USG BORAL ENSEMBLE™ ACOUSTICAL PLASTERBOARD CEILING

Technical Manual (Installation Guide)

USG BORAL
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USGBoral.com / Plasterboard / Ceilings / Interior Finishes / Metal Framing / Substrates

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INTRODUCTION TO THE SYSTEM

USG Boral Ensemble™ Acoustical Plasterboard Ceiling offers the seamless look of plasterboard with true acoustical performance. Installation is similar to standard plasterboard and plasterboard suspension systems. USG Boral Ensemble™ Ceiling Panels are highly engineered gypsum panels that perform like acoustical ceiling panels.
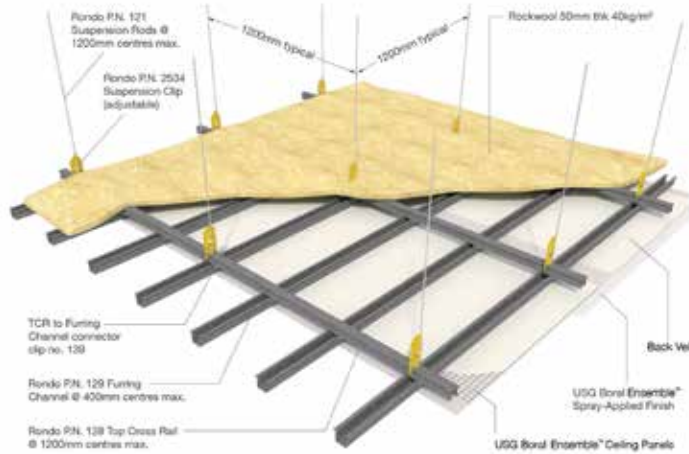
Product	Sizes	Remarks
Rondo Top Cross Rail (PN 128)	Length: 3600mm Height: 38mm	Spaced at 1200mm centres
Rondo Furring Channel (PN 129)	Length: 3600mm Height: 28mm	Spaced at 400mm centres
Rondo Furring Channel Track (for perimeter) (PN 140)	Length: 3000mm	
Rondo TCR and Rod Joiner (PN 2534)		
Rondo TCR to FC Joiner (PN 139)		
Rondo 5mm Soft Galvanized Suspension Rod (PN 121)	Length: 3600mm	Spaced at 1200mm centres
Rondo Stitching Batten (PN MB005)		
50mm-thick 40kg/m³ rockwool	1200mm x 600mm	Packed in slabs
USG Boral Ensemble™ Ceiling Panels	12.5mm x 1200mm x 2400mm	
USG SHEETROCK® Brand Paper Joint Tape	63.5mm x 76.2m or 63.5mm x 152.4m	
USG Boral EasySet™ 20	20kg per bag	
USG Boral SHEETROCK® Lightweight Finishing Joint Compound Plus 3™	18kg per pail	
USG Boral Ensemble™ Spray-Applied Finish, White	17L per pail	

Features and Benefits

- Non-directional, monolithic appearance with fine texture
- Special acoustical perforated USG Boral Ensemble™ Panels to optimize sound performance
- Installs and finishes similar to plasterboard
- Up to NRC 0.80 and αw 0.80
- VOC <0.1 mg/m²/hr (ASTM D5116)
- High light-reflective finish (LR-0.85) reduces fixture and energy use
- Acoustically transparent spray-applied finish

Applications

- Reception areas
- Lobbies
- Conference rooms
- Restaurant dining areas
- Museums
- Galleries
- Retail
- Spaces with multiple hard surfaces
- Courtrooms
- Offices
- Classrooms
- Libraries
- Healthcare offices and lobbies

SYSTEM SUMMARY

System	USG Boral Ensemble™ Acoustical Plasterboard Ceiling	
Framing	Rondo KEY-LOCK® Suspension System	
Application	Lobbies, atriums, museums, executive or boardrooms, conference rooms	
Description	USG Boral Ensemble™ Acoustical Plasterboard Ceiling is a lightweight, non-combustible, and high acoustic seamless ceiling system consisting of 12.5mm-thick USG Boral Ensemble™ Ceiling Panels, screw fixed to a Rondo KEY-LOCK® Suspension System, and finished using USG Boral Ensemble™ Spray-Applied Finish.	
Performance	Mass	$\approx 7kg/m^2$
	Acoustic rating	Up to NRC 0.80, αw 0.80
	Light reflectance	0.85
	Fire hazard properties	Fire propagation index, I = 5.0 (BS 476 Part 6) Surface spread of flame = Class One (BS 476 Part 7)
	Finish	White, seamless, and spray-applied fine texture with low VOC-emitting material
Specification	Lining	USG Boral Ensemble™ Ceiling Panels 12.5mm-thick
	Framing	Rondo KEY-LOCK® Suspension System
	Insulation	Rockwool 50mm-thick 40kg/m³
	Fastener	30mm Type "S" Needle Point Screws
	Joint Tape	USG SHEETROCK® Brand Paper Joint Tape
	Jointing Compound	1st and 2nd coat – USG Boral EasySet™ 20 3rd coat – USG Boral SHEETROCK® Lightweight Finishing Joint Compound Plus 3™
	Final finish	USG Boral Ensemble™ Spray-Applied Finish
	Open Area	20%
	Veil Colour	White veil (front and back)
Warranty	To ensure the performance of this system meets the USG Boral Warranty requirements, only USG Boral products are to be used and installed in accordance with USG Boral specification and recommendations.	

COMPONENTS

Rondo KEY-LOCK® Suspension System

Rondo Top Cross Rail
(PN 128)

Rondo Furring Channel
(PN 129)

Rondo Furring Channel Track
(PN 140)

Rondo Connecting Clip
(PN 139)

Rondo Suspension Clip
(PN 2534)

Rondo 5mm Soft Galvanized
Suspension Rod (PN 121)

Rondo Stitching Batten
(PN MB005)

Insulation

50mm-thick 40kg/m³ rockwool

COMPONENTS

Plasterboard Lining

USG Boral Ensemble™ Ceiling Panels

12.5mm-thick, 1200mm-wide, and 2400mm in length, with tapered edges as supplied by USG Boral. To be identified by a translucent veil on the front facer and a translucent veil on the back facer, as well as a R12-1 pattern with no band and having 20% perforation ratio on the board surface.

Finishing Systems

Joint Tape

Name:
USG SHEETROCK® Brand Paper Joint Tape

Size (width x length):
63.5mm x 76.2m or 63.5mm x 152.4m

First and Second Coat

Name:
USG Boral EasySet™ 20

Color:
Off white

Working time:
Setting type – 20 minutes working time

Packaging:
20kg bag

VOC:
Not detected

(under SGLS-032 eco-labelling)

COMPONENTS

Third Coat

Name:
USG Boral SHEETROCK® Lightweight Finishing Joint Compound Plus 3™

Color:
Off white

Working time:
Setting type – air dry

Packaging:
18kg pail

Name:
USG Boral Ensemble™ Spray-Applied Finish

Color:
White

Binder:
Water-based acrylic

Coverage:
Approximately 10m² per 17-liter pail

pH:
9.0 to 10.0

Weight Solids:
55-60%

Packaging:
17-liter pail

Finishing Tools

Sanding block with 180 to 220-grit sandpaper

Must use only sanding block with sandpaper to sand flat to a Level 4 finish.
No wet sanding or sponge sanders allowed.

Pitch squeegee trowel

PERSONAL PROTECTIVE EQUIPMENT

Disposable Protective Overalls

Image credit: https://www.homedepot.com/p/Florida-Coast-Super-Polymer-Coveralls-HD-1428/301810935

P2/N95 Dust Mask (AS/NZS 1716:2012)

The P2/N95 mask is a particulate filter personal respiratory protection device, capable of filtering 0.3μm particles. It complies with the AS/NZS 1716:2012.

• N95 classification indicates compliance with NIOSH testing requirements

• P2 classification indicates compliance with European testing requirements

Safety Glasses

SPRAYING EQUIPMENT

Texture Sprayer

GRACO TexSpray GTX 2000ex	
Maximum Working Air Pressure	120psi
Maximum Working Fluid Pressure	120psi
Compressor (not supplied by Graco)	Oilless compressor
Air Delivery	12 CFM @ 100psi minimum
Hopper Capacity	17gal
Maximum Delivery with Texture Material	4.0gpm
Sound	Reference Pump Manual 308479
Weight with Hoses and Gun	110lb
Wetted Parts	PVC, zinc plate CS, Buna-N, aluminum, brass, polyethylene, SST, UHMW, Delrin

Image credit: http://www.graco.com/us/en/products/contractor/texspray-gtx-2000ex.html
Note: The texture sprayer **cannot** be substituted. The GRACO TexSpray GTX 2000ex model must be used.

Air Compressor

An air compressor with minimum performance of 12CFM at 100psi (340LPM at 6.9 BAR) is highly recommended. Specification as below:


Input Power	Minimum 240volt, 10amp plug
Motor Horsepower	Minimum 2hp
Receiver Tank	Minimum 55liter
Air Delivery	Minimum 12CFM @ 100psi minimum (340LPM @ 6.9BAR)
Air Pressure	Minimum 100psi

TEKSPRAY is a trademark of Graco Inc. (the "Graco Marks").
The depiction in this material is for illustrative purpose only and is not an endorsement by either party on the subject product.
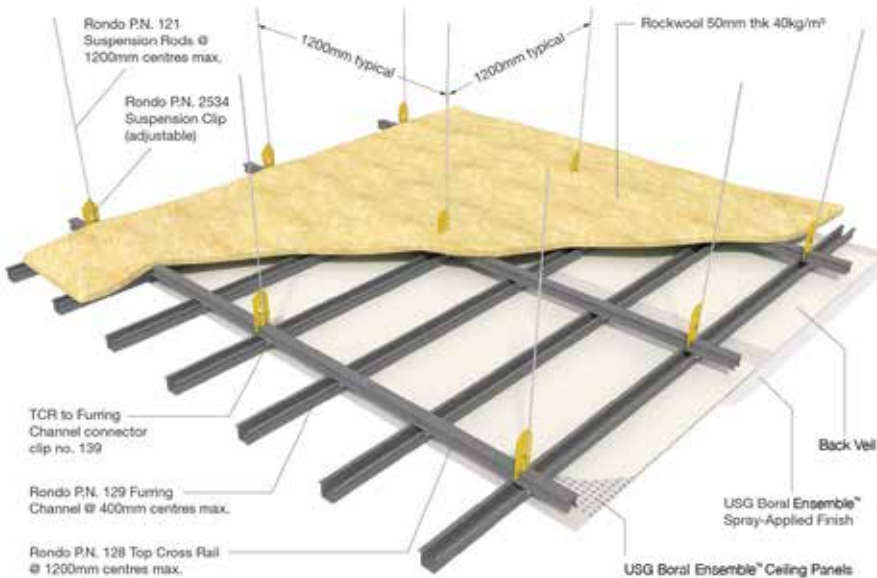
SYSTEM CONFIGURATION

Fixing Configuration
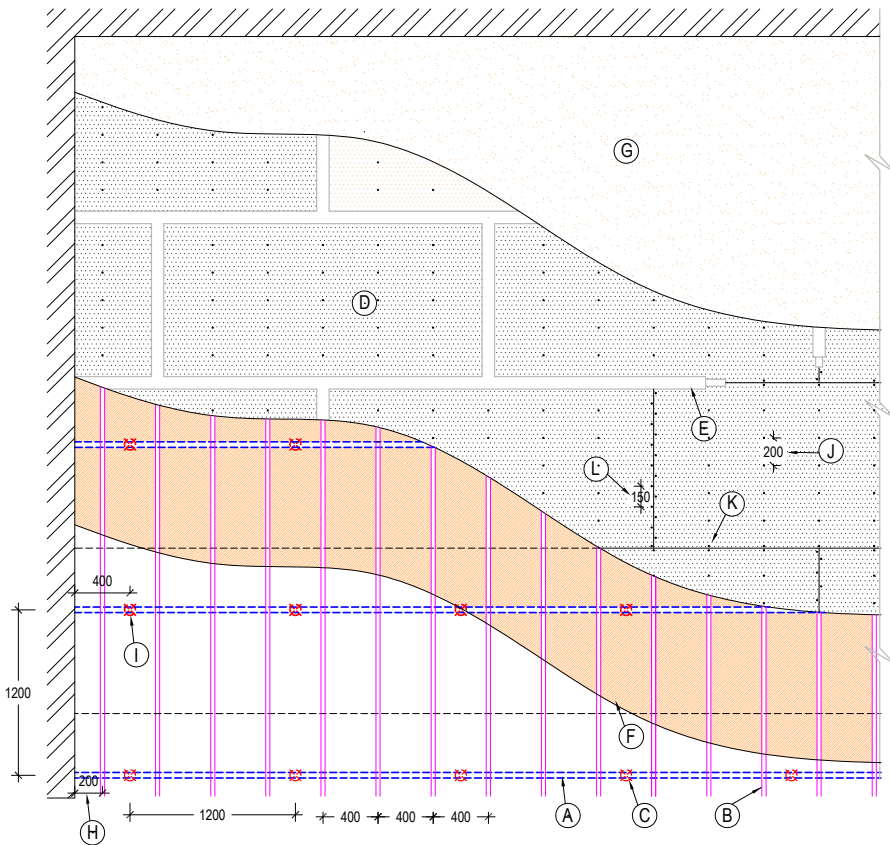
A	- - - - -	Rondo Top Cross Rail @ 1200mm ctrs max.
B	———	Rondo Furring Channel @ 400mm ctrs max.
C	✕	Hanger rod
D	▭	USG Boral Ensemble™ Ceiling Panels
E	▭	Board Joints
F	▨	Insulation blanket (thickness and density as specified)
G	▭	USG Boral Ensemble™ Spray-Applied Finish
H		Furring Channel 200mm max. from perimeter wall
I		Suspension rod 400mm max. from perimeter wall
J		Screws @ 200mm ctrs at field/center of board
K		Screws @ 10-15mm from edge of board
L		Screws @ 150mm ctrs at butt joint, staggered

System Illustration

Screw Fixing Configuration

Location	Fixing Centers
Field/Center	200mm
Recessed/Butt Joint	150mm
Square Set/Fixing at Perimeter Relief	150mm
Edge Distance	10-15mm from edge

Jointing System (Level 4 Finish)

Item	Detail
Tape	50mm USG SHEETROCK® Brand Paper Joint Tape
First Coat	USG Boral EasySet™ 20
Second Coat	
Final Coat	USG Boral SHEETROCK® Lightweight Finishing Joint Compound Plus 3™

The joints are finished using the USG Boral Jointing Compound as per table above and USG SHEETROCK® Brand Paper Joint Tape. It is imperative to finish the joints as flat and level with the surface of the board as possible. Slightly hollow or crowned joints will show as imperfections under critical lighting after the finish is applied.

To achieve a Level 4 finish, use USG SHEETROCK® Brand Paper Joint Tape and relevant USG Boral Jointing Compound as per the table above, and finish all board joints to the correct finished width.

	First Coat	Second Coat	Third Coat
Recessed Joint	100mm (using 4"-wide broad-knife)	150mm (using 6"-wide broad-knife)	200mm (using 8"-wide blade/trowel)
Butt Joint	100mm (using 4"-wide broad-knife)	300mm (using 6"-wide broad-knife; 150mm on each side of butt joint)	400mm (using 8"-wide blade/trowel; 200mm on each side of butt joint)

Recessed Joint

Butt Joint

SYSTEM CONFIGURATION

Control Joint

For interior ceiling areas with perimeter relief*, install control joints at no more than 12 meters in either direction, and these may be positioned to intersect lighting fixtures, heating vents, or air diffusers.

For interior ceiling areas without perimeter relief*, control joints should be spaced at nine meters maximum.

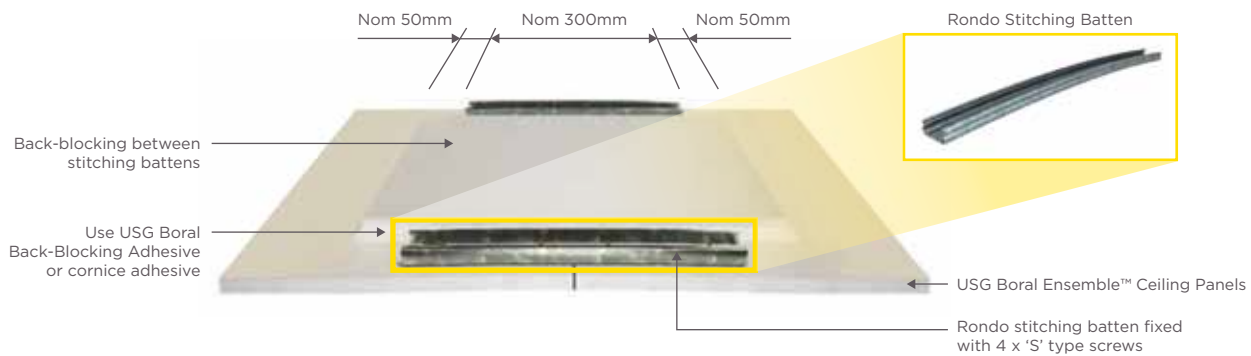*perimeter relief = control joint at ceiling perimeter

Back-blocking in Critical Light Design (if necessary)

Back-blocking is a reinforcing system designed to minimize cracking and deformation along butt joints.

Whenever possible, avoid the need for butt joints by using full-length sheets. If sheets must be joined 'end-to-end', then the joints must fall mid-span between framing members or between stitching battens (see below).

Back-blocking Butt Joints

Butt joints can be back-blocked by forming a recess in the USG Boral Ensemble™ face, where the sheet ends meet, using Rondo Stitching Batten.

Nom 50mm   Nom 300mm   Nom 50mm   Rondo Stitching Batten

Back-blocking between stitching battens

Use USG Boral Back-Blocking Adhesive or cornice adhesive

USG Boral Ensemble™ Ceiling Panels

Rondo stitching batten fixed with 4 x 'S' type screws

Light Fittings

All penetrations to be prepared prior to paint application.

Install light fittings by strengthening the suspension with supplementary suspension rods. Install surface mounted light fittings by attaching lights to furring channels, strengthening the suspension with an additional short length of top cross rail and supplementary suspension rods. A router or keyhole saw can be used to cut penetrations like plasterboard. Install beads and trims using the same method as plasterboard.

Spot all fastener heads with USG Boral EasySet™ 20 using a 1" or 2" joint knife. Keep the compound area small to minimize covering the perforations.
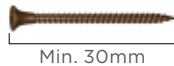
INSTALLATION OF BOARD

Step 1

Using a collated screw gun, screw fix the recessed and butt joints at 150mm centers.

Ensure that the board edges are butted snugly without gaps.

Step 2

Use a manual-feed drill or screw gun and install using 30mm minimum type S screws at 200mm centers in the field.

Min. 30mm

Step 3

Using a drill bit stopper, ensure the screw is installed centrally between the holes.

Step 4

Fill in the joints with USG Boral EasySet™ 20. Center and press the paper tape into the base compound using a 4" (100mm) broad knife. Ensure no air bubbles are left under tape.

INSTALLATION OF BOARD

Step 5

Apply second coat of USG Boral EasySet™ 20 using a 6" (150mm)-wide broad knife.

Step 6

Using a 8" (200mm) trowel or broad knife, apply the final coat of USG Boral SHEETROCK® Lightweight Finishing Joint Compound Plus 3™, feathering approximately 25mm beyond edges of the basecoat.

For spotting of screw heads, keep the compound area small to minimize covering the perforations.

Step 7

Allow the joint compound to dry, then lightly sand with a sanding block (180 to 220-grit sand paper) to achieve a flat finish.

Use the sanding block as shown.

Do not use a wet sponge or sponge sanding block during the sanding process.

MIXING OF USG BORAL ENSEMBLE™ SPRAY-APPLIED FINISH

Step 1

Check the consistency of the paint.

If needed, add approximately 500 to 600ml (or five cups) of clean water into each pail.

Step 2

Mix the paint using a 450rpm electric drill and a high shear paddle mixer.

If the texture remains dry, add an additional cup of water (100ml) and repeat the mixing process.

Step 3

Mix the paint thoroughly for approximately one to two minutes until it achieves a smooth, whipped-cream consistency.

Step 4

Check the viscosity of the paint using the material thickness gauge (small steel ball) provided by the spray equipment manufacturer.

If the steel ball sinks completely within three to four seconds, the texture is ready to spray.

If the ball does not sink within three to four seconds, add an additional cup of water (100ml) at a time and mix thoroughly until it passes the test.

SETTING THE EQUIPMENT

Step 1

Prime the Spray Machine Prime texture equipment with five liters of clean water.
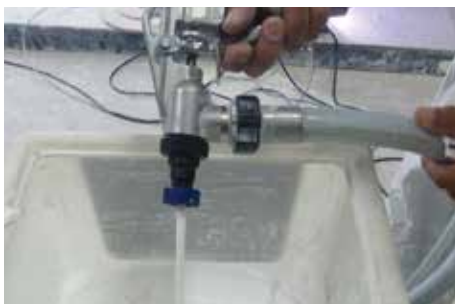

Step 2

With the air nozzle switched off, cycle water through the hose and drain the water out completely (including water in the hose).

Step 3

Pour the mixed paint into the hopper.

Step 4

Empty the water remaining in the hose until the paint starts to flow. With the air nozzle turned off, cycle the remaining water out of the hose into an empty bucket until the paint reaches the spray gun.

When the paint has reached the gun, cycle the paint through the gun back into the hopper until it is flowing smoothly through the machine.

Step 5

When there is a need to stop spraying for longer than 30 minutes, submerge the gun into water to avoid blockage in the spray gun.

Step 6

Depending on the desired texture, adjust the pump pressure to 60 to 70psi and the air pressure to 80 to 90psi.

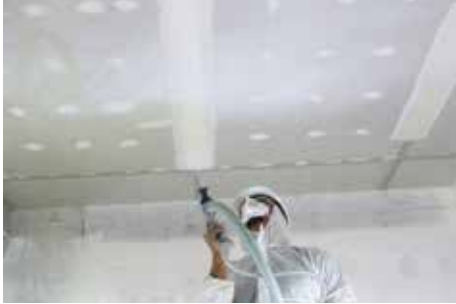For a finer texture, a lower pump pressure can be adopted.

Set the independent air compressor regulator to 120psi.

Step 7

Standard spray gun 4mm tip with added GRACO fan tip 4mm adaptor must be used to increase spray fan width to 400mm for a faster and smoother finish.

SPRAYING

Step 1

USG Boral Ensemble™ Spray-Applied Finish must be applied in a minimum of four coats, cross-hatched with a minimum of 50% overlap to achieve the appearance and sound performance.

Maintain clean safety conditions and wear proper protective equipment (safety goggles, NIOSH approved respirator, and overalls) while applying the finish.

Step 2

Start in one corner and work progressively across the ceiling. Once the finish is dry to the touch (approximately 10 to 20 minutes), recoat using the same technique.

Apply the coat with minimum one-meter gun clearance. Allow the paint to dry for approximately 10 to 20 minutes between layers.

Step 3

Between each spray, submerge the gun into water to avoid blockage in the spray gun.

Step 4

Apply a minimum of four successive coats until the desired appearance is achieved and the perforations are no longer visible through the finish.

Step 5

The spray is considered successful when all the butt joints, recessed joints and screw heads are no longer visible under natural light, and a consistent and fine texture is achieved.

Step 6

Leave the ceiling to dry for a minimum of 24 hours. It must be totally dry. If needed, remove any minor irregularities with a soft rubber-bladed squeegee.

CLEANING

Step 1

Ensure the paint is thoroughly cleaned from the hose and gun.

Step 2

Flush the remaining paint in the hose and fill the hopper with water.

Step 3

Disconnect the spray gun, nozzle, and air pressure valve for proper cleaning.

Step 4

Clean the nozzle by removing the tip and holder. Thoroughly clean out any residual dry paint in the gun.

Step 5

Clean the paint valve by thoroughly cleaning out the paint residue.

Step 6

Open up the pressure cap and clean out residual paint within the gun.

Step 7

Lastly, ensure the air pressure nozzle is cleaned thoroughly.

Australia
China
India
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Middle East
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Thailand
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Vietnam

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