid designs that will create glancing light conditions where possible
- Position downlights so that they do not shine down the surface of a wall.

For a premium Level 4 Finish use **opal**.

Level 5 Finish

A Level 5 Finish is the highest level of finish possible and can assist in reducing the effect of glancing light. By covering the entire surface, the skim coat of a Level 5 Finish fills any slight impressions in the surface, and removes the difference in texture and paint absorption between plasterboard and the joints. The framer, plasterer and painter all need to cooperate and contribute to providing a Level 5 Finish. Even when applied correctly, a Level 5 Finish is no guarantee that all surface deviations will be invisible, only minimised [Refer to Section 7.1 for details on Level 5 Finish].

OnBoard - Glancing Light

Read Siniat's OnBoard Technical Newsletter on Glancing Light by clicking on the link or by using your phone's camera on the QR code.