



Compounds

Jointing & Finishing of Gypsum Board
Technical Manual (Installation Guide)



[USGBoral.com](https://www.usgboral.com)

Gypsum Board

Ceilings

Compounds

Metal Framing

Substrates

Interior Finishes

Introduction

Boral Gypsum and USG Corporation have joined forces to become market leaders across Asia, Australasia and the Middle East, transforming the two companies into a world-leading building products business, USG Boral Building Products (USG Boral).

At USG Boral, we believe the best innovations start with a purpose – a focus on why the innovation is needed and who will benefit from it. Our focus is to deliver innovations that help you work smarter, do more and build better. Through an ever-growing portfolio of groundbreaking products backed by unparalleled service, we empower our customers to grow their business, much the same way you build cities and communities the world over. We do so by investing in purposeful innovation, expanding into different markets and constantly searching for new ways to increase performance and productivity.

This commitment to innovation and focus on you, our customer, is inspired by a desire to enable architects, contractors and workers alike to improve the way we live by changing the way buildings are designed and built.

Interior Finishing

USG Boral manufactures and supplies an extensive range of high-quality and consistent joint compounds including bedding and base compounds, finishing compounds, all purpose to patching and skim compounds to transform your gypsum board joints, angles and fastener heads into one seamless surface.

USG Boral recommends the use of a 3 coat joint system for all gypsum board joints with high quality paper tape such as SHEETROCK® Paper Joint Tape.



Application of joint compounds

Jointing and Finishing

Jointing and finishing of gypsum board should be carried out according to the required level of finish (refer to Levels of Finish). If no level is specified then Level 4 is the default level of finish for domestic construction.

It requires all joints and external angles to be taped and coated as follows:

- Bed jointing tape into an initial coat of base compound
- Apply a second coat of base compound to fill and level joints
- Apply a coat of finishing compound

Internal angles are to be completed with a two-coat application. The joint compound should be finished smooth and be free of tool marks and ridges.

Extreme care must be taken in jointing and finishing where walls or ceilings are subject to critical lighting.

Levels of Finish

The term 'level of finish' applies to gypsum board linings prior to decoration.

As per ASTM C840 Application and Finishing of Gypsum Board defines three levels of finish: 3, 4 and 5. Level 4 is the default level of finish for gypsum board linings, unless specified otherwise.

It is essential that the level of finish is determined at the design stage since each level has specific requirements for substrate tolerances and gypsum board installation, jointing and finishing. The desired level of finish may not be achieved unless all of these requirements are met through various stages of construction. Levels of finish recommended for various lighting conditions and surface decorations are shown in Figure 1.

A summary of various levels of finish is provided below:

Level 3

This level of finish is used in areas that do not require decoration, or where finish is not important (for example, above ceiling level or inside service shafts). All joints and interior angles must have tape embedded in the joint compound and one separate coat of joint compound applied over all joints and fastener heads. Butt joints and recessed joints in walls and ceilings can be placed on framing members.

Level 4

This is the default and generally accepted level of gypsum board finish. All joints and interior angles must have tape embedded in the jointing compound and a minimum of two separate coats of joint compound applied over all joints, angles, fastener heads and accessories. If Level 4 surface is to be exposed to critical light, it should be covered with textured finishes or wall coverings. Smooth textured finishes and flat, matt or low sheen paints can be used when Level 4 finish is illuminated by non-critical lighting. Flat paints in this situation tend to conceal joints better. Weight, texture and sheen level of wall coverings and finishes should be carefully evaluated and joints should be adequately concealed if wall-covering material is lightweight, glossy or lightly patterned.

NOTES:

- In critical lighting conditions, surface variations may still be apparent in a Level 4 surface finish
- Gloss, semi-gloss or deep tone paints are not recommended for Level 4 finish, as they accentuate surface variations

Level 5

Level 5 finish should be used where gloss or semi-gloss paints are specified or where lining surfaces will be exposed to critical lighting conditions. The Level 5 finish is characterised by a parity of surface texture and porosity. All joints and interior angles must have tape embedded in the jointing compound and a minimum of two separate coats of jointing compound applied over all joints, angles, fastener heads and accessories. The work is finished with proprietary surface preparations or skim coating to remove differential surface textures and porosity.

A suitable paint or plaster material is sprayed, rolled or troweled over the defined area. The surface texture must be random and monolithic, concealing joints and fixing points.

NOTES:

- If Level 5 finish is desired for a decorated gypsum board surface, this must be specified at the design stage
- Level 5 finish is difficult to achieve and always requires the cooperation of the framer, plasterer and painter in establishing suitable work practices that deliver the agreed painted finish for the given project
- Some minor surface variations may still be visible in Level 5 finish, however, these will be minimised
- The surface of the defined area may require sanding to be suitable for decoration

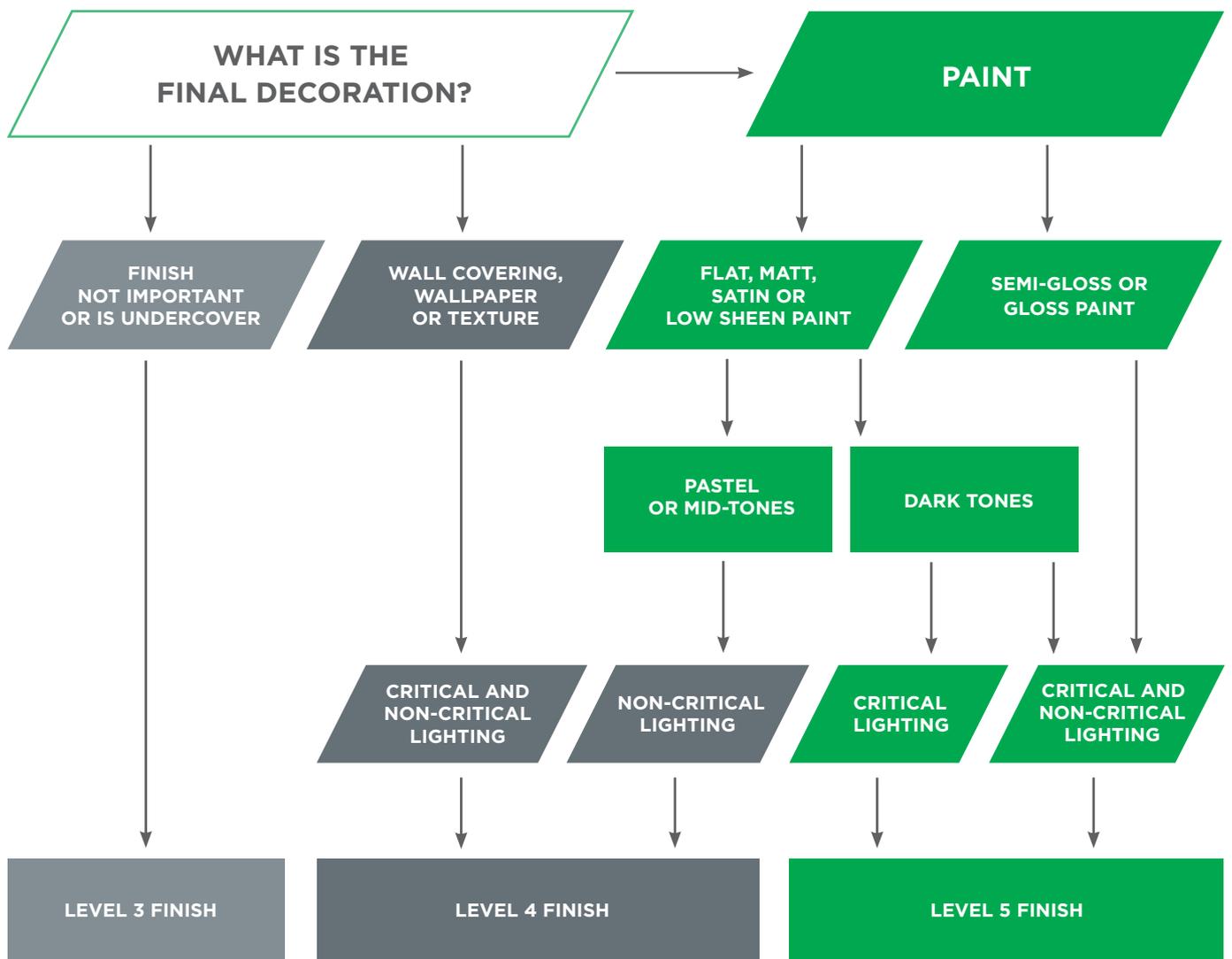


Figure 1: Levels of Finish

Jointing Compounds

Types of Jointing Compounds

Jointing compounds broadly fall into two types:

- Setting compounds
- Air-drying compounds

The jointing system may consist of one or both types of compounds and jointing tape (paper tape, mesh or fibreglass tape).

Setting Compounds

- Setting compounds are gypsum based and can be used for bedding tape, base coating and finishing coats. They are applied by hand and generally provide a stronger joint than air-drying compounds. Setting time can range from 20 minutes to 120 minutes

Air-Drying Compounds

Air-drying compounds are vinyl-based premixed compounds that can be used for base coating (all-purpose compounds only) and/or top coating. The use of air-drying type compounds in hot and dry conditions reduces the risk of premature dry out associated with gypsum based setting compounds. Can be applied by hand or with mechanical tools.

- Paper tape must be used when taping with air-drying compounds
- Air-drying compounds may require 24 hours drying time between coats, depending on weather conditions
- Air-drying compounds should not be applied when the interior temperature is less than 10°C
- Application of gypsum based setting compounds over premixed air-drying compounds is not recommended

Storage

- Compounds should be stored in a dry place above ground and protected from the elements and temperature extremes
- Storage in an unsuitable environment or once container or bag is opened can shorten the lifespan of the product

Mixing – Setting Powder Compounds

For best results:

- Check the 'best before' date on packaging to ensure compounds are fit for use
- Always use clean, cold potable water and clean containers and tools for mixing. Using dirty containers, water and tools may affect the setting time and set strength
- Slowly add powder to water and allow powder to soak before mixing
- Mix only enough compound for stated working time when using setting compounds
- Mix by hand or with a power mixer (max of 400rpm — mixing at higher speeds may draw air into the mix, creating air bubbles). Mix until a smooth workable paste has been achieved. Avoid overmixing as this may accelerate setting and shorten the working life of the compound
- For setting compounds, once setting has commenced, the material cannot be remixed and should not be agitated or retempered by the addition of water
- Inclusion of other materials in the mix could impair the performance of the compound and is not recommended

Mixing – Air-Drying Readymix Compounds

For best results:

- Ready-mix compounds may appear thick in pail. Before adding water, lightly mix and test its application; if required, add water to achieve desired consistency
- Caution: Avoid over-thinning when adding water as this may cause cracking and excessive shrinkage
- If liquid has separated from the compound, stir carefully to restore consistency
- Caution: Do not overmix; overmixing can introduce air bubbles, which can create surface imperfections

NOTES:

- Setting compounds should be used with caution in windy, dry and hot conditions as compounds may dry out before setting occurs. Faster setting compounds or air-drying compounds are recommended for such applications
- Subsequent coats of jointing compounds should not be applied 'wet on wet'. Allow each coat to dry before applying the next coat
- Overthinning of jointing compounds may cause shrinkage and hollow joints

USG Boral Joint Compounds

			
		Premium Jointing	Premium Premix
JOINTING	1st Coat	✓	✓ Note 3
	2nd Coat	✓	✓
	Finishing Coat	✓	✓
	Primer Coat	-	-
	Mechanical Tools		✓
SYSTEMS	Fire Rated	✓	✓
	Wet Area	-	-
	Curing Type	Setting / Powder	Air-Drying / Ready Mix
	Drying/Setting time	45mins (depending on local conditions)	12-24 hours (depending on local conditions)
	Product Size	20kg bag	28kg pail
	Scrape Back	-	-
	Sanding	Moderate 150-180 grit	Easy 180-220 grit
	Compound Type	Powder	Ready Mix
	Colour	White	White

Note 3 - Paper Tape

Paper tape must be used with Air-drying type compounds when jointing. (e.g SHEETROCK® Brand Paper Joint Tape).

Jointing Tapes

Jointing tapes are used to provide reinforcement to gypsum board joints and angles.

USG Boral Sheetrock paper tape is a high strength special cross-fibre paper tape possessing exceptional wet strength and resisting stretching, wrinkling and tearing.

A wafer thin paper aids smooth finishing and the roughened surface produces a superior bond to jointing compounds. Centre creased for application to angles.

Paper tape is recommended by USG Boral for jointing of gypsum wall and ceiling linings due to its high strength and suitability for all jointing compounds and applications.

Paper jointing tape must be used with air-drying type jointing compounds.

USG Boral jointing tape is available in 75m and 150m x 50mm wide rolls.

NOTE:

As the two sides of paper tape are not identical, the outside of the roll should always be applied to the wet compound to ensure the best adhesion.



Paper tape

Application Tools and Accessories

Plastering tools and accessories required for jointing and finishing gypsum board systems:



Paper tape



Mixer



Joint knife



Trowel



Sanding paper



Empty pails for mixing

Stainless steel jointing tools are recommended for the best possible finish and service longevity. Tools should be cleaned in water before compounds have fully set and stainless steel tools given a light rub with an oiled cloth to prevent rusting.

Plasterers trestles or scaffolding should be used to ensure correct working height.

Jointing and Finishing Recessed or Tapered Edge Joints

Recessed joints should be stopped and finished with a straight or curved trowel to leave a slightly convex camber over the joint.

First Coat

- Fill any gaps in joints with base compound prior to the taping process
- Fill recessed joint with a layer of base compound using a flexible 150mm broadknife
- Centre and press the paper tape into the base compound using a 150mm broadknife, drawing along the joint with sufficient pressure to remove excess compound
- Ensure all air bubbles have been expelled, taking care sufficient compound is left under the tape to provide a strong bond
- After embedding tape, apply a skim coat of compound to fill the recess
- Spot fastener heads

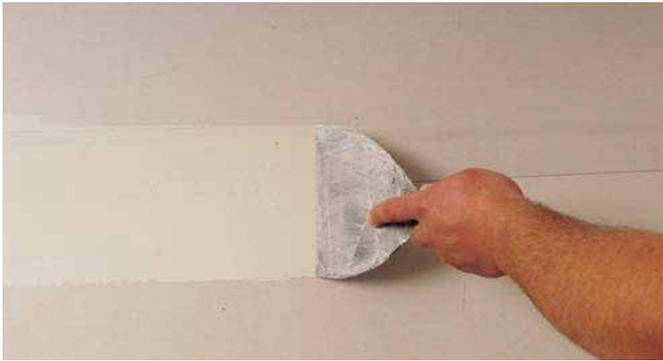
Second Coat

- Allow sufficient time for the first coat of base compound to set
- Apply a second coat of base compound approximately 200mm wide, using a trowel or broad-knife
- Feather joint edges
- Spot fastener heads again, extending beyond the first coat by approximately 25mm

Finishing Coat

- Ensure base coats are set and scrape to remove any rough spots or lumps
- Using a trowel, apply a coat of finishing compound approximately 250mm wide, feathering out approximately 25mm beyond edges of the basecoat
- Use a curved trowel on the finishing coat to produce a slight convex curve. Feather out the edges
- Allow a minimum of 24 hours to dry (longer in cold, wet weather conditions)
- When dry, lightly sand to a smooth finish with sanding mesh or 150-220 grit paper, depending on sanding hardness of finishing compound used

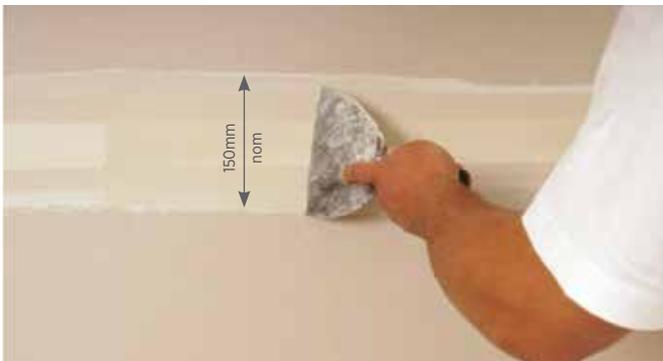
Application Steps



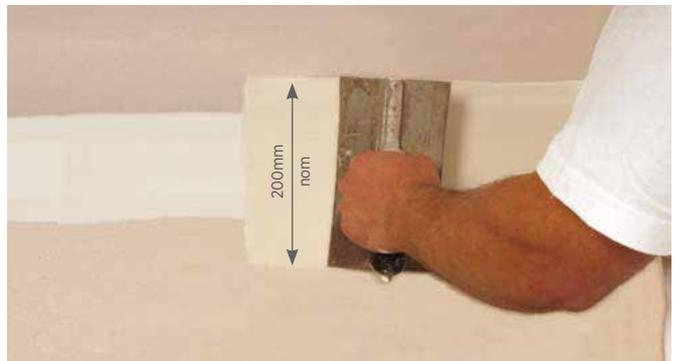
Step 1
First coat - Bedding compound



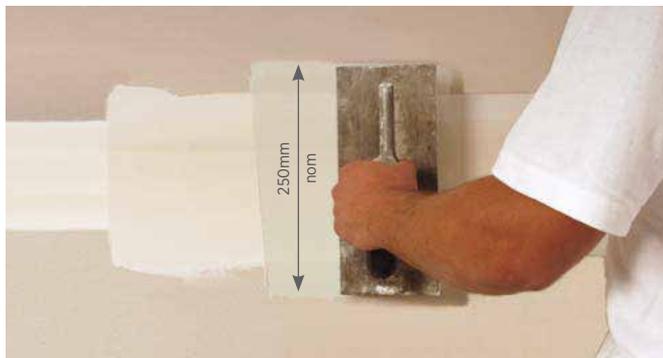
Step 2
First coat - Bed tape



Step 3
First coat - Skim coat



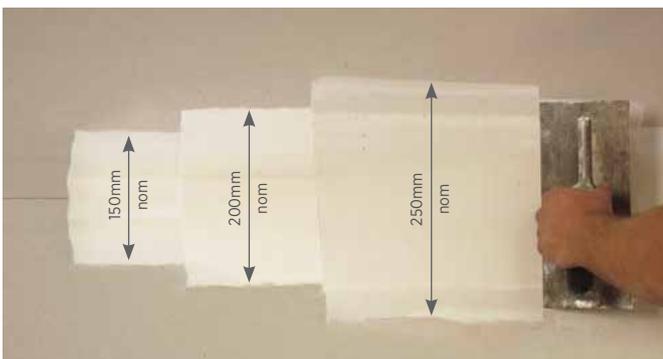
Step 4
Second coat



Step 5
Finishing coat



Step 6
Dry sanding



Step 7
Total recessed joint system

Jointing and Finishing Butt or Square Edge Joints

Butt or end joints should be flush-jointed and finished with a three coat system as for recessed joints.

For a flatter finish, and to minimise surface build-up of compound, widen each jointing coat so that the final coat of the finished joint is about 500mm wide.

First Coat

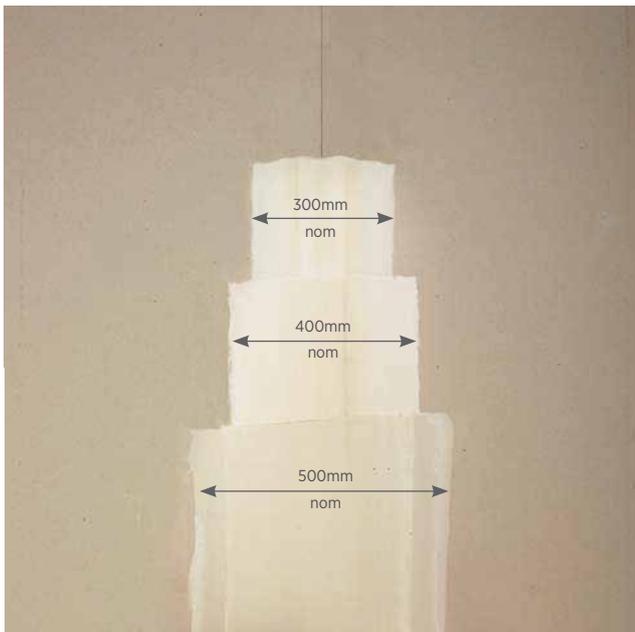
- Fill in any gaps in joints with base compound prior to the taping process
- Using a trowel, apply a thin layer of base compound to each side of the joint (approximately 300mm total width) prefilling any recess gaps at the joints
- Centre and press the paper tape into the base compound using a 150mm broad-knife, drawing along the joint with sufficient pressure to remove excess compound
- Ensure all air bubbles have been expelled, taking care sufficient compound is left under the tape to provide a strong bond
- After embedding tape apply a skim coat of compound over the paper tape

Second Coat

- Allow sufficient time for the first coat of base compound to set before applying a second coat
- Apply a second coat of compound to each side of the joint (approximately 400mm total width)
- Feather out joint edges
- The second coat should have a gradual convex curve

Finishing Coat

- Ensure base coats are set and remove any rough spots or lumps
- Using a straight bladed trowel, apply a coat of finishing compound to each side of the joint (approximately 500mm total width). Feather out the edges
- The finished coat should have a slight convex curve
- Allow a minimum of 24 hours to dry (longer in cold, wet weather conditions)
- When thoroughly dry, lightly sand to a smooth finish with sanding mesh or 150–220 grit sand paper, depending on sanding hardness of finishing compound used



Stopping Butt Joints

Jointing and Finishing Corners

Internal Corners or Angles

Internal corners should be jointed with a two coat system using paper tape. Gaps in excess of 4mm should be pre-filled with compound.

Installation:

- Apply compound to both sides of internal corner using a 75mm broadknife
- Measure and cut reinforcing tape, fold along centreline and bed into corner, using broadknife
- Apply a skim coat of compound over tape
- When dry apply a second coat of compound with the broad knife, then finish by feathering beyond edges of first coat
- Allow a minimum of 24 hours to dry (longer in cold, wet weather conditions)
- When thoroughly dry, lightly sand to a smooth finish with sanding mesh or 150-220 grit paper, depending on the sanding hardness of the compound used



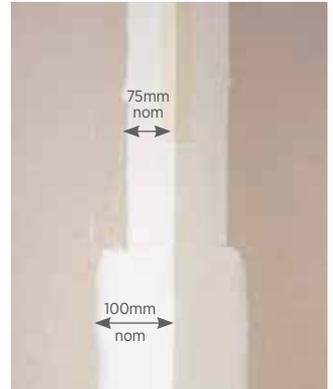
Step 1
Apply base compound



Step 2
Bed tape



Step 3
Apply second coat



Step 4
Internal corner jointing system

External Corners or Angles

External corners should be strengthened with perforated metal angles then jointed and finished with a three coat system. Suitable metal angles include Rondo Corner Beads P01 or P32.

Installation:

- Cut metal angle to length and position so that the angle is both straight and in line with the wall surfaces. Ensure that there is a 10mm gap left at the concrete floor to avoid rust
- Fix with nails or staples at maximum 300mm centres along each face with nails opposite each other
- Stop and finish with a three coat system as per jointing specification
- Ensure that the first coat of compound covers approximately 150mm of angle faces and is forced through the perforations
- The second coat should extend approximately 200mm from the corner
- The final coat should extend approximately 280mm from the corner with the edges feathered out
- Ensure that the final coat is built up to the corner
- Allow a minimum of 24 hours to dry (longer in cold, wet weather conditions)
- When finishing compound is thoroughly dry, light sand to a smooth finish with sanding mesh or 150–220 grit paper, depending on the sanding hardness of finishing compound used

Other beads and angles (Shadowline, Stopping Angle etc) should be finished in the same manner.



Step 1
Cut angle and fix to sides of corner @ 300mm ctrs



Step 2
Apply first coat to both corner faces



Step 3
Apply second coat to corner faces



Step 4
Apply third coat to corner faces



Step 5
External corner jointing system

Mechanical Jointing Tools

The following recommendations apply to mechanical jointing tools in addition to the general Jointing and Finishing specification.

Banjo Box (Mud Machine)

- Jointing compounds recommended for use in Banjo Box include USG Boral readymix all purpose joint compounds
- Centre joint tape along the joint and using a broad knife press the tape down into the bedding compound. Ensure sufficient joint compound under the tape (minimum 1mm thick compounds under the paper tape)
- With the broad knife held approximately at 45 degrees to the board surface draw along the joint with enough pressure to remove excess compound and any air bubbles sandwiched beneath the tape (avoid dry spots under tape)
- A second applicator should immediately apply compound over the recess to cover the tape and feather the edges
- Leave sufficient compound under the tape to achieve a good bond
- Immediately apply a skim coat of base compound. This reduces the possibility of the tape edge curling or wrinkling which could lead to edge cracking (especially in hot, dry conditions)



Banjo Box Application

PRODUCT INFORMATION

See USGBoral.com for the most up-to-date product information.

NOTE

Products described here may not be available in all geographic markets. Consult your USG Boral sales office or representative for information.

This Technical Information Guide is intended to provide general information and should not be used as a substitute for professional advice. There are many variables that can influence construction projects which affect whether a construction technique is appropriate. Before proceeding with any project we recommend you obtain professional advice to ascertain the appropriate construction techniques to suit the particular circumstances of your project having regard to the contents of this Installation Manual. We recommend you use qualified tradespersons to install this system.

The technical information contained in this manual was correct at the time of printing. Building systems, details and product availability are, however, subject to change. To ensure the information you are using is current, USG Boral recommends you review the latest building information available on the USG Boral website.

For further information nearest USG Boral Sales Office.

Australia
China
India
Indonesia
Malaysia
Middle East
New Zealand
Thailand
Philippines
Singapore
South Korea
Vietnam

3rd Floor 108 Central Building A,
108 E. Rodriguez Jr. Avenue, Bagumbayan,
Quezon City, Philippines 1110
T: +63 2 911 6709 | +63 2 903 1200 | +63 2 236 5810
F: +63 2 903 1201 | +63 2 857 2562 | +63 2 857 2251
E: info.ph@usgboral.com | Skype call: [usgboralph.outlook.com](https://www.skype.com/join/usgboralph.outlook.com)