

## FABRICATION & INSTALLATION MANUAL

### I. INTRODUCTION

#### 1. Purpose

The purpose of this manual is to outline the basic technical requirements and provide suggestions and guidelines related to the fabrication and installation of MetroQuartz.

#### 2. Terminology

The phrase “MetroQuartz” when used in this document refers to any engineered stone slab or cut to size forms manufactured, marketed, and sold by Architectural Granite & Marble or its approved distributors or agents.

“The Customer” used in this document refers to any person, firm or company placing an order with Architectural Granite & Marble or its approved distributors (“the Company”) for the purchase of MetroQuartz.

“Product Manual” used in this document refers to the technical information, specification, design, fabrication, maintenance and other data relating to the use and application of MetroQuartz.

#### 3. General Product Information

MetroQuartz is a composite of natural minerals and rocks, mainly quartz, bound with resin, pigments and other fillers. MetroQuartz is a high quality solid non-porous surface product that is resistant to scratches, heat, stains and water. MetroQuartz requires minimal maintenance, and when properly cared for, can remain in impeccable condition for years.

#### 4. Limitations & Responsibilities

We have taken care to provide complete information in this document. This information should be used as a guide in the design, installation and care of MetroQuartz. No warranty, however implied or expressed, is given in relation to the procedures outlined in this Manual except that which is required by law.

Architectural Granite & Marble assumes that the designers, fabricators, and installers using MetroQuartz are familiar with all aspects outlined in this Manual and strictly adhere to the recommendations and specifications described herein. Any deviation from the recommended guidelines may result in the products not performing as expected and may result in the warranty becoming null and void.

Though every care and precaution has been taken in the preparation of this document, Architectural Granite & Marble assumes no responsibility for errors and/or omissions, or for the damages resulting from the use of information contained in this Manual. Architectural Granite & Marble shall not be liable for any loss of profit or any other loss or damage caused or alleged to have been caused either directly or indirectly as a result of any person solely relying upon any information contained in this Manual.

Architectural Granite & Marble reserves the right to change or modify this Manual or its electronic version from time to time without notice. It is the responsibility of the Consumer to consult or contact Architectural Granite & Marble for the latest version or updates.

## **II. Applications for MetroQuartz**

### **1. Interior Applications**

MetroQuartz is ideal for use in interior applications such as: kitchen countertops, bathroom vanities, tub and shower surrounds, fireplace mantles, walls, stairs, restaurants, hotels, hospitals, and laboratories, and also wherever high quality, sanitary, and low maintenance countertops are required.

Exposure to unfiltered direct sunlight may result in color change and/or warping. Most windows manufactured in the last 30 years block a sufficient amount of the UV rays to prevent color change or warping, however it should be taken into account, especially in older homes. It is advisable to avoid direct unfiltered sunlight over a prolonged period on the surfaces used in the above applications.

### **2. Fireplace Mantle Applications**

MetroQuartz can be used for fireplace mantles but is not recommended for fireplace surrounds. MetroQuartz should not make contact with the firebox or surfaces exceeding 212 °F (100 °C). Exposure to temperatures above 212°F may result in localized seam separation or material cracking if not properly installed.

### **3. Exterior Applications**

Architectural Granite & Marble does not recommend MetroQuartz for use in exterior applications. Its use in an exterior application will void the warranty.

## **III. PRODUCT SPECIFICATIONS**

### **1. Slab Sizes**

MetroQuartz can be manufactured in a wide range of sizes and thicknesses to accommodate any application. However, some may be available on a special order bases only. For information about availability, minimum purchase quantities, and lead time, please contact your sales representative. Slab sizes are approximate only, as sizes may be up to 1-2 inches larger or smaller than indicated based on the actual slab.

### **2. Color & Finish**

MetroQuartz has a color palette ranging from subtle white and beige tones to darker greys, browns, and blacks. MetroQuartz slabs are generally available in the polished finish, while select colors are available in a honed or 'Atlantis' finish. However, a honed finish may be supplied to special projects in other colors on a case by case basis.

### **3. Color Consistency and Tonal Characteristics**

Variation in slab color may occur from batch to batch due to the location from which the natural material is sourced. The composition of natural particles used in the products may sometimes produce minor irregularities such as crazing in the grains, blotches, spots, or colored particles. Such imperfections are generally accepted by the industry.

MetroQuartz is a non-porous product, but very fine micro pores could be present in certain colors/finishes and is unavoidable during the manufacturing process. **It is the responsibility of the fabricator to visually verify color match of any slabs to be fabricated and installed prior to cutting.**

#### 4. Technical Characteristics

Characteristics	Test Method	MetroQuartz ( Range of Values )
Density	ASTM C97 EN 14617-1	2.2-2.5 gr/cm <sup>3</sup>
Water Absorption	ASTM C97	≤0.10%
Flexural Strength	ASTM C880 EN 14617-2	6,200 -11,000psi 24.3-70 MPa
Impact Resistance	EN 14617-9	3.4-10J
Compressive Strength	EN 14617-15	150 – 250 MPa
Mohs Hardness Scale	EN101	6.0-7.0
Microbial Resistance	Resistant to Mold Growth	
Resistance to Chemical Acids	ASTM C560	Not affected
Slip Resistance at Honed 400	DIN 51130	R9-R10
Determination of resistance to dry heat	Rating A (no visible change)	

**NOTE:** *The values quoted above for MetroQuartz are an average range of values of the different products tested and should be considered as an indication only. The test results may vary between colors and different production runs.*

Tested and Approved by GreenGuard

#### IV. GENERAL INSTRUCTIONS

##### 1. Taking Delivery

When taking delivery of MetroQuartz, please make sure of the following:

- Check all the slabs for uniformity of color and granulometry (aggregate distribution) as slabs may vary in color and granulometry from batch to batch.
- Check the slabs for any surface defects including: Contamination of grains, fine fissures, stains, chipping, warping, and thickness variation.
- Do not transport slabs horizontally and use proper “A” frames to transport the slabs. Always keep the polished surface protected and remove any sharp tools or implements from the vicinity of the slabs to avoid scratches on the polished surface.

If you detect any of the above defects after taking delivery of the slabs, and prior to cutting, do not proceed with the processing, rather return the slabs immediately.

## V. DESIGN AND INSTALLATION GUIDE

Remove the plastic sheet on the slab prior to inspecting and fabricating slabs.

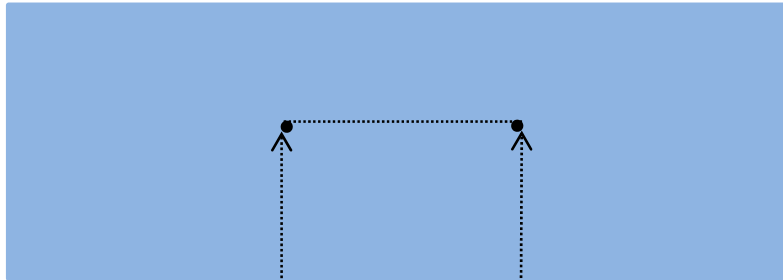
### 1. Fabricating MetroQuartz

Care should be taken when cutting and fabricating MetroQuartz. Tension within the slab can cause cracking. Following these simple rules can minimize the chance of this occurring.

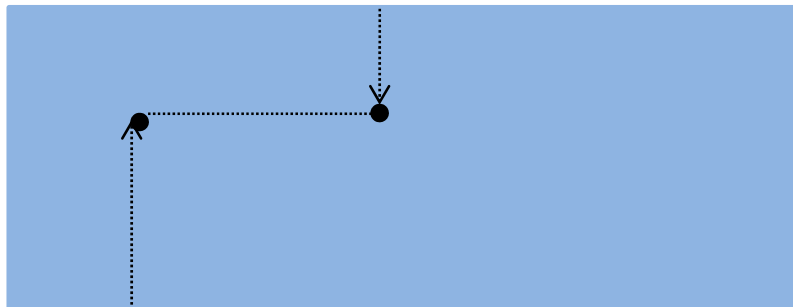
- For a plunge cut, prior to beginning the cut, drill a 1" relief hole at the termination point of the cut. Always cut **towards** the relief hole.



- For a "U" shaped cut, mark and drill relief holes where the cut lines will intersect. Always make the shortest cut first.



- For an "L" shaped cut, mark and drill relief holes where the cut lines will intersect. Always cut the shortest length first, and cut towards the relief hole.



- For a cut that will be the full length of the slab, either with a plunge cut, or starting at the edge, mark and drill a relief hole at the termination point of the cut, then cut towards the relief hole.



- Fabrication of MetroQuartz requires a minimum radius for all inside corners of 3/8" or larger.

## 2. Recommended Waterjet Settings

For the best results, be sure the cutting table is completely flat when fabricating MetroQuartz.

Orifice size: .0140

Abrasive Flow Rate: .16

Initial cut for approximately the first 10-15 seconds at low pressure: 8,000 - 10,000 PSI

Then increasing to high pressure for the balance of cutting the piece: 43,000 - 45,000 PSI

Feed Rate: 2.5 in/min. initially at low pressure. Increase to 3.5 - 3.75 in/min. for the remainder of the cutting at high pressure.

NOTE: Recommendations and settings may vary depending on a number of factors including but not limited to equipment and abrasive materials used. Please consult with your equipment's manufacturer for optimal material cutting recommendations for your waterjet.

## 3. Kitchen / Vanity Cabinets

Prior to installing countertops, the cabinets and base units should be checked for the following:

- Strength and stability; the cabinets and substrate base should be able to withstand weight in excess of 12lbs per Sq. Ft.
- All units are fastened to both the wall and between the base units.
- Cabinets are leveled properly. The top of the cabinets must be plumb, true, and flat. Make sure that the level does not vary more than 1/16" over 10'.
- Remove any nails, screws or sharp edges from the surfaces where the tops will be placed.

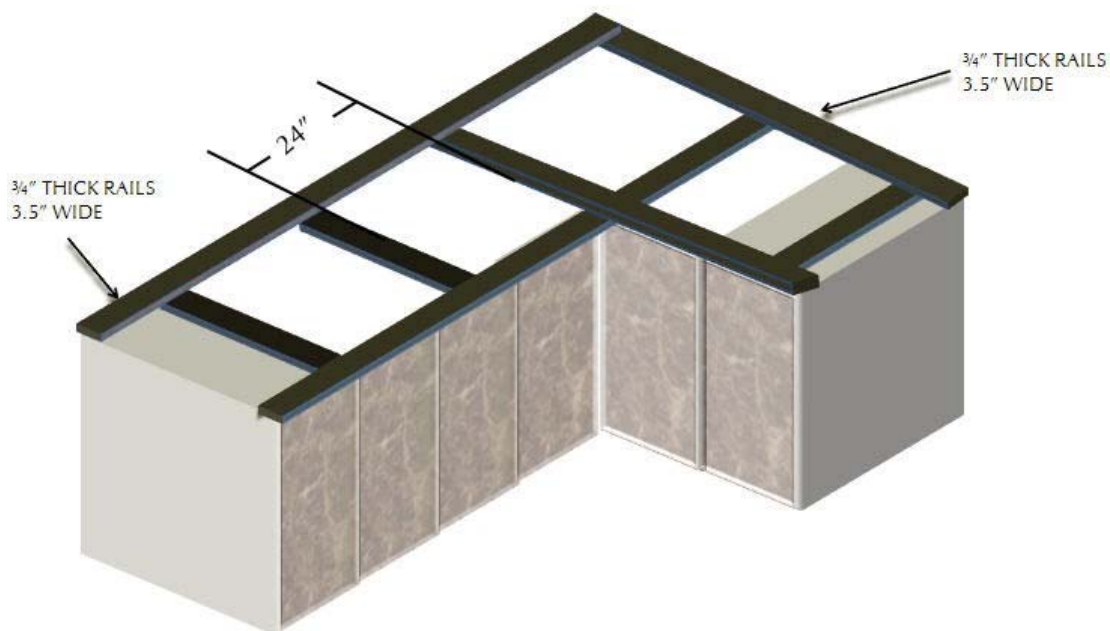
## 4. Installation of Countertops

No two kitchen countertops are the same, however there are some general guidelines for installing MetroQuartz countertops. As long as the base cabinets are level and they allow for the support outlined below, no additional support is needed when installing 3cm material. When installing any material less than 3cm in thickness, you must ensure the countertop has proper support. For material less than 3cm thick, the base supporting the countertop can either be *Complete Perimeter support* or *Complete Underlay support*.

- Rarely will all the walls be perfectly square. Be sure to make allowances for such imperfections prior to cutting. Clearance of at least 1/8" should be maintained between the MetroQuartz surface and surrounding walls.
- Countertops should be placed on a very sound and solid frame or a base which is perfectly plumb, level and true.

#### **Complete Perimeter Substrate Support**

- Support the top, front, and back with a rail of not less than 3.5" in width and 5/8" thick. Then support the back of the slab with rails 3.5" wide spaced at regular intervals of approximately 24", as shown below.
- It is important to provide a minimum of 1/8" between the edge of the slab and the wall so that any expansion in the wall or slab due to temperature variation can be accommodated. An additional gap of 1/8" per 5' for all countertops exceeding 10' should be provided.
- Apply dabs of flexible 100% silicone adhesive at regular intervals of not less than 12" apart on the back of the top, then place the top gently, and level the tops before the adhesive hardens.

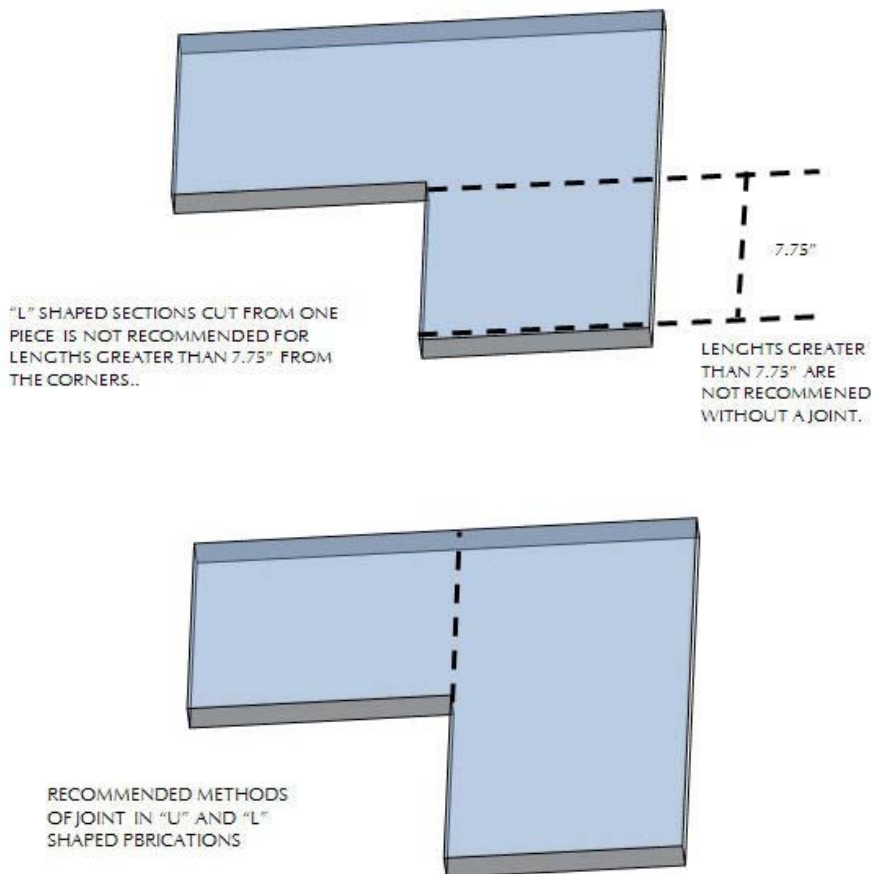


#### **Complete Underlay Substrate Support**

Alternately, the complete surface area of the countertop can be supported over the kitchen cabinets with a full width self-supporting underlay made up of plywood with a minimum thickness of 5/8".

## 5. Planning and Installation of Countertops with Joints & Cutouts

- Do not place joint within 6 inches of a planned cut out, such as for a sink, cook top, etc.
- Due to various mechanical stresses experienced after installation, Architectural Granite & Marble does not recommend installing “L” shaped countertops without a joint at the corner of the “L” shape. Fabricator should use their own discretion when fabricating.

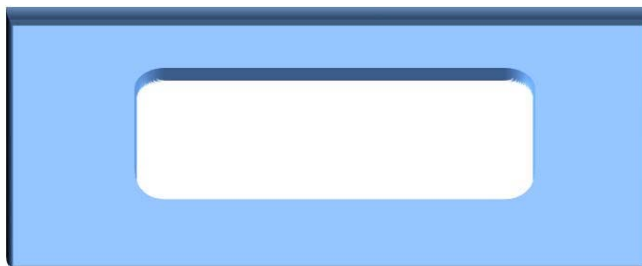


- All the joints in the countertops should be well supported from underneath.
- All the joints should be properly cleaned with acetone or denatured spirit to get rid of dust and grime.
- All the sides of the joints should be grooved or slotted in the middle so that the glue joining the two slabs will be well distributed for good adhesion.
- Check that the countertop is well aligned, both along the joint(s) and also along the front.
- Check that the countertop is leveled properly and is plumb and true.
- Use paper masking tape at the joints so that the glue applied to the joints does not move to the polished face.
- Ensure that the joints are perfect and then place clamps at the joints until the adhesive sets properly.
- Once set, remove the masking tape and clean off any excess adhesive from the contact surface with acetone or denatured spirit.
- Do not fasten any mechanical fasteners like screws and nails directly into MetroQuartz.
- Seams should not be placed directly over a dishwasher or other appliance that may radiate heat.

If you are planning to make your cut outs onsite, it is essential that the operation is in an area where you can use wet tools. It is not recommended that you cut the sink or cook top cut outs, on the top of cabinets with dry cutting tools.

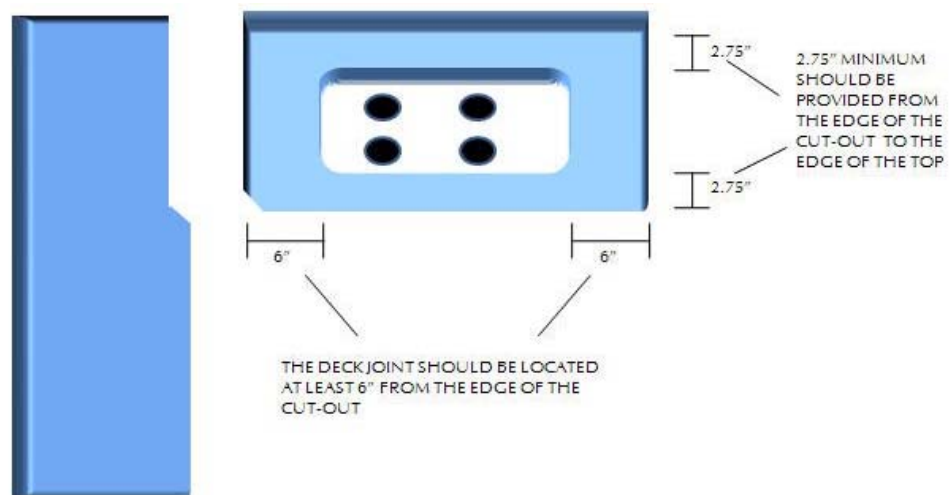
All cut outs should be cut using only wet cutting tools to avoid generating excess heat to the tops and the corners. The radius of the corner should be around  $\frac{1}{4}$ ". When cutouts are planned allow an extra  $\frac{1}{8}$ " between the appliance edges and the top cut out sides. This is essential to accommodate any expansion that may develop in the top due to temperature changes.

INTERNAL CORNERS OF CUT-OUTS SHOULD BE ROUND. PRIOR TO CUTTING, DRILL THE CORNERS WITH A DRILL,  $\frac{1}{2}$ " MINIMUM HOLE DIAMETER.



PLANNING CUT-OUTS

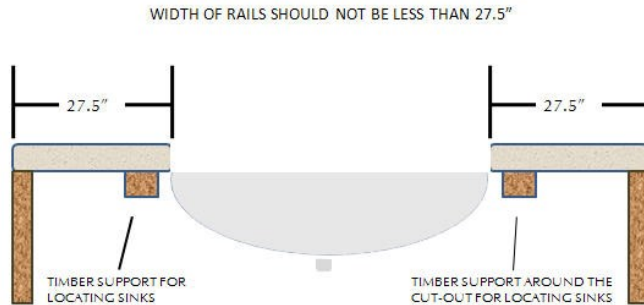
- Care should be taken when installing appliances like cook tops and sinks, etc. Read the instruction manual that was supplied by the appliance manufacturer prior to installing any appliances. Make sure that all brackets and supporting hardware are included.
- Center the appliance in the cut out and make sure that you allow a minimum of  $\frac{1}{8}$ " space between the inside edges of the appliance and the cut out walls.



RECOMMENDED METHOD FOR INSTALLING HOT PLATES.

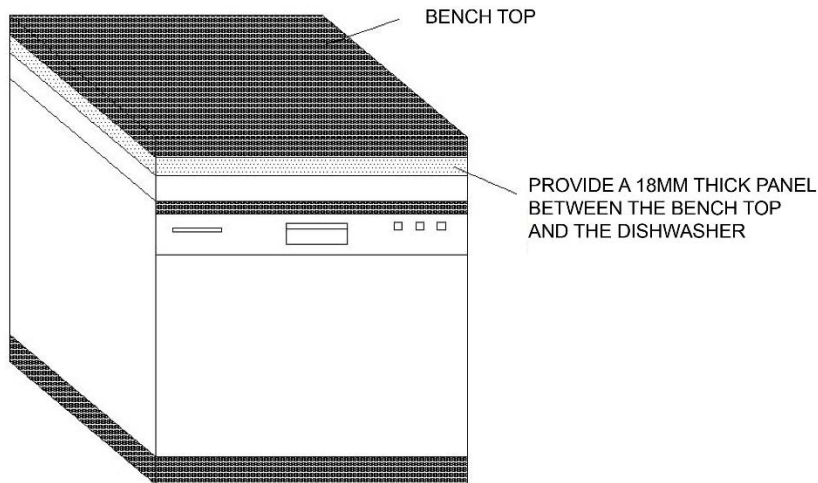


- Position all the appliances in place and make sure that the seals provided with the appliances are properly placed prior to tighten the fasteners. All fasteners should be only finger tight, never use force in tightening the fasteners.
- Any appliances weighing more than 11lbs should be adequately supported by the cabinet frames.



INSTALLATION OF UNDER THE COUNTER SINKS

- All of the joints between the countertop and the appliance edges can be sealed with a high quality transparent flexible sealant. Clean any excess sealant immediately.
- Uneven thermal distribution may occur in areas above dishwashers and over hot water plumbing systems which may cause the top to crack. To avoid this, all the hot water plumbing should be thermally insulated. It is a good practice to make the tap holes slightly oversized so that the hot plumbing system is not in direct contact with the product.
- When installing a dishwasher, it is essential to fit an 18mm thick moisture resistant board or marine plywood above the dishwasher in the cabinet.



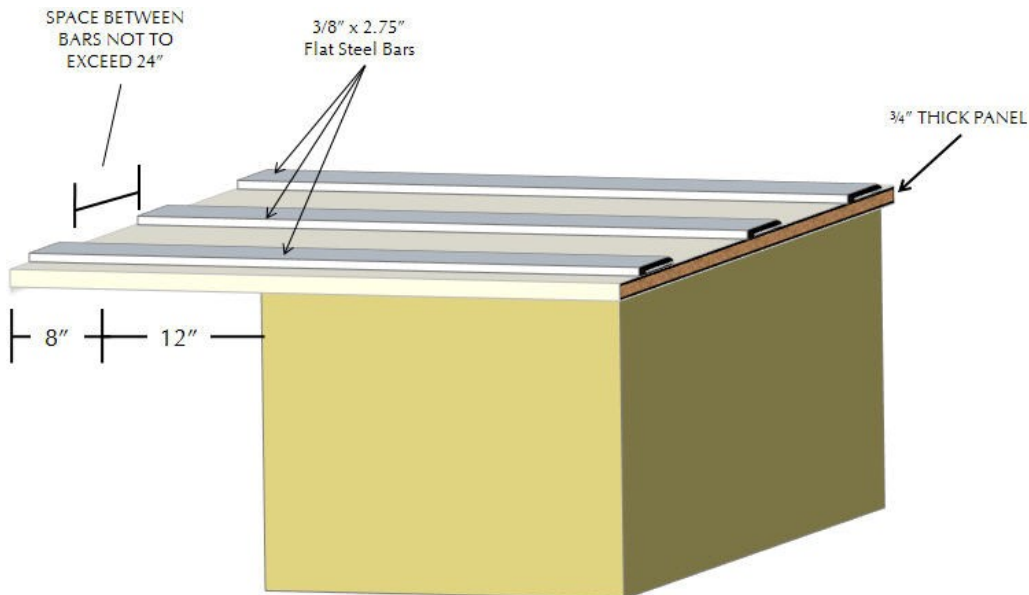
DISHWASHER INSTALLATION

## 6. Overhang and Supporting Brackets

All overhangs should be properly supported. Any overhang that exceeds 8" for 2cm material, or 12" for 2cm material with a 5/8" sub top, or 16" for 3cm material shall require the support of a 3/8" thick steel bar no less than 2.75" wide or appropriate L-Brackets placed underneath the top to support the potential weight load. If a 1 1/2" laminated edge is used, then a piece pasted to the top can extend the whole width of the overhang to take away some of the stress placed on the overhang.

If the overhang is less than 20" then general practice is to provide a support base made up of timber and brackets placed approximately 20" apart. The brackets should be fastened to a backer plate, which is secured to the cabinet or wall with screws. All over hangs exceeding 20" should be supported with proper metal or solid wood legs.

Material Support Required	2cm (3/4")	2cm (3/4") With 5/8" Sub Top	3cm (1 1/4")
No Additional Support Required	Less than 8" (200mm)	Less than 12" (400mm)	Less than 16" (400mm)
Brackets Required at 24" (600mm) Intervals	8 - 16" (200mm – 400mm)	12 - 20" (400mm – 600mm)	16 - 24" (400mm – 600mm)
Legs, Columns, or Panels Required at 24" (600mm)	Over 16" (400mm) Intervals	Over 20" (600mm) Intervals	Over 24" (600mm) Intervals



SUPPORT DETAILS FOR OVER HANG EXCEEDING 8"

## 7. Installation of Backsplash

MetroQuartz can be used for a backsplash application in wet areas, behind wash basins, sinks, and behind cook tops. However, when installing backsplashes behind gas cook tops and heat generating appliances, it is important that the installer follow all instructions and safety requirements as outlined by the appliance manufacturers, as well as conform to any local building standards or codes.

The installer must also ensure that the following general guidelines are strictly followed:

- Make sure that the walls are vertical and free from dirt and grime. If needed clean the entire surface.
- It is not advisable to install a backsplash on gyprock boards and any paper lined gypsum product.
- The backsplash pieces should be thoroughly cleaned on the back and on the top. Place them in the area to be installed and check whether the pieces fit properly.
- After the pieces are fit satisfactorily, clean the contact surfaces with acetone or denatured spirits and apply dabs of transparent two part epoxy glue to both the surfaces of the contact and place the cladding. It is not advisable to use grout between the cladding and the countertop. Use a flexible silicon based sealant to fill the gap between the countertop and backsplash.

## 8. Cladding Walls

MetroQuartz can be used for all internal cladding of walls and vertical applications. When designing and installing vertical panels and cladding, it is necessary to take the mass of the product into account and the services of an experienced structural engineer should be sought during the design and installation phases.

If fasteners are needed for safe installation, care should always be taken. Damage caused by the attachment or use of Mechanical Fasteners is not covered by the warranty.



## VI. CARE & MAINTENANCE

MetroQuartz is a high quality solid non-porous product that is resistant to scratches, heat, and stains. However, MetroQuartz is not heat, stain and scratch proof. MetroQuartz requires minimal maintenance and the following care and maintenance guidelines will help to keep the surface in impeccable condition for years.

### 1. General Routine Care & Maintenance

MetroQuartz is highly resistant to stains caused by fruit juices, liquid food coloring, coffee, tea, wine, grapes, soft drinks, paints, nail polish and remover, automotive fluids, and permanent markers. Should a spill occur, wipe off the stained area with any commonly available multi-purpose cleaner or household detergent and then rinse the area with water immediately. For more stubborn spills and stains, repeat the procedure several times and use a soft, non-metallic scouring pad to remove the stain. It is possible that some of the stubborn stains may leave a light mark or very slight discoloration of the stone.

### 2. Preventing Heat Damage to Countertops

MetroQuartz is designed and manufactured to withstand moderate heat but the **product is not heat proof**. The Thermal Shock resistance is increased with the increase of the thickness of the material; 3cm slabs are far more resistant to heat than a 2cm slab. Like any other composite material, MetroQuartz may be damaged by a sudden and/or lasting exposure to high temperatures, mainly at the edges and cut outs of the product, resulting in cracks. To prevent thermal shock, discoloration or other damages, it is necessary to use insulating pads or trivets when putting hot objects on the surface, and not to expose the surface to open flames or prolonged contact with very hot pots. We always recommend using a hot pad or trivet, especially when using cooking appliances such as electric frying pans, crock pots, or roaster ovens.

### 3. Use of Common Kitchen Implements

Common kitchen implements including sharp knives won't harm MetroQuartz, however continued cutting in the same area directly on the surface may dull the polished finish over time. Care should be taken when moving heavy objects to avoid dropping heavy kitchen tools on the MetroQuartz surface.

### 4. Removing Foreign Materials

If food, chewing gum, nail polish, paint or any other foreign material is found sticking to the top/floor, simply scrape away the material with a sharp blade or sharp plastic scraper. The use of a metal scraper may leave grey metal marks on the surface, and nylon non-abrasive scouring pad can easily remove them. Wash and rinse the surface in the normal way with water.

### 5. Exposure to Chemicals and Solvents

MetroQuartz can be permanently damaged by prolonged exposure to strong chemicals and solvents. It is advisable not to use hydrofluoric acid, or any product such as oven cleaners or drain cleaners containing trichlorethane or methylene chloride and paint strippers.

## 6. Exposure to Direct Sunlight

When exposed to direct sunlight MetroQuartz slabs may result in color change and warping. It is advisable to avoid direct sunlight over a prolonged period.

## 7. Maintenance of Floors

Dust, grit, and barrier materials from the floors should be removed on a daily basis by sweeping with a soft brush. Sand, rocks or other debris can scratch a Quartz Based floor and those surfaces should always be kept free from dust, sand and soil. MetroQuartz surfaces can be easily cleaned with warm water and mild household detergent using a standard mop. Make sure the floor is completely dry before allowing people to walk on it.

## 8. Maintenance of Finishes

MetroQuartz is offered in a few different finishes. Just as each finish has a different look, it also has slightly different characteristics.

Some colors are available in our Honed finish which offers the soft appearance of a lower sheen compared to the Polished finish. The Honed finish requires slightly more maintenance than our polished finished materials. Since the honed finish actually creates more surface area to the material it has the potential to show more signs of living from daily use. Possible marks from metal cookware or utensils, fingerprints, food and beverages, and other items placed on, or moved across the countertop, may be visible on the surface. Most marks can be easily removed with a cloth or sponge, or by using household cleaners such as a cleaning eraser or carefully scrubbing with a sponge and a non-abrasive cleaner such as Soft Scrub Advanced Cleaner®. Over time the Honed finish will develop character and a patina unique to each customer. A Honed finish can be cleaned using the same products and methods as other finishes. Please see our care and maintenance guide at: [MetroQuartz.com](http://MetroQuartz.com)

Be aware of the unique characteristics of a honed finish; it will be more likely to show scuffs, marks, and fingerprints, and will require more frequent or intense cleaning and maintenance to keep it free from marks.

A few colors are also available in our Atlantis finish. This finish is made to resemble concrete, and will have more variation in color and texture than other quartz slabs. Each slab is unique with texture variation including channels, dips, ridges, and indentations that are inherent to the Atlantis finish.

The warranty issued by Architectural Granite & Marble for MetroQuartz covers manufacturing defects, however the temporary marks that commonly occur on honed and satin finishes are inherent to the material, and are not covered under the terms of the warranty.

## 9. Clear Shipping Plastic Removal

MetroQuartz is protected during transportation by a protective plastic cover. The plastic and its acrylic adhesive should be removed using the method described below.

- Strip away plastic sheeting.
- Wash away the remaining adhesive with “*warm*” water and a small amount of mild soap. Warm is defined as between 104° -120° Fahrenheit. Clean the whole surface of the slab.



- Wait for 5-10 minutes.
- Repeat steps 2 and 3 as necessary until the surface is free of adhesive.
- Rinse with cool water.

Note: Do **NOT** use chemicals such as alcohol or acetone! The use of solvents to remove the film causes the adhesive to dissolve and create a chemical reaction which may change the appearance of the slab surface and will not be covered under the product warranty.

#### **9. Advice to the Installer**

It is the duty of the installer to advise customers of the important aspects of Care and Maintenance for MetroQuartz.

Matching adhesives available at Integra Adhesives.

Please visit the link below to learn more about safety when cutting natural stone and engineered stone slabs. Please keep in touch with OSHA and MIA for the most updated information.

<http://www.marble-institute.com/silica/>



## Technical Bulletin

### Proper use of Chemicals on quartz surfaces

While quartz is very resistant to various chemicals, there is a risk of damage to the finished surface from prolonged exposure to certain chemicals.

#### Proper use of acetone and other chemicals:

1. Acetone may safely be used to remove excess adhesive near edge details and material seams. Acetone may also be used to clean the finished surface of MetroQuartz of stains, fabrication markings, or templating residue.
2. Acetone should be applied to a cloth for cleaning and not poured directly on the material surface.
3. Chemical bottles or metal cans should not be left on the material surface as it is possible to trap liquid under the container and cause damage to the MetroQuartz finish.
4. Acetone soaked cloths should not be placed or left on the material surface for prolonged periods of time as this can cause damage to the material finish.
5. It is possible for acetone or other chemicals to become trapped under the protective plastic on slabs during the fabrication process. In order to avoid this potential issue it is again recommended to only apply acetone to a cloth for cleaning and not pour the liquid on the slab surface. Make sure to clean any spills immediately and remove plastic from any areas exposed to the chemical spill.
6. Below is a list of other chemicals that could potentially damage or affect the finish on MetroQuartz. This list is not all inclusive as there are other potential chemicals that may damage the material. The degree of any damage experienced may vary based upon the chemical, concentration, and the length of time of exposure.
  - Dyes, stains, drain cleaners, oven cleaners, paint thinner or strippers.
  - Stone sealers, enhancers, agers, or other topical treatments.
  - Solvents such as acetone, nail polish, lacquer thinner, or bleach (short-term exposure is acceptable for purpose of cleaning difficult stains, but these chemicals should be removed and thoroughly rinsed away within five minutes of application)
  - Chlorinated solvents such as trichloroethylene or methylene chloride
  - Benzene, toluene, methyl ethyl ketone
  - Concentrated acids such as hydrocyanic acid, hydrofluoric acid, hydrochloric acid, sulfuric acid, nitric acid, or muriatic acid.
  - Chemicals with high alkaline/PH levels above 8.5

In case of contact with any of the above chemicals, immediately rinse thoroughly with water.