

Fabrication and installation Guidelines



Gemstone Solid surfaces--- Where Elegance Meets Everyday Durability at an Honest Price.



Heat resistant

High heat resistance. Suitable for use around cooktops.



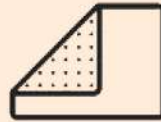
Stain resistant

No risk of staining - even with red wine or makeup.



Durable

Diamond-polished surface for scratch resistance.



Easy clean

Easy clean, non-porous surface. Clean with any household cleaners.



Antibacterial

Non-porous for a bacteria free surface can contact food directly.



Renewable

If scratched or damaged can be easily repaired/revitalized with fine sandpaper and polish.



Fast Installation.



Zero-silica

Fabricator's Handbook

Prior to undertaking any activities involving Gemstone benchtops and vanity tops, it is strongly recommended to review this booklet thoroughly and adhere to the specified procedures and tool requirements. Take time and care to achieve the best finish.

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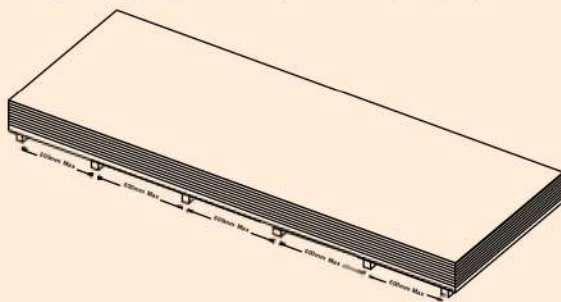
Receiving, Storage and Preperation

Receiving

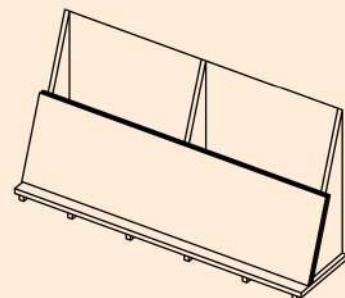
- Confirm arrival in good condition: Gemstone is carefully packed by our Dispatch team and is shipped in such a way as to minimise the risk of in-transit damage. Please check the integrity of your Gemstone sheets within 24 hours of arrival and report any damage or inconsistencies immediately. This is an essential requirement for any warranty claims relating to a damaged shipment.

Storage - Slabs

- Gemstone Slabs must be stored correctly to prevent warping or damage.
- Gemstone must be stored under cover in a dry, well-ventilated area with no exposure to moisture or direct sunlight. Gemstone has a thin plastic film to protect the face which should be left on during storage. Do not store or stack other items on top of Gemstone that may cause damage to the product.
- Each Gemstone slab has the colour and batch number noted on the edge or underside of the slab; it is recommended that slabs are stored in a way this information is easily visible.
- Gemstone slabs 600mm/900mm wide must be stored flat and fully supported in their original package. the Gemstone top must have support across the full length at maximum 600mm spacing to prevent warping.
- Bowing or warping is usually caused by improper storage practices. Products should not lean against walls or structures.



Horizontal storage of Gemstone is recommended, on a flat and level surface supported evenly across the length of the slab (maximum 600mm spacing between supports). All supports must run the full depth of the slab.



If stored vertically (Eg. on an 'A Frame'), there must be a minimum of 3 supports across the length of the slab with the vertical supports running the full slab depth.

Handling

It's recommended that Gemstone slabs are lifted with a forklift or other mechanical lifting equipment suitable for weights below:

Slab Length	Slab Depth	Slab Thickness	Slab Weight	Pallet Weight	Weight per square metre
3660mm	600mm	20mm	79kg	20slabs - 1600kg	36kg
1820mm	600mm	20mm	39.5 kg	10slabs - 400kg	36kg

Notes: Above weight doesn't include pallet.

If manually handled, do not attempt to lift multiple Gemstone slabs; wear the correct personal protective equipment (gloves, steel cap boots, etc.) and follow heavy load manual handling practices. Ensure that the Gemstone slab is carried vertically ONLY. Never push or drag Gemstone along the ground as this will likely cause damage to the edge of the slab.

Any claim for faulty or damaged goods must be made within 48 hours from receipt of product. Any warping or damage caused by incorrectly storing or handling Gemstone will not be covered under warranty.

Recommended tooling and equipment for—fabricating

Gemstone can be cut/machined using any of the following equipment:

- Waterjet Machine
- CNC Router
- Beam Saw
- Table Saw
- Hand router
- Plunge Saw
- Gigsaw
- Circular saw

For saw blades and router bits, while tungsten carbide tipped tools are sufficient, diamond tipped tools are recommended for the highest quality cut/finish and longest tool life. Or Blades can cut Alluminum material is sufficient as well.

Tooling must be kept sharp and clean to prevent chipping or other damage to Gemstone.

The below details can be used as a general power guide for routers:

- General Cutting/Machining: Minimum 2200W
- Edge Trimming/Seam Trimming: Minimum 1400W
- Edge Finishing (Rounding or Chamfering edges): Cordless trimmers are sufficient.

For general cutting/machining with a CNC Router, the table below from an existing Gemstone fabricator can be used as a guide:

Component	Minimum	Recommended
Spindle Power	2.2 kW (3 HP)	3.0–6.0 kW (4–8 HP)
Spindle Speed	18,000 RPM	18,000–24,000 RPM (variable speed)
Bed Size	1300×2500 mm	1500×3000 mm or more
Drive Type	Stepper (min)	Servo preferred for speed & precision
Hold-down	Clamps	Vacuum table preferred

In the example above, a finishing tool is used for both machining passes. However, a 'roughing' tool can be used to remove material more quickly before the edge is completed with a 'finishing' tool.

Roughing Tool	Finishing Tool
Higher feed rate	Lower feed rate
Higher cutting depth	Lower cutting depth (More passes may be required)
Lower quality surface finish	Higher quality surface finish
Higher chip load on the tool	Lower chip load on the tool
Higher material removal	Lower material removal
Lower dimensional accuracy	Higher dimensional accuracy

When using Saw blades to cut Gemstone, the blade should have a minimum of 7 teeth per 25mm diameter, have a triple chip grind and a rake angle between -5 and 10 degrees to prevent chipping and achieve the best possible finish. For dry cutting with a saw blade the below example from an existing Gemstone fabricator can be used as a guide:

Saw Blade	180mm Diameter, 3.2mm thick, 54 Tooth PCD Solid Surface blade
Machining Details	
Feed Rate:	4800mm/Min
Descent Rate:	1000mm/Min
Rotation Speed:	8000 rpm
Number of Passes:	1
Lead In/Lead Out Length:	40mm

When machining Gemstone slabs down to size, it is important to consider any allowances that need to be made for joining, built-up edges or onsite trimming. For example, certain built-up edges such as Drop Edge Rebate require the Gemstone top to be 1mm oversized on each built up edge (refer to Joining Gemstone and Gemstone Built Up Edges sections).

Random orbital sanders with a minimum 125mm sanding disk should be used for finishing/polishing Gemstone.

Gemstone is non-toxic and contains 0% Silica. However, as is the case with any dust producing operation, exposure to dust may cause irritation and pose a safety risk. The correct dust extraction and personal protective equipment (PPE) must be used to ensure a safe working environment.

Gemstone can be manufactured with the same machinery and tooling used for engineered stone, such as CNCs, bridge saws, and edge polishers. This has been tested and confirmed by several trusted stone machinery manufacturers. We recommend ordinary woodworking equipment such as CNCs, table saws, planers, hand routers etc.

Sink & cooktop appliance cutout

Cutouts within Gemstone (Sink, Cooktop etc.) can be completed either by a CNC or hand router making sure the recommended tooling is used.

- If routing by hand, it is recommended that a MDF template of the cut-out is created and clamped in position for a clean and accurate cut. Ensure the slab is properly supported before you commence the cut-out, making sure the waste part of the benchtop is supported at all times to prevent damage to the benchtop.
- A minimum 5mm inside corner radius is required for all cutouts to prevent weak areas susceptible to cracking. If routing by hand, hole saw is recommended to cut the corner.
- All cut-out to the front edge should keep at least 70mm away. All cutouts to any seam/joins should be minimal 150mm away.
- Using a 150 grit sandpaper, sand the inside edge of the cut-out to remove cutting marks (see figure)
- For cooktop cut-outs, apply the aluminum heat conductive tape around the inside edge in one continuous piece. This is an important step to ensure the benchtop is protected from excessive heat.

Undermount Sink Fixing with Clips

Important Note:

All sink clips bolts can be bonded in position before any benchtops are joined or fixed in place with AB glue, and wait 20- 30 minutes handling time(see figure).

When installing the sink, ensure that no screws are used directly into the GemStone benchtops. All fixing clips should be on the underside of the benchtop. In some installation scenarios, it may be necessary to bond additional fixing blocks to the underside of the benchtops.

Effortless and Versatile installation



1 Clean the bottom of the countertop at the installation location with alcohol.



2 Prepare the epoxy resin and place it on your marked positions.



3 Firmly press the anchor studs into the epoxy resin and wait for it to dry.

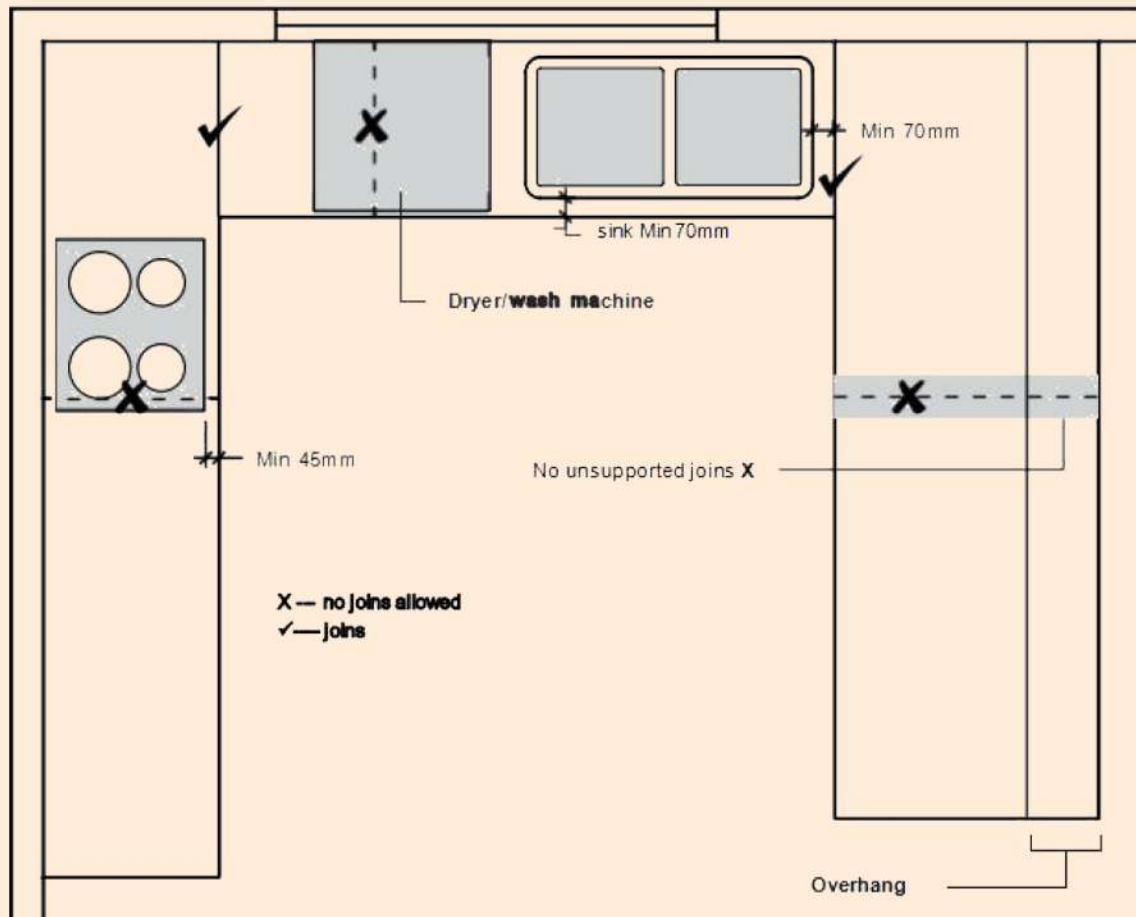


4 Insert the clips into the anchor bolts and tighten the wingnuts to complete.

Joining & Installation of GemStone Benchtop

Step 1 Join preparation.

Joins should not be made over a dishwasher, washing machine, dryer or any other appliance which will produce heat. Joins must be 70mm away from cut-outs. Joins are to be fully supported and not over benchtop overhang.



After all cut-outs have been made, dry fit the pieces together to double check the alignment and fit. Also make sure the tops are level. Note: Ensure the edges which are joining meet along the full length (see Fig. 9). When factory levelling inserts are positioned and benchtops are butted together they can be shimmed underneath with thin packing pieces (not supplied) to ensure the top surfaces are level.

Test fit Gemstone tops without applying adhesive to ensure a correct fit. Ensure an expansion gap of 1.5-3mm is left between walls which can be sealed with a silicone sealant if needed

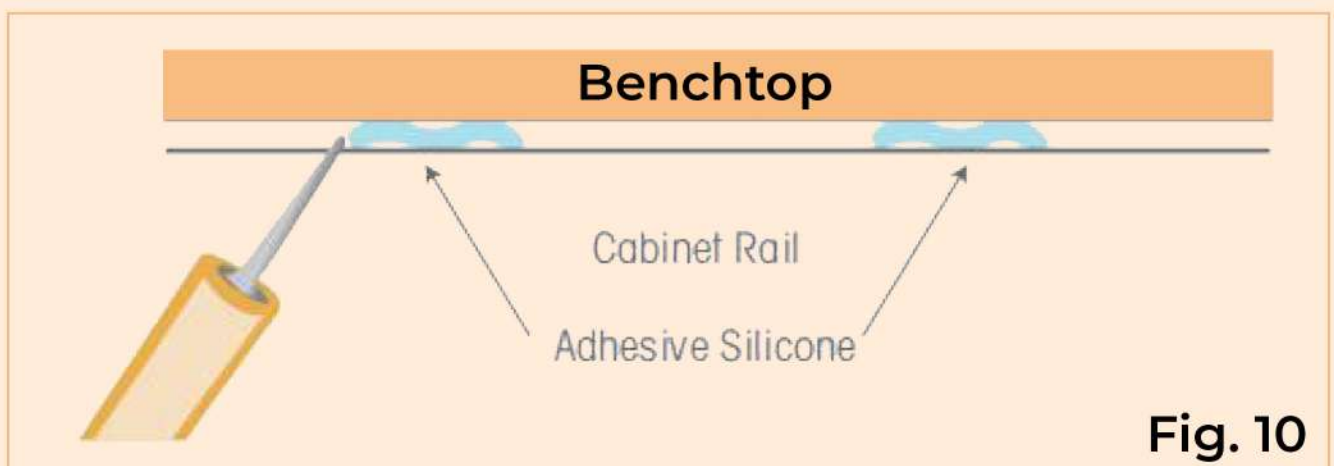
Professional Tip-To ensure that each toggle bolt can be accessed to be tightened, check the positioning of where these will be located prior to installing the benchtops

Step 2- Cleaning and preparing joints

Clean the pre-prepared edges with methylated spirits prior to applying the translucent silicone. Ensure your hands are clean to avoid contamination of the silicone in the joint.

Step 3-Positioning the first top

Start in a corner and work outwards. Apply small amounts of the translucent silicone sealant on the cabinet front & back rails, as well as other points where they make contact with the benchtops. (see Fig. 10) Gently fit the first top in place and check that it is level. For the first top, ensure the tongue is properly located in the edge of the factory prepared join. (see Fig. 11)



Step 4-Installing the second/third tops

Apply translucent silicone sealant to the cabinets as before in Step 3, Joining the benchtops together.

CAUTION: The GemStone must be fitted to the wall allowing a minimum of 1mm expansion Gap.

CAUTION: Ensure hands are clean so as not to contaminate the silicone in the join.

Apply a bead of translucent silicone sealant along the adjoining edges (see Fig. 12). Bed the benchtop down onto the sealant and push the benchtops together ensuring they are aligned, and join firmly ensuring that a small amount of silicone sealant beads on the benchtop surface (see Fig. 13) Remove any excess translucent silicone sealant from the benchtop with a clean, moist cloth.

Masons mitre is a typical join that takes away from any variation within the slabs or that looks to be different. All areas to be joined need to be cleaned to prevent contamination & discoloration of the joint.

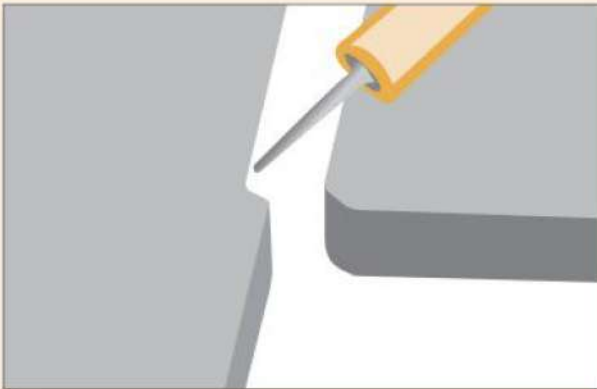


Fig.12

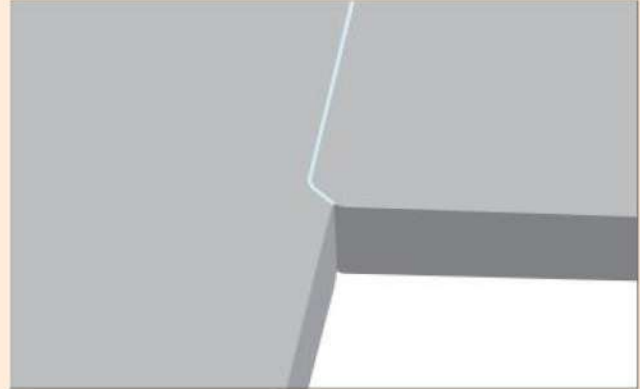
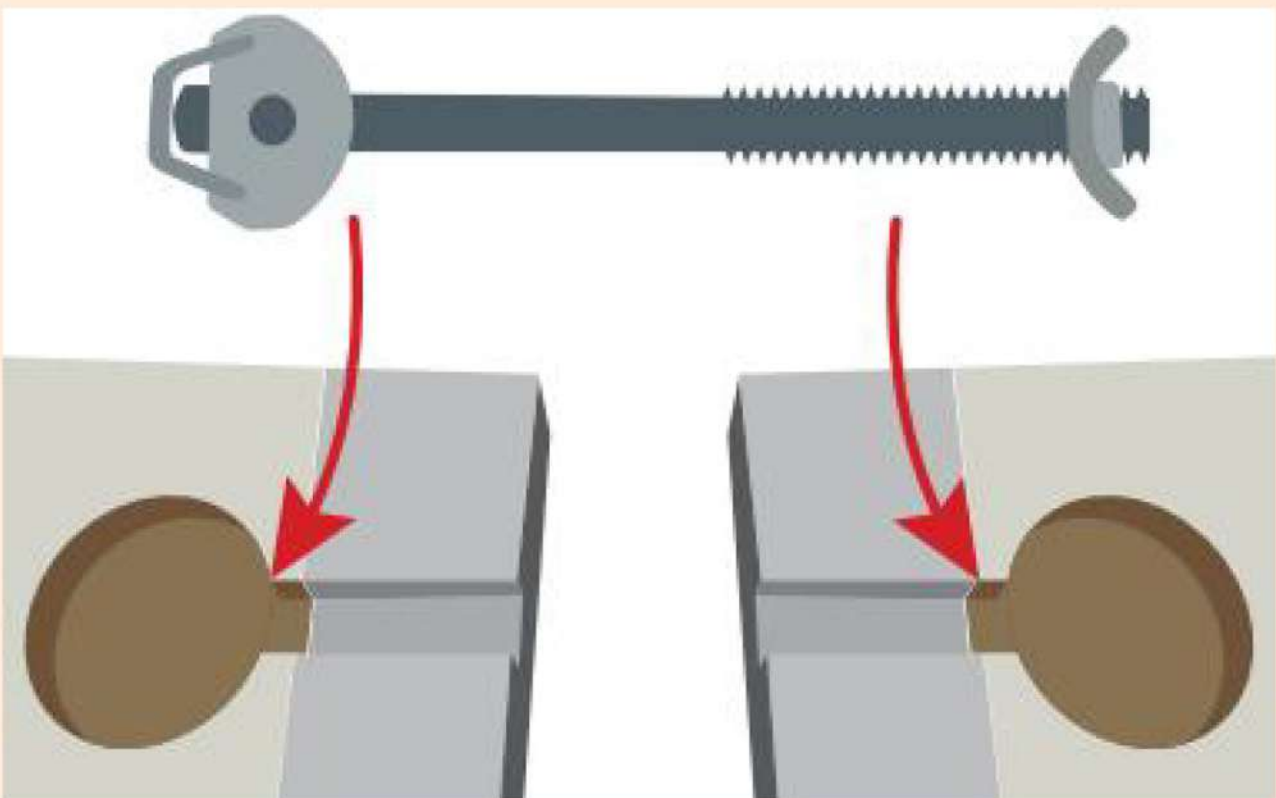


Fig.13

Insert the toggle bolts to the underside of the benchtop. Ensure the toggle key attachment is accessible once the benchtops have been positioned into place and tighten.

For additional benchtops, follow instructions shown in the second and third tops section. Once you have completed the installation of all benchtops, you can have your appliances installed by a licenced plumber and/or electrician.

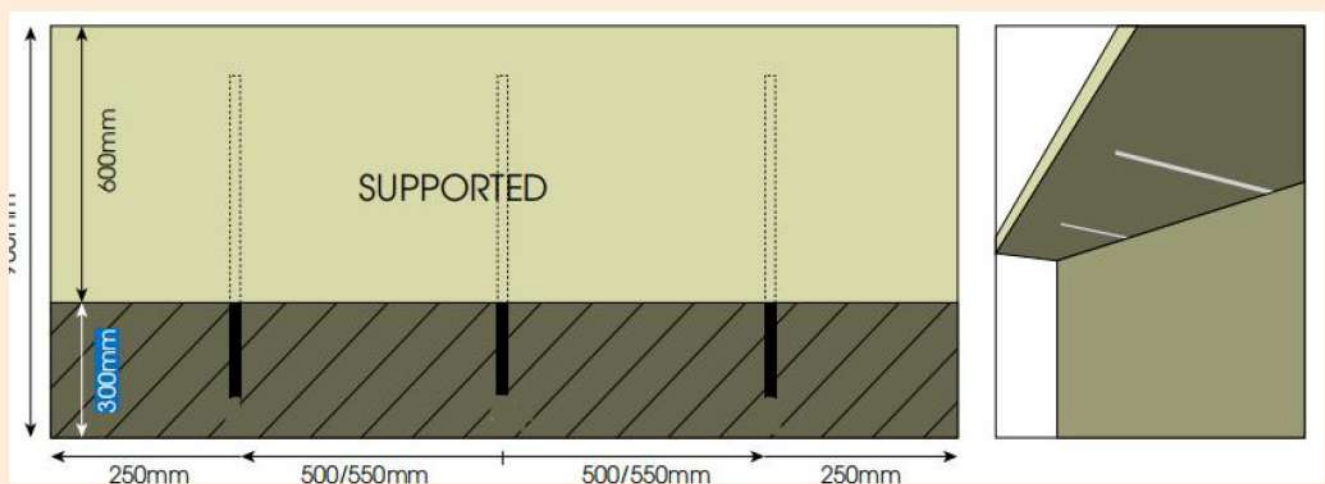


Allen Key and toggle joint as pictures above& below.



Overhang

Overhang Size 20mm	Suggested support
Less than 150mm	No additional support required
Between 150mm & 300mm (20mm GemStone only)	Brackets every 550mm and extending within 100mm of the edge, Overhang should no more than one third width of the benchtops.



Planning your color matching before Fabricating

Matching of slabs before manufacture or taking them to the site for installation is crucially important. Joins should always be picked with care, especially in the veinous pattern where the colour and patterns will need to be lined up.

We highly recommend you lay your slabs out before any manufacture of the product, to mimic the benchtop plan of the job to check colour and patterns line up. Manufacture of the product is acceptance of the product.

Finishing and polishing

To achieve a flawless finish, the following guide should be used when finishing/polishing Gemstone. Gemstone slabs are supplied with a 4K Gloss finish to the face which can be repolished to a Matt or Semi-gloss finish if required. In addition to polishing the edges of a fabricated Gemstone top to a matching finish, after storage, machining, and fabrication the slab face may need to be repolished to be brought back to its original finish.

Finish	P Grade Sandpaper
Matt	P180, P240, P320, P500
Semi-Gloss	P180, P240, P320, P500, P800, P1000 (Cutting), P1000 (Polishing)
Gloss (4K)	P180, P240, P320, P500, P800, P1000 (Cutting), P1000 (Polishing), P2000 (Polishing), P3000 (Polishing), P4000 (Polishing)

Repair

Gemstone is a highly repairable product and when completed correctly can be re-stored back to its original state. The below steps outline the procedures for repairing Gemstone if damage occurs.

Scratches and minor surface marks

Minor scratches, stains or shallow impact marks can be polished out by following the steps laid out in 'Finishing/Polishing section. For light scratches, start at P320 grit sandpaper and sequentially move up finer grits listed until the desired finish (Matt, Semi-gloss, Gloss) is reached. Deeper scratches may require at a coarser grit sandpaper (P180) to be used as the starting point.

Deeper surface marks and small chips

For deeper surface marks and chips where re-polishing the surface will not be sufficient, it is possible to repair the damage with Gemstone adhesive that matches the Gemstone slab colour.

1. Drill out the damaged area using a diamond tipped drill (recommended) or tungsten carbide drill bit. The size of the damage will determine the diameter drill bit required, however any damage over 5mm wide consider if a plug repair method (see below) is better suited.
2. Ensure all dust and excess material is removed from the drill hole and clean with a lint free white rag and methylated spirits.

3. Fill the hole with matching Gemstone adhesive ensuring to overfill the hole so that the repaired surface can be polished down to the flat surface of the rest of the slab.

4. Once cured, follow the steps laid out in Finishing/Polishing section to reach the required finish (Matte, Semi-gloss, or Gloss).
Ensure to blend the polishing area outside of the repaired section to achieve a uni-

Gemstone Institution: Please tell us if you need further help to know how to fabricate Our products, we can provide onsite training in our warehouse.

Disclaimer : The information provided in this guideline is intended as a general reference for the fabrication and installation of our benchtop materials. It is based on typical industry practices and our current understanding of best methods at the time of publication.

However, this guideline is not intended to be exhaustive or prescriptive, and users are not required to follow it exactly. The actual procedures may vary depending on the specific materials, tools, site conditions, and project requirements.

We make no guarantees that following this guide will be suitable for all applications or result in successful outcomes in every situation. It is the responsibility of the fabricator, installer, or contractor to apply their professional judgment and comply with relevant building codes, safety standards, and manufacturer specifications