

Introduction

Quantum Quartz is a pure natural quartz surface with a choice of designer surfaces but with the feel of natural stone, and with unmatched qualities and panache. It is non-porous, homogenous, highly durable, resistant to scratching, staining, water absorption, and is virtually maintenance free.

Quantum Quartz is manufactured using internationally patented Bretonstone® Technology. It is composed of up to 93% premium grade pure Natural Quartz and 7% high quality polyester resin. Quantum Quartz colours use the finest quality unleaded pigments, which ensures the consistency of colour from batch to batch with exceptionally accurate repeatability.

The secret behind Quantum Quartz's ground-breaking material strength and beauty lies in its high-purity Natural Quartz, a new generation binding polymer and heavy metal-free pigments. Quantum Quartz is twice as impact resistant and four times stronger than natural stone. Quantum Quartz makes it possible to create anything from beautiful kitchen worktops through to the most innovative flooring and cladding surfaces. It comes with the endless possibilities of adding a variety of customized aesthetic elements like recycled glass or mirror chips, siliceous metal, mother-of-pearl shell fragments, besides rare embellishments such as amethyst, lapis lazuli, jade, jasper, rose quartz, etc., giving Quantum Quartz a sophisticated and matchless aesthetic appearance.

Key features: • Stain Resistant • Low Maintenance • Heat Resistant • Scratch Resistant
• Bacteria Resistant • Fully compliant with multiple global standards.

Quantum Quartz is the leading supplier of quartz surfaces ("Slabs") to distributors, fabricators of countertops in the United States, United Kingdom and Middle East. This manual is published by Quantum Quartz to inform its customers of the best practices for fabricating countertops from slabs. This manual does not intend to replace the normal industry standards for fabrication and craftsmanship. A basic knowledge of stone fabrication is required. Quantum Quartz will not be responsible for any damages or liabilities that arise on account of these fabrication guidelines.

About this Manual

The purpose of this manual is to provide you with the most up to date information about the fabrication and installation procedures of Quantum Quartz slabs. It contains recommendations and technical information about our products and is designed to help you when working with our slabs. This manual is strictly not meant to replace the skills/experience of a qualified stonemason. The processes and recommendations in this manual should be considered as a list of best practices only. The stonemason will make the best choice of fabrication and installation methods to suit the application to which these surfaces may be used. This manual is not meant to be used for any other purpose, nor is it considered to be legally binding. We do not determine or insist on how a fabricator /qualified stonemason should use our surfaces, although following our recommendations can help in faster, smoother work flow during pre- and post- installation and achieve a quality outcome.

Caution

This manual is not intended for use by unqualified/unskilled workers. It assumes that the reader is a skilled professional in the area of stone fabrication, as this manual does not cover the basic skills and knowledge that a stonemason should possess. Quantum Quartz will not be responsible for any damages or liabilities that arise as a consequence of non-adherence to these guidelines.

Warranty

Quantum Quartz provides a Residential Lifetime Limited Warranty and a 10-year Limited Commercial Warranty, ensuring a long-lasting investment to purchasers of countertops with respect to the quality of the slabs. Quantum Quartz's warranty is for the material only and is applicable to any defects that are related to the manufacturing aspects of the slabs. Issues such as the suitability of the slabs, fabrication, installation and the quality of workmanship are solely the responsibility of the fabricator. Full details of the warranty can be found on our website.

How important is technology and why we are superior to our competitors?

Ours is not a generic engineered stone. Our engineered stone is made using the latest technology of Breton Spa of Italy, who are the pioneers and patent-holders of key manufacturing processes that enable the production of a man-made stone with qualities that actually exceed natural stone. Breton's vibro-compression vacuum process builds in the extraordinary innate strength. A series of our proprietary processes ensure the most precise specifications and a truly enduring finish. Hence, we believe that any other engineered stone is a compromise.

Where in the world is Quantum Quartz being used and in which applications?

Quantum Quartz is best used indoors, ideally in areas of low to medium footfall. It is most highly recommended for kitchen and bathroom countertops as well as wall cladding. From international airports to Wall Street lobbies to celebrity kitchens and bathrooms, Quantum Quartz is the most rational, cost-efficient and eclectic choice of architects, contractors, homeowners and home makers. Our clientele ranges from the world's largest chain of home stores to luxury hotel groups to a renowned lingerie chain. Quantum Quartz has a fully robotic fabrication centre to deliver cut-to-size projects. Our equipment includes CNC, bridge saws and automated edge polishing machines. Not only do we offer a comprehensive range of surfaces, finishes, thicknesses and slab sizes, we can customise solutions for you. Including your own signature colours. That's the magic of Quantum Quartz. Natural quartz surfaces that have been engineered to perfection.

Applications

Residential Uses: • Kitchen Countertops, Islands, Peninsulas • Bath, Vanity Tops, Shower Stalls and Shower Surrounds • Other Table Tops, Fireplace Surrounds, Window Sills, Wainscoting, Wall Coverings, Thresholds

Commercial Uses: • Healthcare Facilities • Restaurants, • Office Conference Tables, Reception and Desktops, Countertops and Credenzas, Lobby/Interior Walls • Food Preparation Areas, Laboratories, Floorings and Inlays.

Note: It is not recommended to use Quantum Quartz surfaces in areas that are exposed to direct sunlight, UV radiation, or excessive heat over 150 °C.

FABRICATION & INSTALLATION MANUAL

Technical Specifications

Test(s) Performed	Test Standards	Test Results
Absorption	EN- 14617 - 1	<0.03%
Bulk Density	EN- 14617 - 1	2.15-2.46 g/cm ³
Flexural Strength	EN- 14617 - 2	31-75N/ mm ²
Impact Strength	EN- 14617 -9	3.4- 7.35 Joules
Thermal Expansion	EN- 14617 - 11	16*10 ⁻⁶ - 20.8* 10 ⁻⁶
Abrasion Resistance	EN- 14617 - 4	23.64- 27.5mm
Freeze- Thaw- Resistance	EN- 14617 - 5	0.999
Mohs Hardness	EN- 101	6.5-7.5
Slip Resistance	ASTM C 1028-07	Coefficient of friction>0.5*
Stain Resistance	ASTM C 1378- 04	Not Affected
Wear and Cleanability	ASTM Z124 6.5.3	Pass
Cigarette Test	ASTM Z124 6.5.4	Pass
Surface burning	ASTM E- 84	Class A
Chemical Resistance	EN- 14617- 10	Class C4
Static Coefficient of friction	ASTM C1028 - 07	Dry Average 0.68*
		Wet Average 0.5*
Flame Spread	ASTM E-84	FSI<10 For 3 cm and <15 for 2 cm

*The above mentioned values are for polished finish only

NOTE: These results are indicative only. The values quoted above are average for different Quantum Quartz products for 20 mm thickness. The test results may vary depending on the thickness, colours, special additives and also the batches of the products and based on the grain size of the quartz.

General Safety Guidelines

Quantum Quartz always strives to create a safe work environment. All fabricators and Installers are required to maintain a safe work environment. For preventing accidents please follow the general safety rules given below.

" Safety isn't expensive, it's priceless"

- Keep the work area clean. Cluttered areas often invite accidents.
- All tools that may be exposed to water or moisture must be equipped with a Ground Fault Circuit Interrupter (GFCI) without fail.
- Keep the work area clean, dry, and well-lit.
- Children and visitors should be kept at a safe distance from the work area.
- Don't force a tool or attachment to do a job for which it was not designed.
- Use clamps or a vise to secure equipments when necessary.
- In order to reduce the number of airborne particles always ensure to cut the material with wet tools only.

- All the tools must be lubricated according to the specifications provided by the manufacturer. Moreover, only use tools that are in top condition for the best and safest performance.
- Avoid overreaching for anything and ensure proper footing and balance at all times.
- Always use safety glasses or approved eye protection. Refrain from using eyeglasses that only have impact-resistant lenses as they are not safety glasses.
- Wear hair-protective covering to contain long hair.
- Before starting work ensure to read the pertinent instruction manuals before operating various tools. Learn the tools applications and limitations as well as the hazards specific to them.
- Prevent Contact – machine guards must provide a physical barrier that prevents the operator from having any of their body in the “danger zone” during the machine’s operating cycle.
- Dust contains silica which can be detrimental to your health so always ensure to wear a mask and follow other mandatory guidelines.
- It is recommended to use Non-slip footwear at all times on the shop floor.
- Wear proper apparel – loose clothing, gloves, watches, rings, bracelets and other jewelry may get caught in moving parts.

Layout

Before cutting any slabs of Quantum Quartz, calculate the square footage, lengths, and widths of material you will need to finish the entire project using a computer program. If you come up short, it may create colour match concerns if more material must be ordered. Thoroughly inspect the slab for colour, pattern, defects, and finish. Do not use material with visible manufacturing defects unless the layout allows them to be excluded from the job.

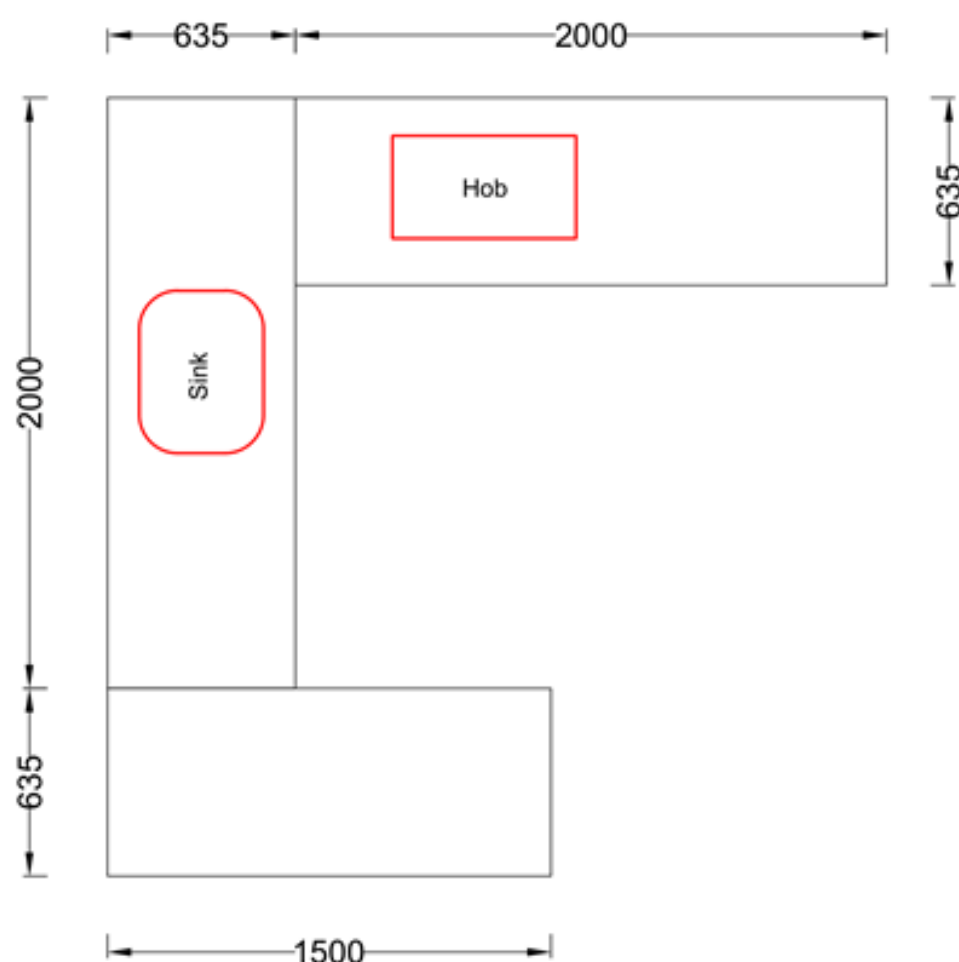
Measurements

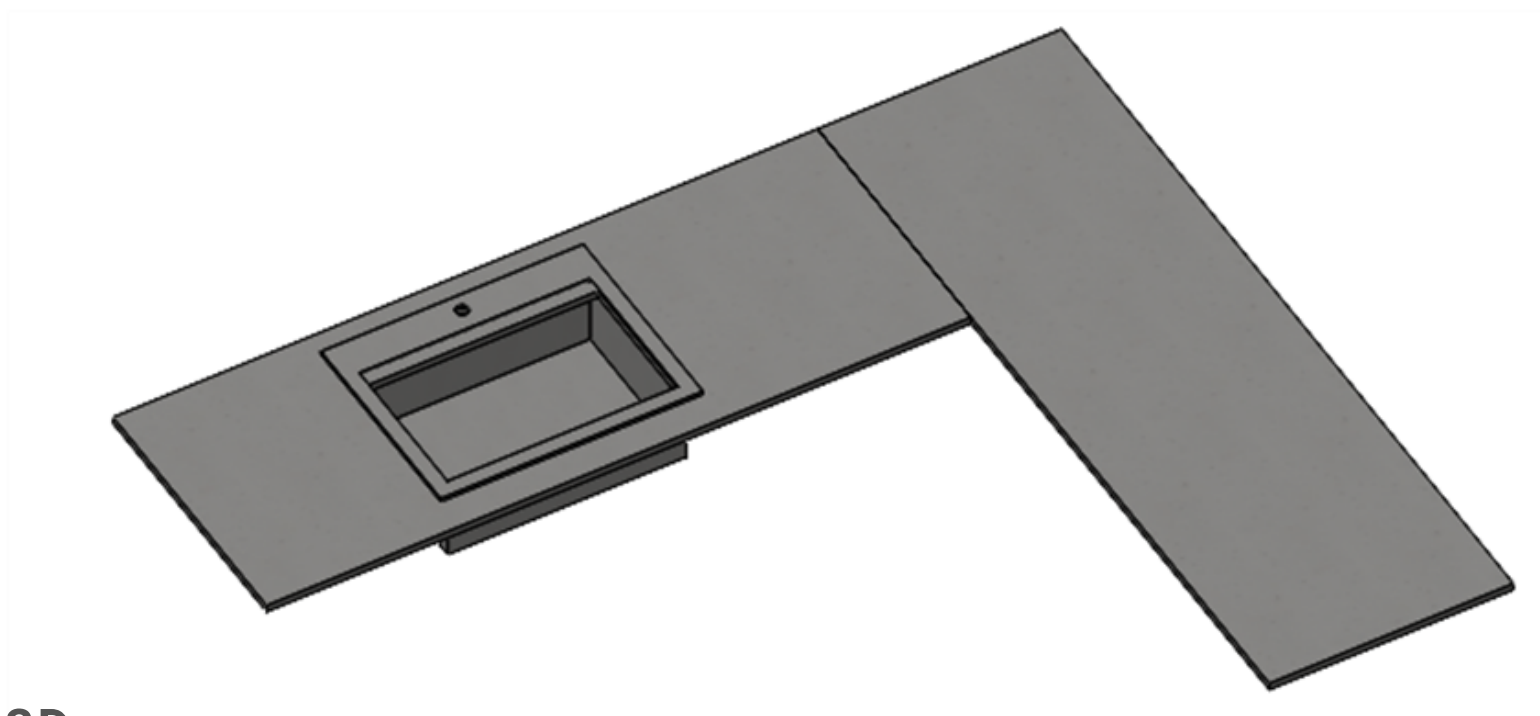
In order to complete a job to perfection it is essential to have the exact measurements. In addition to this, it is also highly important that there is a high level of co-ordination between the measuring, processing and installation teams.

Basic Tools: Measurement Tape, Spirit level (2 meters), pencils, ruler, builder’s square and a graph paper.

Given below are images of a typical kitchen layout and their dimensions these are especially helpful when calculating the total square foot needed.

2D





3D

Visual Slab Inspection

It is imperative that a visual inspection be performed when working with Quantum Quartz slabs and it should be adopted as a standard practice before any subsequent operation can be performed on the slab.

Mention below are the most common thing that a a fabricator must check before cutting the slab.

- High/low contrast contamination
- Voids/Blemishes
- Pinholes
- Warpage
- Warpage: length (3.5 mm), width (2 mm)
- Irregular/Oversized spot
- Variation of gloss levels
- Hairline cracks
- Scratches
- Polishing marks
- Pattern Stain
- Thickness variation within the slab
- Colour Match between different slabs
- Colour consistency within the slab
- Variation of Quartz pattern within the slab

Colour Match, Veining, Aggregate Distribution

Inspect all material prior to fabrication. Veined material has a non-directional pattern. Hence, care must be taken in the layout relative to seam location.

Make a note that vein and aggregate distribution may be slightly different towards the edge of the slabs. Layout the Quantum Quartz slabs to provide the customer with the best visual appearance.

Inspect slabnumbers

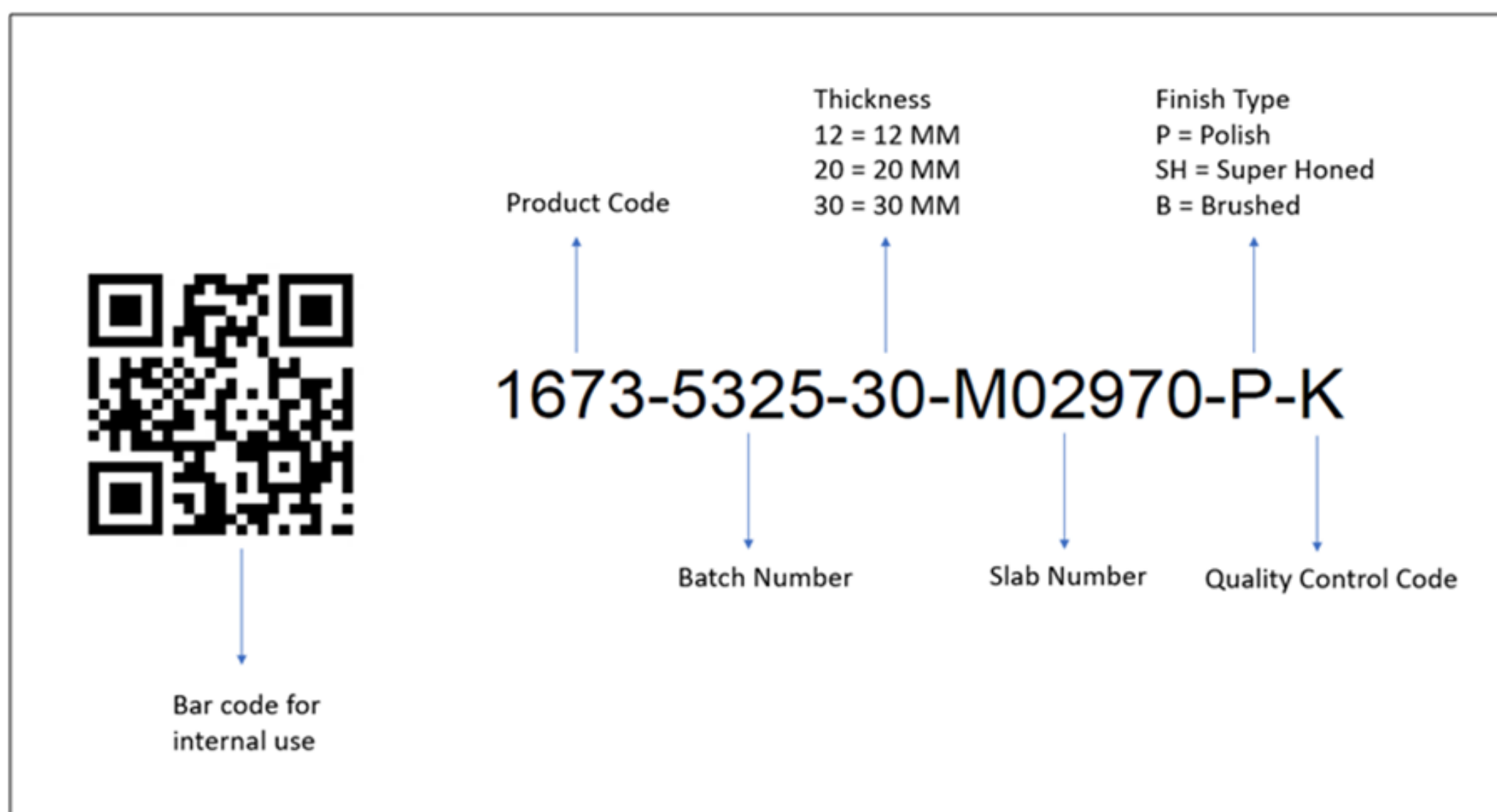
Remove the plastic film and inspect for colour variation, colour match and defects. Veined pattern may require a more specialized layout. Colour match from countertop to backsplash is generally not as important as colour match between pieces across a seam. Even though

FABRICATION & INSTALLATION MANUAL

the backsplash is adjacent to the countertop, it is in a different plane and slight colour variation is generally not noticeable.

Labelling and Identification

Quantum Quartz's bar code is simple and intuitive to understand. A sticker is placed on both the shorter edges of the slab for easy identification. It contains all the essential details such as the product code, batch number, thickness, slab number, type of finish and the grade of the slab. This information is all you need during back tracking and troubleshooting.



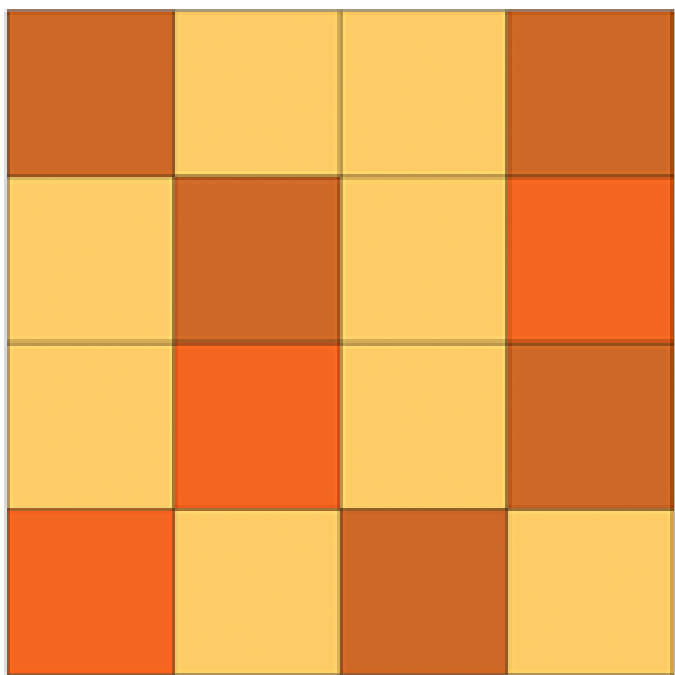
NOTE: Please record all batch and slab numbers for future reference. Although we do our best to record all batches, it is your responsibility to maintain a record of the batch number that is listed on the sides of the slab. We can not guarantee that we will always be able to provide this information in the future.

Guidelines for Colour Matching & Pattern Irregularity

- Colour consistency is one of the advantages of Quantum Quartz. The mixture of colour is always carefully controlled and monitored to maintain the highest level of consistency possible.
- Although careful steps are taken to ensure a high level of consistency, slight colour variations can still occur. Colour variation is present due to the intricate nature of production. Slight background shade variations can occur, especially on monochromatic or solid colour patterns.
- Pay close attention to particular size and distribution. This can vary slightly from slabs within the same lot or sometimes from the perimeter of the slab to center.
- Each slab is unique and will have minor color and pattern variations.
- When viewing pieces for colour match, proper lighting becomes a crucial factor. It is not necessary to inspect the slabs in direct sunlight or even natural lighting. What is important is that the lighting

Be adequate and uniform. Lighting that is 40 feet above the shop floor may not be adequate to see colour variations and will look distinctly different than lighting in a customer’s kitchen. Conversely, under counter lighting and high intensity spot lighting in a kitchen can sometimes make a top appear to have colour variance even when it does not

- Always photograph a color variance issue under uniform lighting. Colour, background or shade variations not visible from 6 feet away (with uniform lighting and no spotlights or high intensity lighting) are considered acceptable.
- If a job requires more than one slab of the same colour make sure that the slabs are from the same batch. The batch information can be found on the slab. Batch number should ensure a colour match, but it is recommended that a visual inspection of the slabs is done prior to cutting to ensure colour match and aggregate distribution.
- In spite of highly controlled system for coloyr consistency, colour variance can still occur. The diagram below can serve as an idea of colour variance across the batches.



Handling and Storage

Quantum Quartz slabs are typically transported from the factory on A- Frames or in a bundle packaging. The slabs should be unloaded from the container with appropriate lifting machinery only. That machinery must be capable of handling the load safely.

Sizes

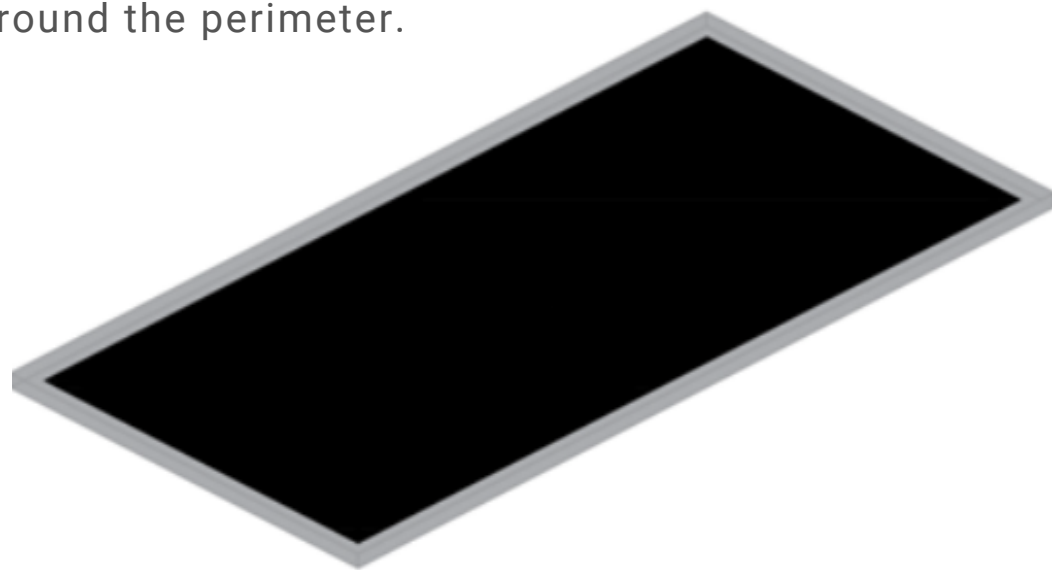
Quantum Quartz can be ordered in slabs of different thickness, widths and lengths. Slabs can also be fabricated into a variety of sizes and design applications.

Format	Length (MM)	Width (MM)	Thickness (MM)	Slab Weight (KGS)
Regular	3050	1400	12	130
			20	210
			30	310
Jumbo	3300	1650	20	240
			30	360
Super Jumbo	3470	2010	20	305
			30	460

Note: Not all colours are available in all sizes and thicknesses.

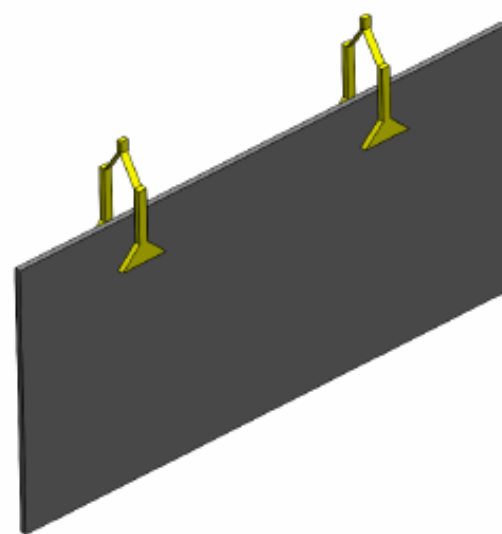
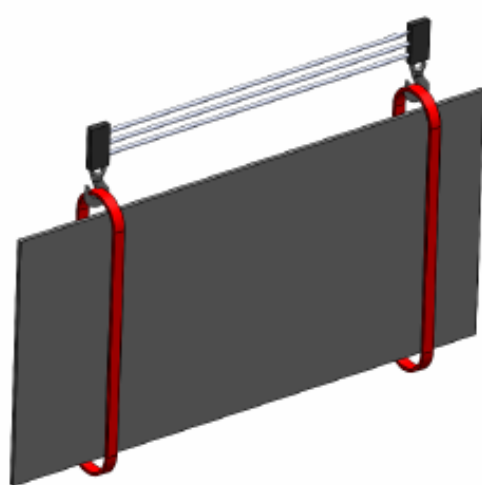
The slab dimensions and weights are for indicative purposes only. These are to be used for storage

and transportation purposes. Actual usable slab surface is slightly less per side and varies from slab to slab. In order to find out the maximum width and length of the slab you must inspect the grey area around the perimeter.



** Quality of the grey area around the perimeter is not guaranteed.

- Slabs must only be handled using commercially available sling straps or clamps designed that are sold specifically for lifting and handling.

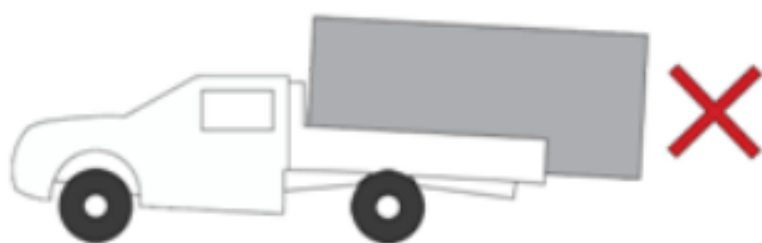


Only If the available equipment has the appropriate lifting and carrying capacity, multiple slabs can be moved using appropriately sized sling straps.

- Slabs must be carried face-to-face or back-to-back to minimize scratching and damage to the polished surface.
- For slabs that are packaged in bundles, the handler may use an appropriate forklift or/and an overhead crane.

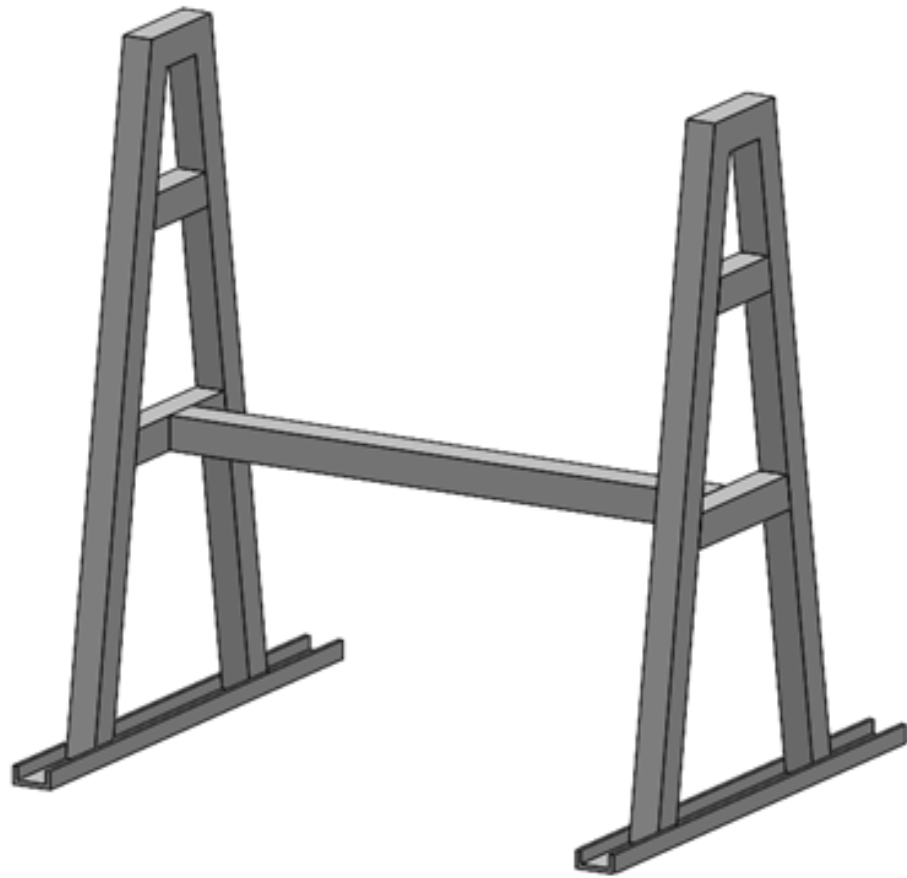
For your safety and the safety of others

- Read and follow all proper recommended use, maintenance, and care instructions for any equipment being utilized.
- Always maintain a safe distance when handling and lifting slabs.
- Always follow all OSHA and ANSI safety protocols and guidelines pertinent to the handling & storage of slabs.
- It is the responsibility of the driver to ensure that the load is within the maximum permissible carrying capacity of the vehicle. Please refer to the table provided above for the approximate weight of the slabs of different thicknesses and sizes.



Storage

- Slabs should be kept in a perfectly uniform manner that minimizes warpage. In order to do so, metal stands (A-frames) must have atleast two support points tilted at about 15° from the vertical and appropriately spaced, measuring a height of 1300mm, and at a distance of 1800mm apart.



- For the storage of slabs that are less than 20mm in thickness, it is recommended to rest the slabs on a solid surface, the same can be achieved by putting a 30 mm slab as support
- Slabs must always be stored in a way that the polished surface is not exposed to the sun and also slabs should be stacked in such a way that the polished sides are facing each other. Doing so minimizes the occurrence of scratches and any damage to the polished surface.
- There should be no more than 20 slabs to each rack with the slabs face-to-face and back-to-back.
- Store Quantum Quartz slabs in a manner that allows for easy identification of colour and batch number.
- Storage temperatures should not exceed 50°C. Tarpaulins can be used to cover slabs that are directly stored under sunlight.
- When suction cups or grips are being used, slab should be held low to the ground. Cut-out pieces should be braced to avoid flexing and should be placed on top of the A-frame to prevent bearing the load. Similarly, laminated edges should be top loaded to avoid bearing the load.
- The slabs should be strapped onto A-Frames to prevent flexing. Care should be taken to protect the straps from being damaged or cut by the edge of the slab.

Warning

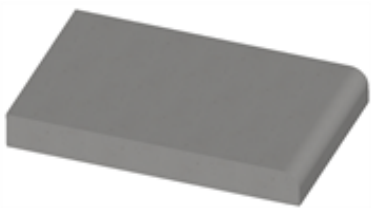
Quantum Quartz is a heavy material that can cause serious injury or death if it is not stored or handled properly. It is recommended that all slabs be secured properly during storage to maintain a safe working environment including adherence to any local laws and regulations.

Edge Details

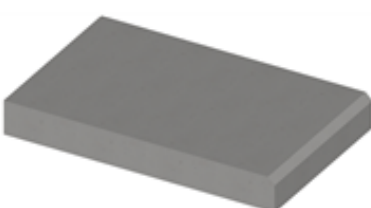
With Quantum Quartz counter tops, numerous edge profiles can be designed. The end application should be considered while designing the exposed edge profile of a counter top.

The long life and overall performance of the edge of counter top depends directly on the radius of edge. Larger the radius better is the overall performance of the edge. It is recommended to avoid designing of sharp edges from the safety point of view and also to

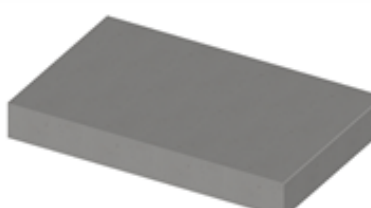
prevent the chipping away of the edges. Square edges are not recommended any time. Always polish Quantum Quartz with lots of water. Pneumatic polishing machine is recommended to avoid electric shock. For under mount sinks, edges need to be finished on all four sides. The well-rounded edge with 3mm radius profile is considered to be the most safe way of design. All the edge cuts are recommended to be bevelled or chamfered with a minimum of 2 mm profile at an angle of 45°. This will minimize the chances of accidental damage. In commercial application where high traffic is expected, a minimum of 5 mm pencil round radius is recommended.



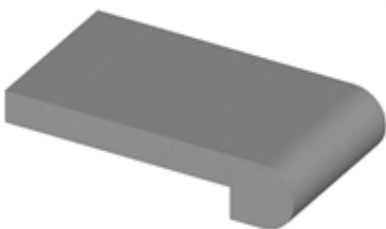
Half Bullnose



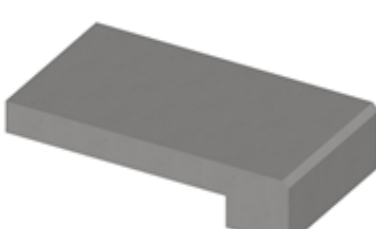
Beveled



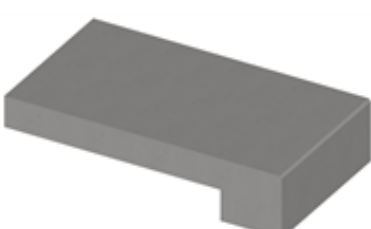
Polished



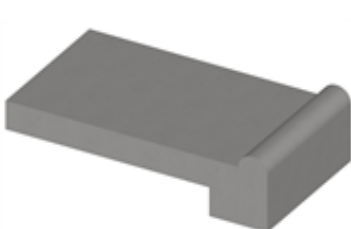
Laminated Full Bullnose



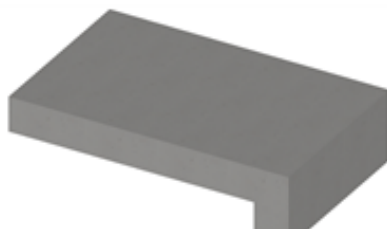
Laminated Beveled Edge



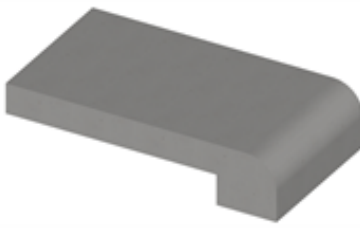
Laminated Polished Edge



Bullnose With Water Drip



Mitered Edge



Laminated Half Bullnose

FABRICATION GUIDELINES

Personal Protective Equipment

- o Safety gloves
- o Steel toe safety shoes
- o First-Aid kit
- o Safety glasses
- o Dust masks
- o Aprons
- o Ear plugs

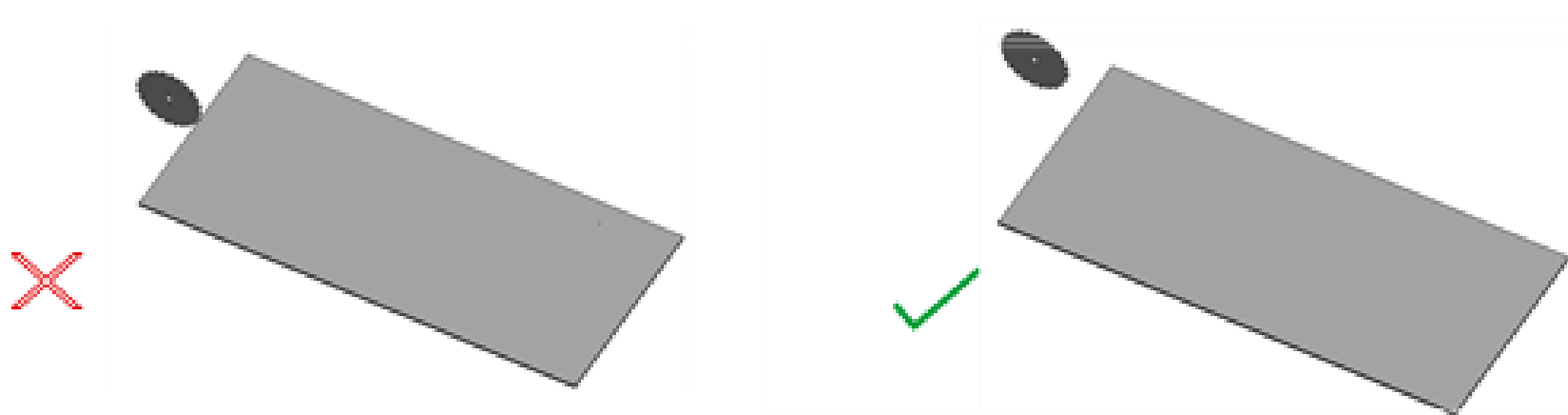
Fabrication Equipment

- | | |
|--|--|
| <ul style="list-style-type: none">o Bridge Sawo Overhead craneso Jib craneso Air compressoro Clampso Dust extraction systemo Diamond polishing diskso Worktableso Forklifts for handling | <ul style="list-style-type: none">o CNC/Water Jeto Diamond cutting bladeso Edge polishero Diamond grinding wheelso Diamond burso Diamond contour bladeo A-Frame/storage rackso Water sourceo Core/Drill bits |
|--|--|

General Fabrication Guidelines

The following guidelines should be followed in order to ensure that a good product is obtained towards the end of the fabrication operation.

- Ensure that the slab does not move during the cutting operation.
- Use blades and tools specifically designed for cutting quartz surfaces.
- Check the condition of the tools regularly and replace them if damaged or worn out.
- Always ensure to keep a constant flow of cooling water in the working area of the blade.
- It is not advisable to immerse the blade directly into the slab to make the cut instead an offset of about 10 centimetres is to be provided before the cutting operation has begun

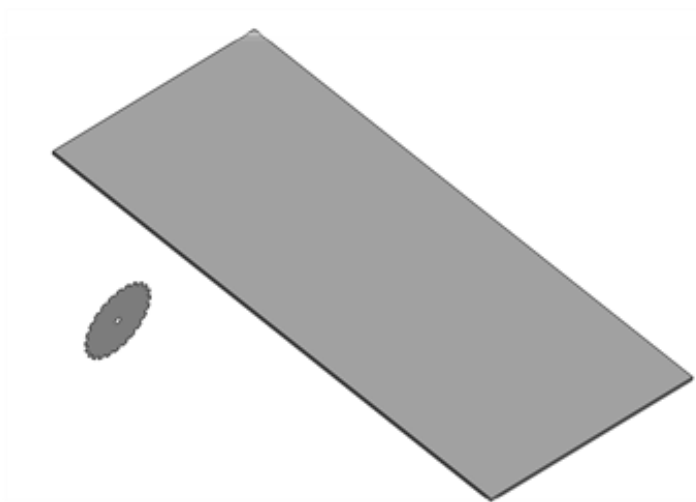


Faucet/Anchor holes should be made after all other cutting operations are complete.

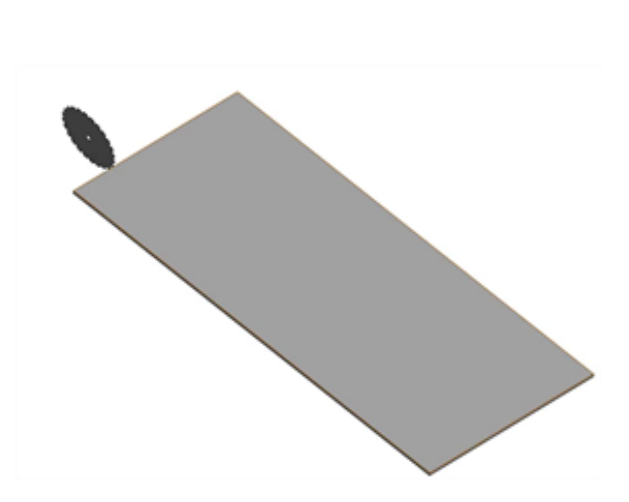
- Use the cutting parameters recommended by the manufacturers of the cutting tools.
- Do not tamper with the original surface(factory) finish of the slabs by re-polishing, honing, sealing, or otherwise altering the factory finish.
- Dry Grinding the corners is not recommended as it generates excess heating and consequently it leads to cracking of the corner.
- Avoid creation of any stress points in the slabs by cross cutting as that might lead to cracking of the slabs.
- Avoid accumulation of water for a long period of time on the surface. This can cause marks which can no longer be removed. Hence, it follows naturally to dry the surface immediately

Bridge Cutting

The slab for cutting has to be in good condition and perfectly flat. Otherwise, the worktop can move during cutting. The cutting disk must be in perfect condition (no worn disks or missing parts). To cut a slab, the first cut must be along the length of the slab and the second on the width.



Cutting along the Length



Cutting along the Width

When 3 CM slabs are not fully supported on A- frames when stored in your warehouse, you may find that slight bowing/warpage of the slab has occurred. In these instances, the slab should be cut twice. The depth of the first cut should be approximately 15mm (i.e., half the thickness of the slab) with the second cut going through the entire slab. The cutting disk must be perfectly in line with the cutting direction else breakage may occur.

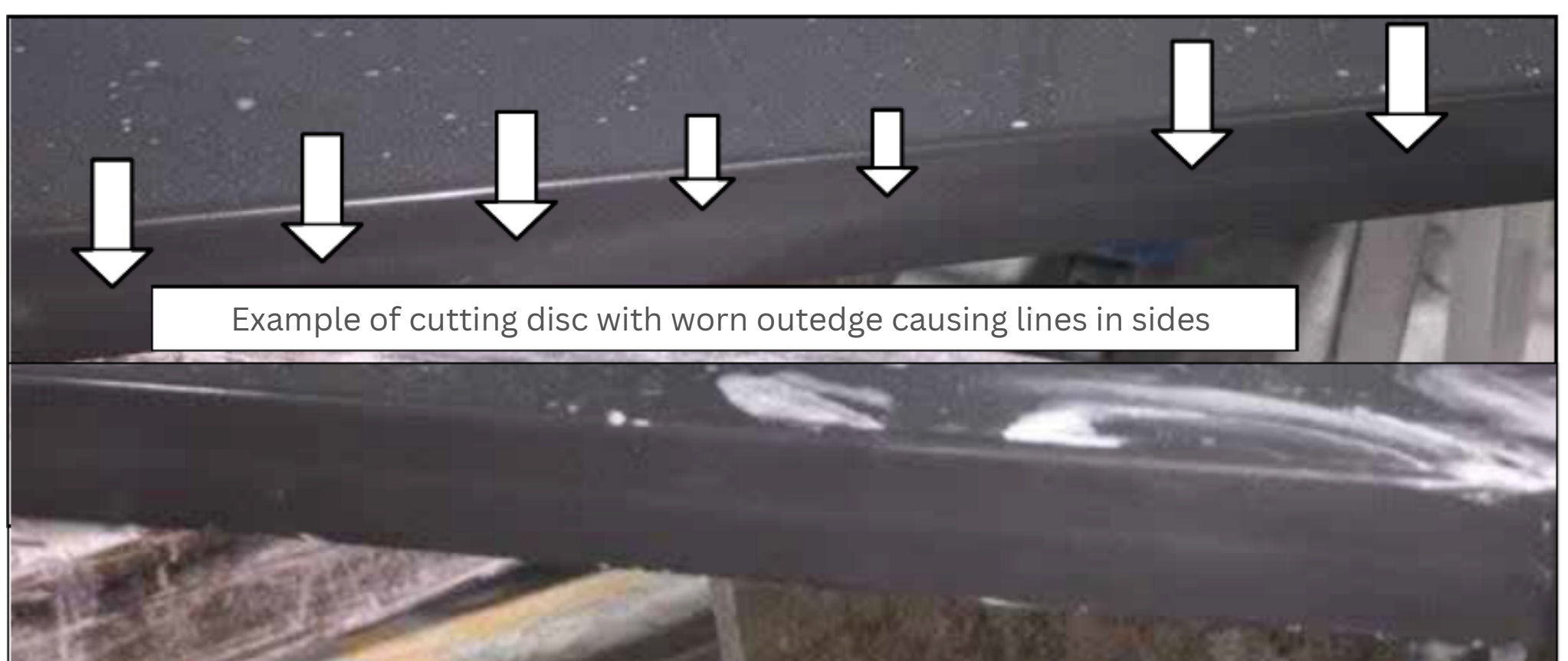
Turn revolutions:

- 20 cm radius disk - 2500 rpm
- 15 cm radius disk- 3500 rpm

Speed of advance:

- 2 CM- between 3 & 3.5 m/min
- 3 CM between 2.5 & 3m/min

Water flow: Direct plenty of fresh water to the leading edge of the disk while cutting.



Manual Radial Cutting

Cutting with manual radial cutting is only appropriate for small jobs that do not need precision. Use a pneumatic cutter as electric cutters are dangerous when water is being used.

Use a radial with minimum sufficient power to cut quartz engineered stone which is usually between 5000 to 7000rpm

Fix down the slab with an anchoring element to prevent the slab from moving during the cutting operation.

Disc should be suitable for cutting quartz stone and it should be in good condition with no teeth worn out.

Water flow: Direct plenty of fresh water to the leading edge of the disk while cutting.

CNC Cut-out

The cutting table should be solid, resistant, perfectly flat and in good condition.



Wet drilling using a Drill Bit



Cut out by CNC

Fix the slab/piece to the table using CNC anchoring system and check that it is properly held down with CNC control element.

Place the anchoring element near the cutting line. This decreases the possibility of movement during the cutting process.

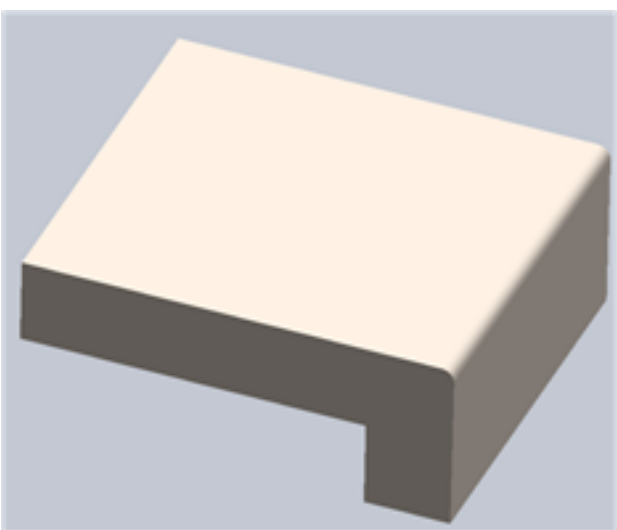
Before the cutting is done, a dry run should be carried out to check that the machine follows the desired path.

Use CNC tools specially designed for cutting quartz engineered stone. We recommend ADI Tools. Don't use the tools used to cut granite. Revolution 5500 rpm, Progress 350mm/minute.

Direct plenty of freshwater flow during the cutting process.

Miter Joint

Miter Joint is a joint made by beveling each of the two parts to be joined, usually at a 45° angle, to form a corner, usually around a 90° angle.



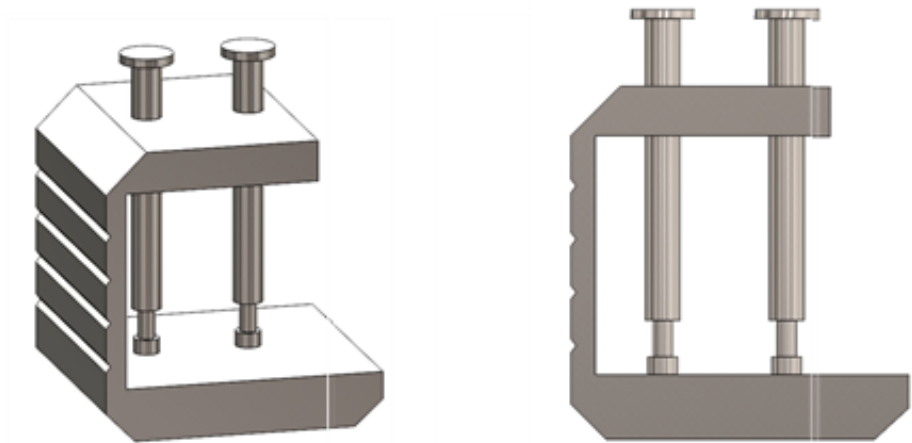
Advantages of using Miter Joints

- Thicker Edges
- Greater flexibility to create edge profiles
- Continuation of vein/patterns around an edge in certain designs
- When compared to a butt joint, polishing the Apron is not required as the visible area is the polished surface of the slab.

Procedure for the creation of a Mitre Joint

The Mitre edges are fabricated at an angle of 45° using a mitre saw to ensure maximum strength and enable a final edge of 90°. Any angle less than 45° makes the edges prone to chipping.

The individual pieces are laminated together with the help of clamps such that they form an angle of 90°. In order to create an accurate 90° angle and to ensure proper bonding between the stone and the adhesive it is recommended to use a mitre clamp.



The clamps are placed equidistant from one another and they are adjusted in a manner such that the gap between the apron and the countertop is reduced to zero.

Glue is applied on the edge of the Mitre Joints in order to join the pieces together.

The Mitre joint is polished to a radius or bevel profile as required. A large radius of 5-6 mm must be created to avoid chipping and ensure the durability of the edge.

Apply a generous amount of adhesive and ensure that the same is uniformly distributed throughout the joint for best results.

Lamination

The thickness of the edges can be increased by laminating two pieces of 20 mm slabs to get 40 mm edges. Before lamination any waves or undulations must be evened out. Material must be thoroughly cleaned before lamination. For light colours, add extra pigments to the glue to avoid dark seam lines, as more pigment will prevent glue from changing colour on drying. The fabricator should use a colour matched adhesive system but a fine joint line may be visible. It is fabricated with a strip of Quantum Quartz (polished face out) to be attached at the end of front edge.

For laminations the same procedure that is described above for the creation of mitre joints can be applied except that the latter does not involve cutting of the pieces at an angle of 45°.

The lamination strip should be cut from the same slab as the countertop surface material to ensure a colour match. In order to have a same colour piece for the lamination it is recommended to add the piece size to your measurements before cutting.



Manual Cut-out

- When carrying this operation ensure that machine will have to go in the cut out.
- Check the cut out measurements and mark them on the slab.
- Drill a hole in each of the corner of the cutout. It is important that holes have a rounded shape. In this way possibilities of breakage are reduced. Smaller the radius of the hole higher are the breakage possibilities.
- Cut using the hole radius. Don't cross the cuts in the corner as this can cause breakage of the worktop in the future. The cutting should end in the hole and shouldn't go beyond.
- Use tools specially designed for cutting quartz engineered stone.
- Direct plenty of freshwater flow during the cutting process.

Polishing Edges with an Automatic Polisher

- Quality of edge polishing depends on various factors- machine, water, abrasives, pressure applied on the sample, speed of the line, etc.
- Direct plenty of freshwater flow during the polishing process to avoid burning.
- Machine and Abrasives conditions should be good.
- Only use tools and abrasives designed for grinding and polishing quartz engineered stone.
- In any case parameters listed below should be taken as the basis, from which modification should be carried out to get the best quality polished.

Straight edges

6 motor machines: grains of 60, 120, 220, 400, 800 shine.

8 motor machines: grains of 40, 120, 220, 300, 500, 800, shine, shine.

Speed *: approximately 50-60 cm per minute.

Pressure: between 2.8 and 3 bar.

Half Bullnose and Bullnose Edges

6 motor machines: Grains: 120, 220, 400, 600, 800, shine.

8 motor machines: Grains: 120, 220, 300, 400, 600, 800, shine, shine.

Speed: approximately 20-25 cm per minute

Pressure: between 2 and 2.4 bar

For level edge profiling we recommend minimum of 1/8" pencil round edge.

Polishing Edges with manual water polishing machine.

The polishing abrasives must be in proper condition (no parts missing, sharp edges,etc.)

The slab and the piece being worked on must be secured to prevent movement during polishing.

Polishing machine disks must turn less than 4000 rpm. Use a pneumatic polisher as electric polishers are dangerous as water is being used.

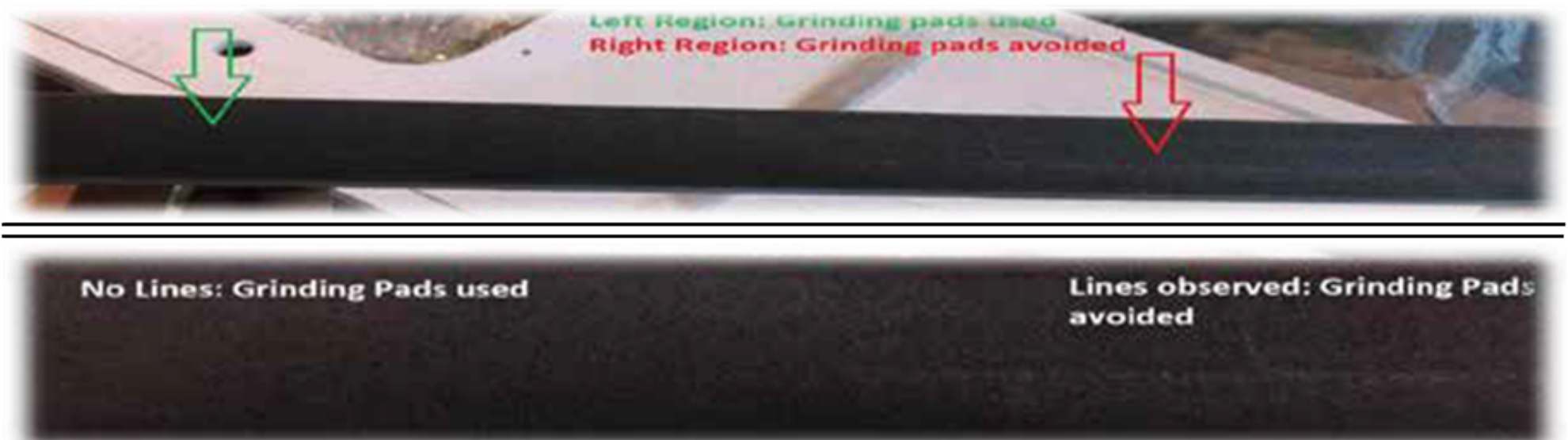
The freshwater flow must be high to allow cooling and prevent burning. Don't polish without using fresh water enabled polisher else the entire surface will have burning and will lead to an improper polish.

Grind using a diamond disc suitable for quartz based engineered stone.

For polishing, use diamond pads designed specifically for polishing quartz engineered stone and don't use diamond pads which are otherwise suggested for any other natural stone. We recommend diamond pads of Sanwa Kenma Ltd-Japan.

When polishing, use limited amount of pressure with the polishing machine continuously along the edge. Do not allow the polishing machine to remain in the same position on the edge for too long applying more pressure. Use random circular motions and utilize whole area of the pad.

Use the following sequence of grains: 50, 120, 220, 400, 600, 1200, and 3500. Make sure that with each grain the surfaces are more and more even/smooth.



New pads should not be directly used on the targeted edge. It should be first used on a rough surface such as concrete shop floor or back side of scrap piece of Quantum Quartz for a few seconds. This removes the top layer of the pad and exposes the diamond layer for better polishing.

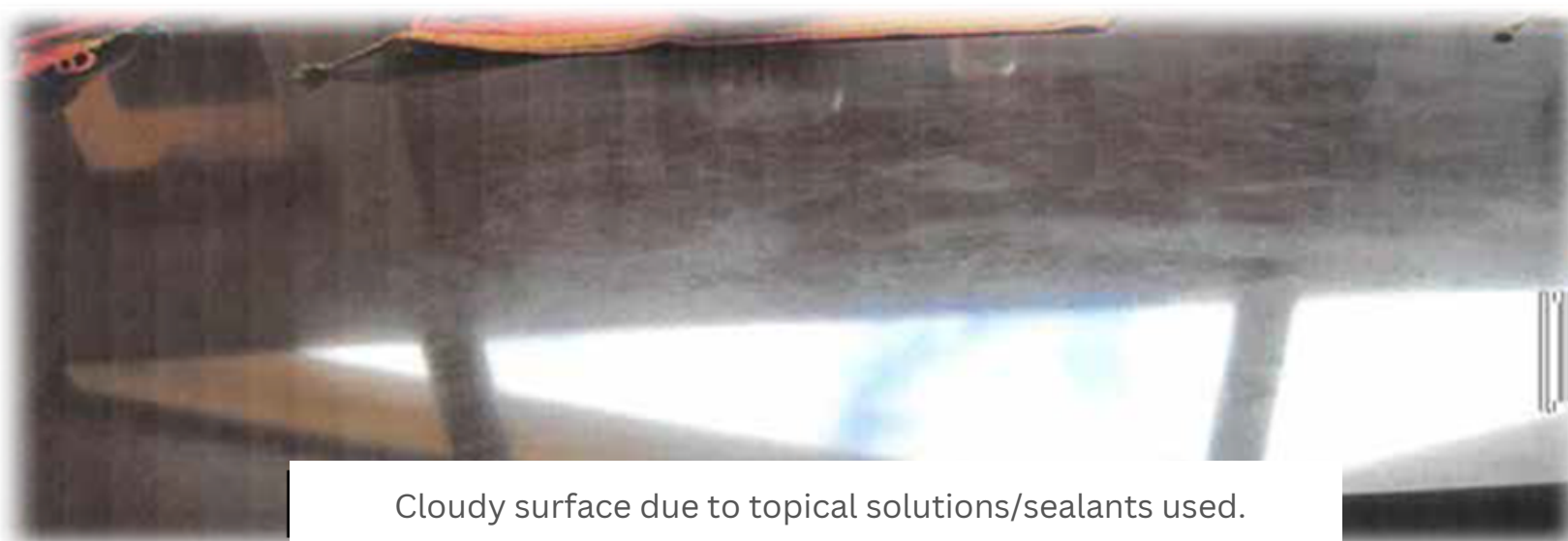
One can check the work after each step by drying the edge with tools such as air hose and inspect to ensure uniform pattern across the entire edge. This is a visual test to ensure that the polishing has been performed properly. It goes without saying that the best quality in polishing depends on the skill level

of the individual performing the task. As with any technique, practice is essential to build the skill level.

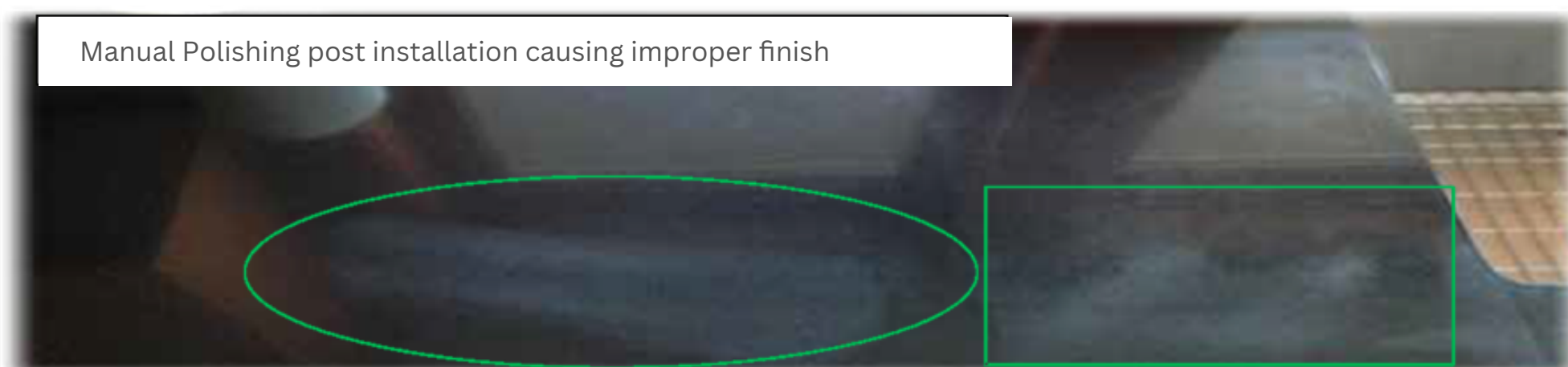
Precautions

- When installing Quantum Quartz between walls/furniture leave a 3mm gap. Use silicon Sealant to install the upstands or backsplashes .
- Also check the levels where the joints meet to ensure alignment and also ensure that the area in front of the sink cut out is fully supported.
- Do not place or store quartz externally or exposed to direct ultra violet light.
- Do not place any hot pots directly onto quartz surface.
- 'L' - shaped counters should be avoided. We recommend using joints at every change of direction in a benchtop. This avoids expansion due to heat creating a stress point in areas of direction change. All cut outs should have 3mm clearance from all the sides for expansion.
- Do not use paint strippers, caustic soda or products containing more than pH 10. Do not use products containing chlorine, oven cleaners, toilet bowl cleaners or other cleaners containing bleach, chemicals such as hydrofluoric acid, battery acid, tarnish or silver cleaners or the likes, permanent markers or inks.

- High alkaline cleaners of more than pH 10 should not be used. If any of the above mentioned substance comes in contact with Quantum Quartz, rinse the exposed surface immediately with plenty of clean water.
- Always use fresh water for operations where dust is produced (cutting, grinding, polishing, etc.)
- Once the required fabrication work is performed on the slab ensure proper cleaning with fresh water and drying before it is held and removed with the vacuum pads as the dust can leave pad marks on the surfaces.
- Fabrication always should be done wearing goggles and ear protection, face masks.
- The gap between the work top and the hob/cooker should be as large as the support allows. Stick the insulating tape around the hob edge cut.
- The internal corners of any cut outs must be larger than 3/8" radius. This can be achieved by using an 8mm diameter drill. Wherever possible try to use a radius larger than 4mm. The same technique should apply for column/pillar cutouts.
- Do not perform cross cutting at the corners at 90° - always use a radius cut as cross cuts create stress points and result in cracking. The bigger the radius of this curve, the less possibilities there are for breakage.
- Make sure that the furniture carcasses are perfectly level so that the worktop is fully supported



Do not use any surface sealants. They are topical in nature and can cause blemishes on the surface with daily usage resulting in ghostly/cloudy appearance.



Do not change the original factory surface finish by repolishing or anything at your end that can later the factory finish



- Where more than one slab is required to make the kitchen worktop, check that the slabs match prior to cutting.
- Variations in the natural quartz stone colour, pattern, size, shape, and shade are to be expected and inherent characteristics of this product. Quantum Quartz is not a seamless product; seams are visible. Where there are seams, the product pattern and shade will change.

Post cutting, fabricator should ensure to remove the cutting water from the slab with Fresh Water and thoroughly dry the surface as soon as possible. Natural evaporation of fabrication water should not be allowed as it will leave marks on the surface which are very difficult to clean.

Suction pad marks can also originate from the fabrication facility if the suction pads are not properly

Similar examples of water marks originating because Fabrication water was not cleaned properly and surface was left to dry out.

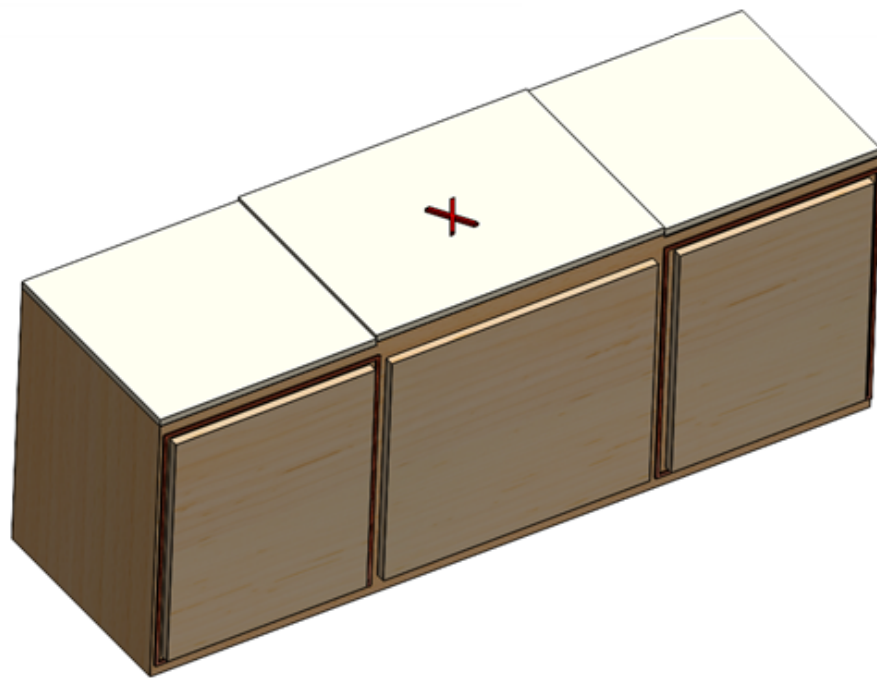




INSTALLATION

Level & Alignment

A 6' level can be used to check the cabinets for level. Cabinets should be within 3 mm of level within the 6'. If the cabinets are out of level more than this tolerance, the cabinets need to be leveled prior to installing to avoid causing problems during installation.



Above Image shows a representation where the piece in the middle of the cabinet is elevated and the same could cause problems during installation.

Also check the level on these cabinets from the front to back using a 2' level. Check the walls with a straight edge for any curvature or gaps.

If there is a backsplash, these gaps may be covered. If not, inform the customer and take necessary corrective action.

Make sure that the template is accurate, especially if the walls are irregular. Always ensure to maintain a minimum gap of 3 mm between the Quantum Quartz countertop and any wall or vertical surface.

Measure the width and length of each piece in two places to ensure accuracy.

If there is a discrepancy, always use the longest dimension. Sometimes it may be necessary to remove a small portion of tile on the backsplash to obtain an accurate measurement.

Seam Placement

- Careful placement of seams can be the difference between a great job and one that becomes a disaster. Seams are required when pieces cannot be fabricated from the same slab. Place seams in a manner such that they are inconspicuous. Support seams on both sides (front and back). For optimum results, it is best to locate seams at a cabinet partition. Explain the seam locations to the customer. If possible, get the customer's approval on the seam locations. This can help in avoiding problems later. Use a state-of-the-art seam setter tool to make seams as narrow and inconspicuous as possible.
- Avoid placing seams in the center of a dishwasher, undermount sink or in the direct sunlight. In case where a seam must be located over a dishwasher, the use of a full deck-isolated support is required. This will allow proper support for the area as well as allowances for thermal movement.
- Never polish the seams to make them even/levelled.
- All seam surfaces should be smooth and free of debris.
- Never install mechanical fasteners like screws or nails.

Seam Tolerance

Recommended seam width is 1/16" and tolerance is +/- 1/32". Adjacent pieces should be completely levelled across a seam, with a tolerance of +/- 1/32". One side of a seam could be slightly raised, or one side can be slightly lowered, but not both.

Seam Preparation

The two edges that are to be seamed must be cut straight. Test fit to make sure the pieces to be seamed together, form a tight, level and uniform seam, prior to application of adhesive. Level the pieces as required. Also check to make sure the colour and pattern matches across the seam. Make sure to clean the joining edges with denatured alcohol and a clean white cloth. In order to prevent the adhesive from dripping below the surface apply a strip of tape to the underside of the area to be joined.

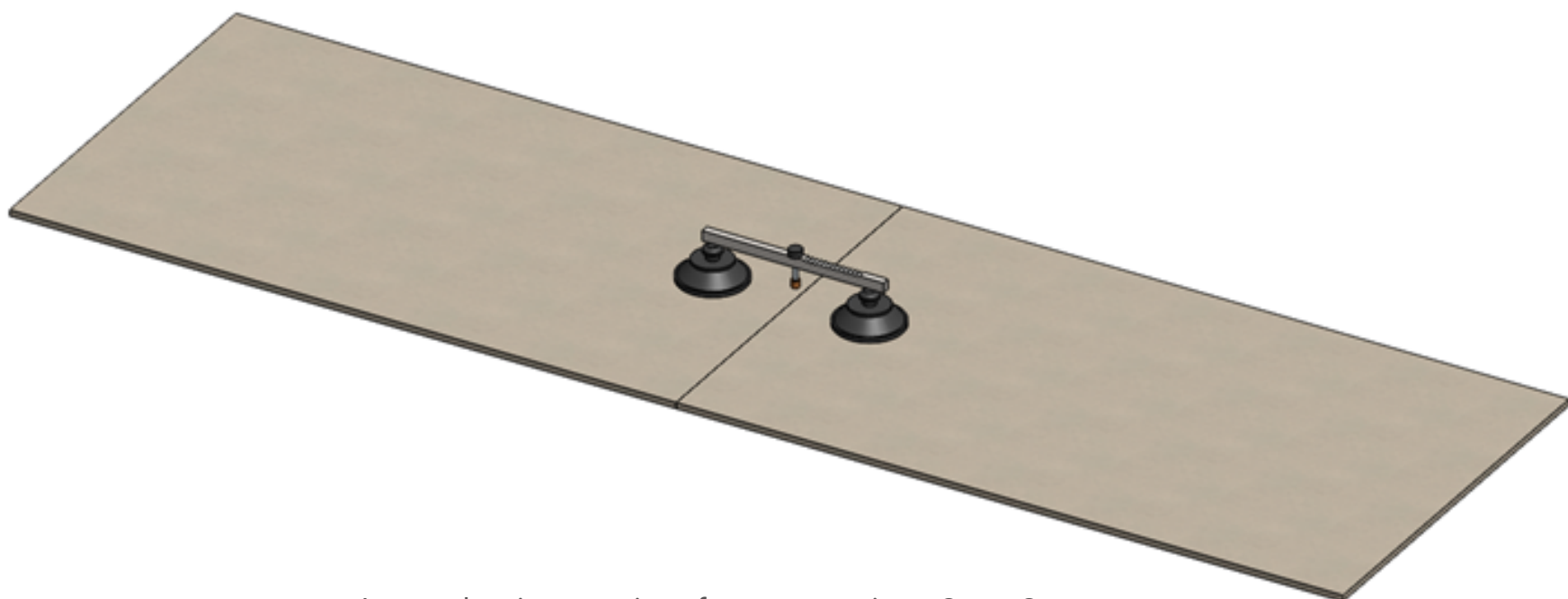
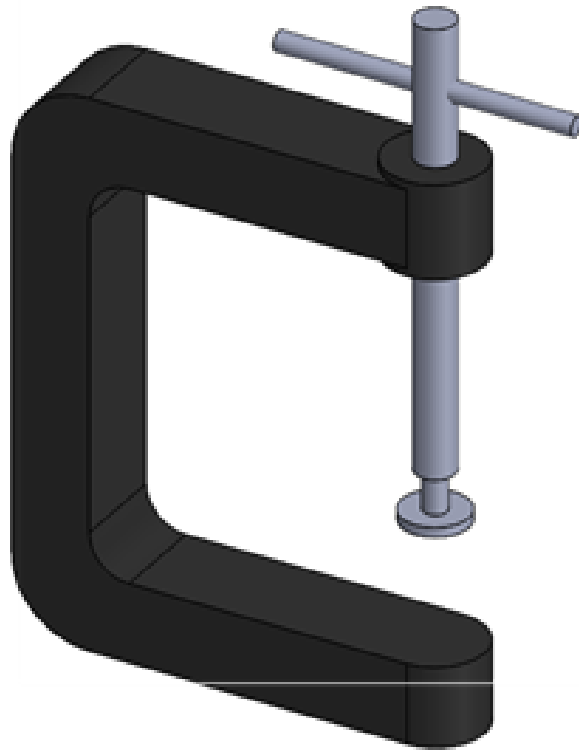


Image showing seaming of two parts using a Seam Setter

Clamping Systems

There are a number of clamping systems in use today including spring clamps, "C" clamps, suction cup, and vacuum systems. Each type is suitable in one or more applications; hence, it boils down to a matter of individual preference.



General Instructions

- In order to prevent the occurrence of a dry joint (squeezing out all the glue from the seam) do not use excessive pressure.
- Set the clamp pressure appropriately such that it allows only a bead of adhesive to squeeze out.
- Only clean up some of the excess epoxy from either side of the seam. The adhesive will shrink slightly, so do not completely clean off the excess adhesive.
- Take care of voids and air pockets before the seam sets up.
- Inspect the seam to ensure a tight fit.

Let the adhesive cure as per the manufacturer's recommendations or until it feels hard to your fingernail touch. Remove the excess adhesive by scraping with a plastic knife.

As the final step, you can use 00 steel wool to put a polished gloss on the seam. This is completely optional, and the steel wool will not harm the Quantum Quartz surface finish. However, it is very important to note that this will damage the seam if this is done before the epoxy is fully hardened.

Adhesive Use

Seam/Butt/Mitre Joints can be made using a 2-part epoxy resin. Various types and brands are available that can be mixed separately (resin & hardener) or available in a 2-component cartridge. Quantum Quartz recommends the cartridge with a static mixing tube as this will provide a consistent seam every time.

- Assemble the cartridge in the pneumatic gun with a fresh disposable mixing nozzle.
- After each use, remove and replace the nozzle. When you are about to apply the adhesive always remember to purge the nozzle in the beginning. This is done by squeezing out a bead of adhesive that is approximately the length of the tip. This ensures that any trapped air bubbles have been removed from the mixing nozzle and that the catalyst and adhesive have mixed properly and are ready to be used.
- In order to achieve an inconspicuous seam, the adhesive used must be mixed with pigments to a colour similar to that of the material being installed. This can be done using colour paste pigments mixed

with the adhesive to achieve a colour match. Quantum Quartz recommends use of adhesives from Akemi and ConfiAd for all seaming, lamination, and miter joint applications.

- For commercial projects - especially in high use areas or where flexibility is required due to movement, expansion, or contraction - flexible seams are recommended. 100% silicone sealant should be used for such purposes.
- Under no circumstances, construction adhesives, epoxies, liquid nails or any other rigid adhesive, must be used.

Caulking

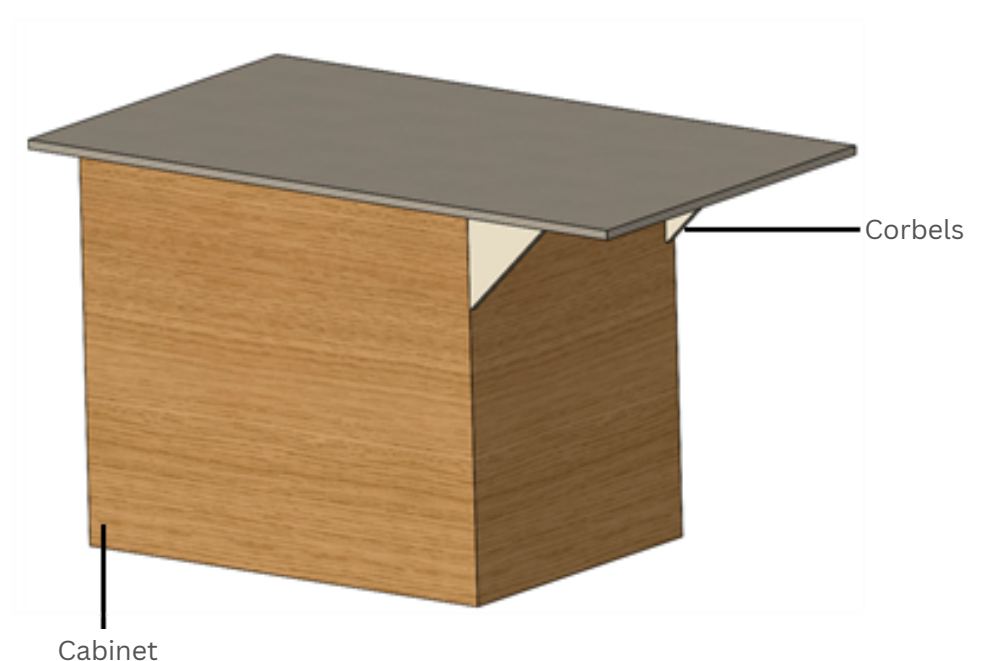
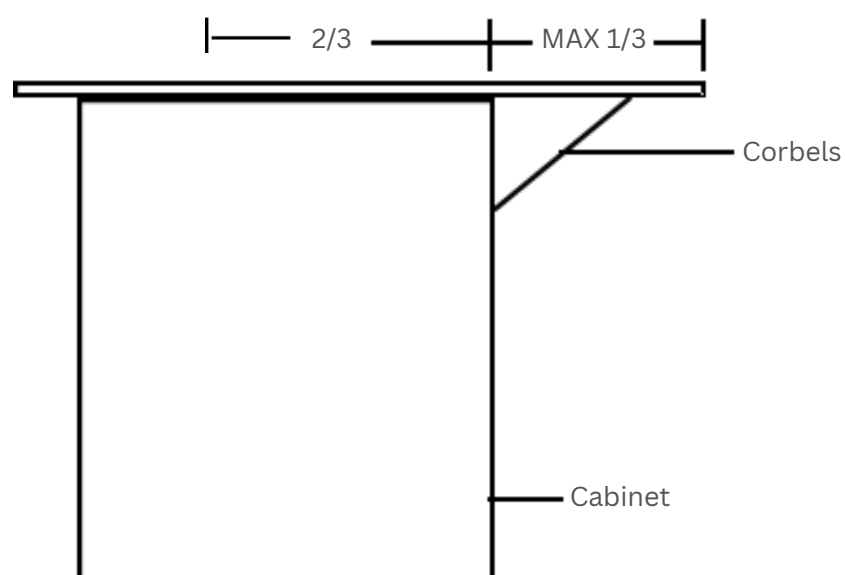
- Caulk all Quantum Quartz countertops to non Quantum Quartz material using 100% Silicone sealant.
- Provide a 1.5 to 3 mm expansion gap at the interface of all walls, cabinets, and other materials. These expansion gaps should also be caulked.
- Caulk loose Quantum Quartz backsplash to the countertop using a colour matched silicone caulk. Make sure to caulk behind faucets. Smoothen the caulk joint to remove excess sealant and provide a finished appearance.
- Backsplash/Upstands should be caulked to the wall. Gaps at this interface have the potential to exceed the maximum allowable tolerance due to variations in the wall surface

Tolerances

- Install the countertop to fit as closely as possible to the surroundings.
- Fabrication and installation tolerances, if not specified elsewhere in this manual, should comply with the following
- Provide a 3mm nominal expansion gap at the interface of all walls, cabinets, and any other materials.
- This gap can vary where back walls are curved or do not align. It is not a standard practice in quartz installation to scribe cut to a wall or other out of tolerance surface. Caulk all gaps with 100% silicone sealant.

Overhangs

- Larger overhangs will require additional support such as corbels or legs. For areas with support on only 3 sides (dishwashers, desks, or corner cabinet voids), additional support will be required to support the countertop.
- As a general rule the overhang should not exceed 1/3 of the supported width of the countertop.
- No portion of the countertop should extend more than 24" (2cm) or 36" (3cm) without support.
- Maximum edge deflection should not exceed 3 mm under an applied load of approximately 60kgs.



Overhang (30 MM)	Overhang (20 MM)	Support Required
0" - 12"	0" - 8"	None (*2/3 rule applies)
12" - 18"	8" - 18"	Brackets (Corbels) are required to be mounted to studs or high strength frame support
18" - 24"	18" - 24"	Brackets (Corbels) and 20 MM underlayment substrate and supporting leg every 36" or less
Any overhang up to 12" will rely on the 2/3 rule, 2/3 of the material needs to be supported for the 1/3 overhang.		

Backsplashes

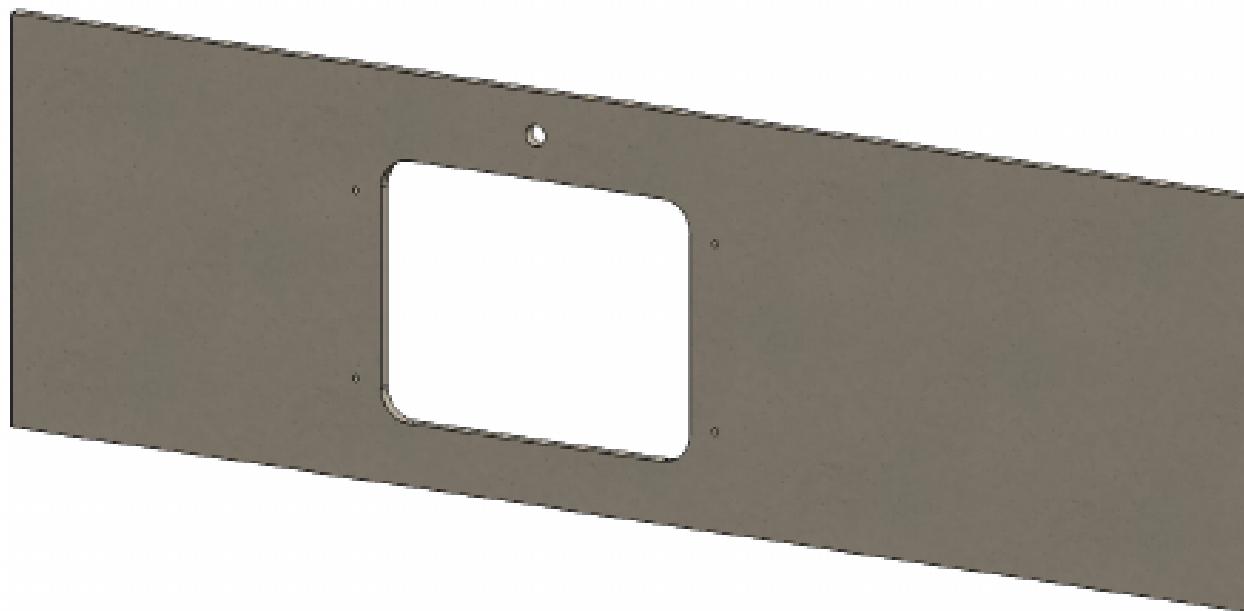
Back Splash is used in wet areas, like, behind wash basins/sinks, behind cook tops, etc. Installer must refer to the building codes and regulations when installing back splash behind gas cook tops and heat generating appliances.

The following guidelines should be considered during back splash design and installation phase:

- Walls should be clean and vertical. Correct distance should be maintained between back splash surface and a heat generating source. Back splash pieces should be thoroughly cleaned before installation.
- For full height splash backs, verify electrical outlet dimensions and accordingly make holes for the outlets and leave space for outlet cover.
- A gap of 1/8" between wall and the counter top is preferred; maximum gap could be 3/8"
- Back Splash should be at least 1" greater in length and cut to fit on site.Full height splashes should be flush with the bottom of the upper cabinet trim. Back splash should sit on the countertop with 100% silicone being applied.Instructions for installing backsplashes that ranges from 3"- 6"
- Cut the splash from the same slab that was used for the countertop fabrication. If you utilize back splash materials from remnants or with materials purchased at a different time, they may not match in colour. Always check for colour match before fabricating.
- Cut all splash to the sizes required as per the drawing. The top edge and any exposed ends should be polished.
- Dry fit the splash materials to ensure all joints and edges are tight and it fit as per specifications before applying the adhesive.
- Install the backsplash materials with 100% silicone adhesive. Place dabs of silicone every 2-4 inches on the back side of the splash materials that will come in contact with the wall. Prior to setting the splash into position, run a thin bead of clear or colour matched silicone on the back-surface edge of the countertop where the splash will rest.
- Put the splash material in place and remove excess silicone squeezed from the joints and finish the caulking operation.

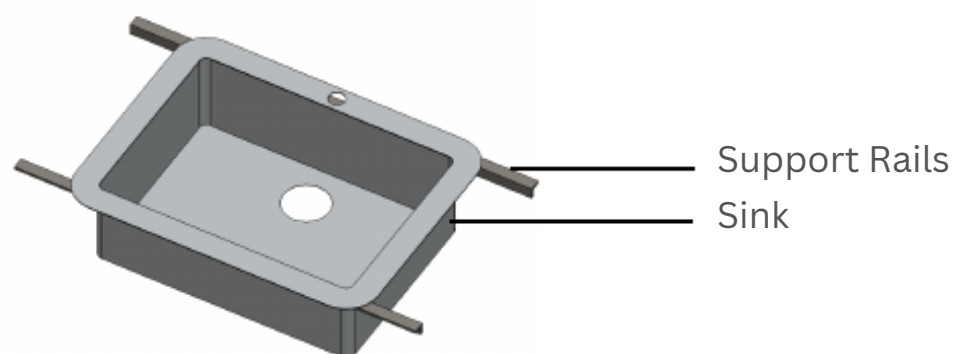
Cut-outs

- Determine the location of all cut-outs physically as well as on the drawing that include any cook tops, undermount sinks, and drop-in sinks. Mark the center line of all cut-outs on the template. For all sink or basin installations, irrespective of if they are top-mount or under-mount, we recommend that you follow the sink manufacturers recommendations.
- The minimum recommended distance between an undermount sink and the front edge of the countertop is 3.5". For drop-in sink or cook-top the minimum distance from the front edge is 2.5", this includes the 1.5" overhang plus the cabinet width plus 0.25" clearance.
- Note the location of holes for faucets, sprayers, soap dispensers, etc.
- Always allow sufficient clearance for the backsplash (if required).
- Cross cutting should be avoided. When preparing a cutout always use a core bit. Avoid damaging the drill area with a cutting disk.
- Always allow an extra 3 mm between the appliance and the edge of the cut-out for expansion.
- Damage to the drilled area can result in stress points that may lead to hairline cracks. All cuts should be done using only wet diamond cutting tools to avoid generating excessive heat, which could also result in hairline cracks. All sink cut outs must be made using drilled corner radius (minimum 3/8") to prevent stress points in the top.
- All sink cut-outs should be centered in the sink base cabinet.



An Image showing a sink cut out with 4 anchor holes and a faucet hole

- Please be sure to use a professional sink-setter or support rail system and all sink installations must be fully supported independent of our countertop.



Edges & Corners

- Certain edge types do not transition well into a flat edge when corners become radiused. Standard overhang for a finished edge is 1.5" from the face of the of the cabinet to the outermost portion of the edge.
- All outside corners should have a radius.
- Any exposed corners or corners not touching walls should also be radiused.
- If the corner is not sharp a flat polished edge may be acceptable.

Vertical Applications

Quantum Quartz wall cladding can be vertically mounted onto a wall surface that provides adequate support. Wall cladding pieces can be seamed together using 100% silicone sealant. An epoxy adhesive is not recommended for vertical wall applications.

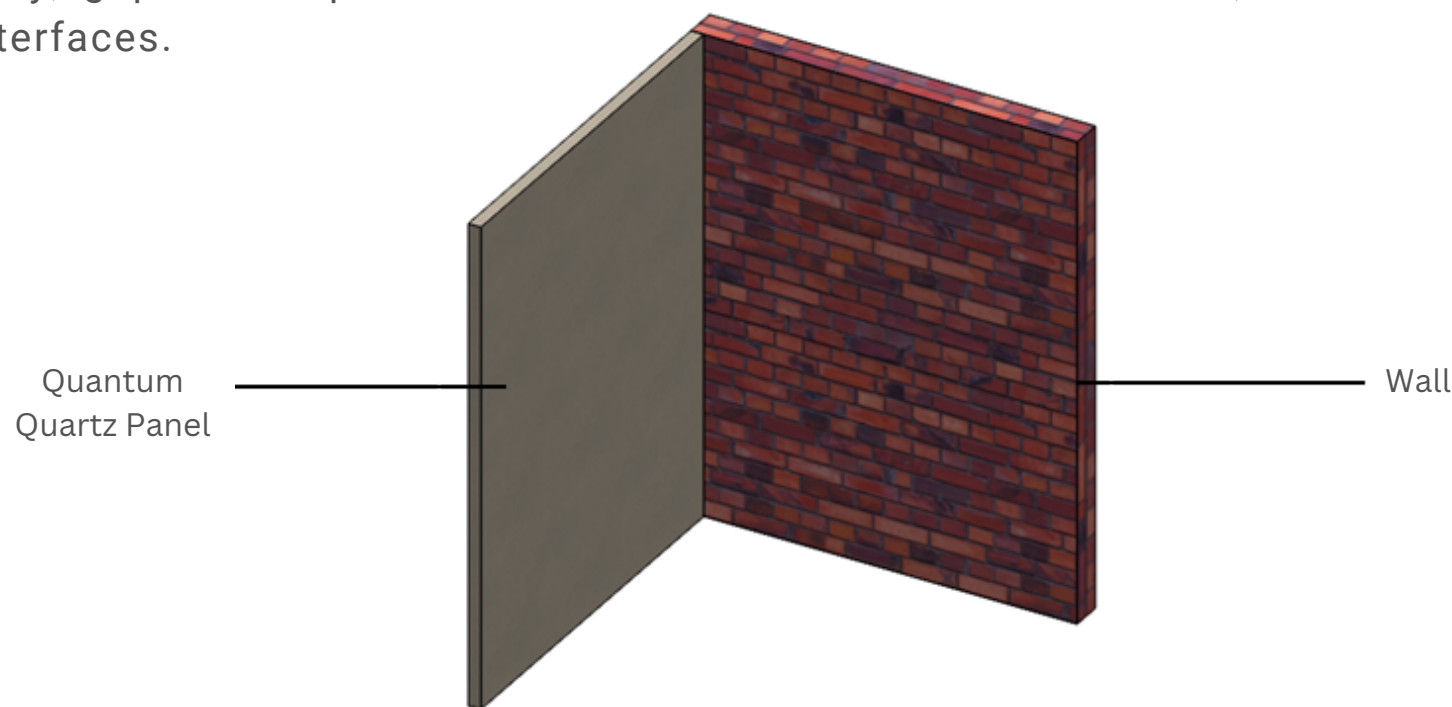
Limited vertical applications - such as a reception counter - may be seamed with epoxy.

Either 2cm or 3cm material may be used, however the 2cm thick material will generally prove just as durable and will be much easier to install.

Ensure that the wall surface that the Quantum Quartz pieces are being attached to is of sound construction and free of defects.

If there is an expansion joint in the wall, an expansion joint of the same size and location will be required in the Quantum Quartz wall panel.

Additionally, gaps for expansion must also occur at inside corners, wall to floor, and wall to ceiling interfaces.



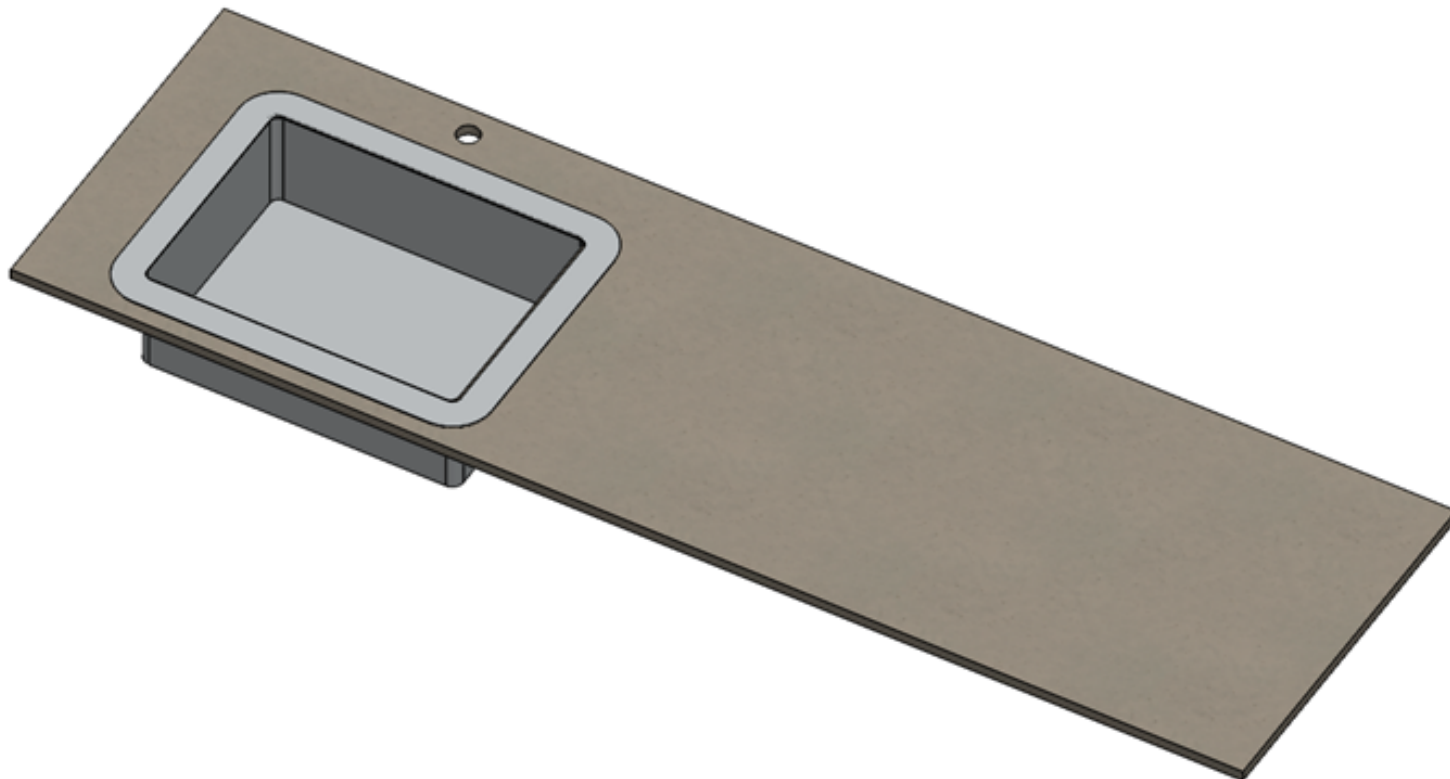
General Instructions for Wet Wall & Wainscot

- Ensure that the walls onto which the Quartz surfaces are to be attached to are clean, smooth, and free of moisture.
- Do not attach Quantum Quartz to a wall that has damage caused by moisture or other deterioration.
- Allow room for expansion at all inside corners.
- All corners to be caulked with 100% silicone caulk. Allow a 3 mm minimum joint between adjacent Quantum Quartz pieces.
- Provide a minimum gap of 3 mm (to be caulked with 100% silicone) at bottom of the quartz surface and also at the interface of tub or shower pan.
- Provide a minimum of 3 mm expansion space at top of the quartz surface/ceiling interface.
- Cut all holes for faucets and plumbing using diamond core drill bits whenever necessary. Maintain at least 15 mm clearance around all items penetrating the wall panel.
- Adhere the Quantum Quartz wall panel using 2" circles of 100% clear silicone caulk, approximately 4" to 6" apart in all directions.
- Ensure application of a continuous bead of silicone at the perimeter and the edge of all cut-outs.
- Press the quartz surface firmly into place and secure to wall studs using a non-corrosive anchor.
- Wall panels should be anchored in 2 to 4 locations each - depending on size of the quartz surface

that is installed.

- Finally, caulk all perimeter panels (including inside corners) with 100% silicone. Add corner trim, batten strips, etc., using colour matched silicone caulk.

Note: The details and instructions for Quantum Quartz vertical applications are for interior wall applications only. Never use Quantum Quartz in an exterior application. The Quantum Quartz warranty does not cover exterior applications.



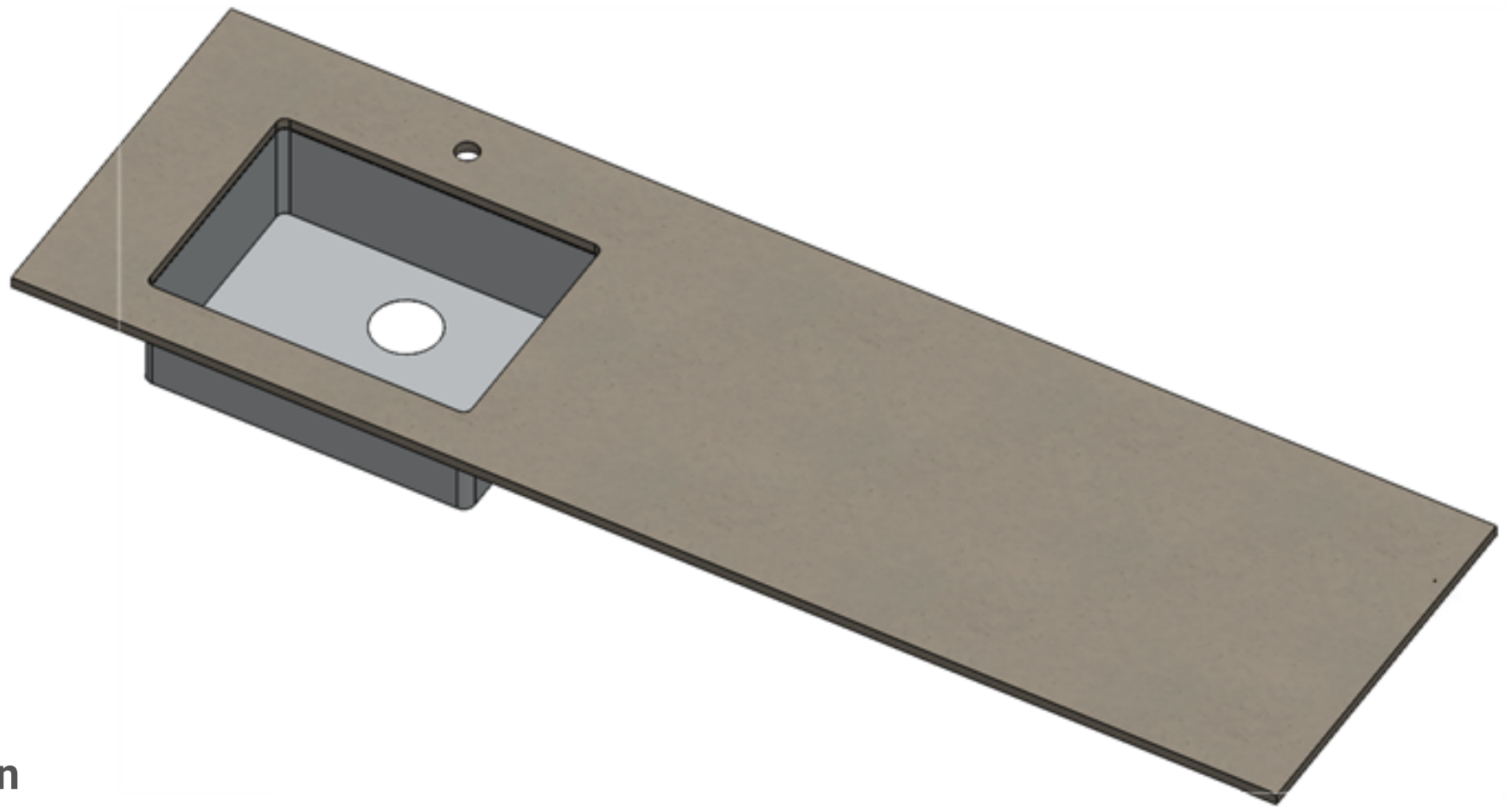
Top Mount Sinks, Cook-tops and other Applications

- Cut the opening in the countertop as per the dimensions provided by the sink manufacturer. It is preferable to use a 1 1/4" core drill to cut holes in each of the 4 corners of the cut-out.
- Using a diamond blade, cut the remaining material between the core holes. Take care to support the cut-out material during the process so that it does not fall during the final cut.
- Top mount cut-outs can be made in the shop or at the job-site. It is recommended that the cuts be at least partially done in the shop - to minimize field work and potential errors. Using a CNC or water jet, the corners of the cut-out can be cut in the shop leaving only straight cuts for the job-site. This will help in maintaining the strength of the piece during transportation.
- It may be necessary to grind out the radiused corner, especially on glass cook-tops, the small flange area leaves little tolerance in the size of the cut-out.
- Cracks may develop in the corners if the corners are over-cut of a cook-top even if is on the bottom of the cook-top.

Undermount Sinks

- Make a template if one is not provided of the required size for the cut-out.
- Regardless of the type of sink, always make the cut-out in accordance with the sink manufacturer's recommendations.
- Fabricators can make use of a CNC machine to cut undermount sinks as it eliminates the human error out of the process. These machines can store files in the form of CAD or DXF (Drawing eXchange Format) to produce error free cut-outs and also repeat them whenever necessary.
- Leave enough room at the back of the countertop for the faucet assembly, edge build-up backsplash, and respective sink flange.
- Kitchen sink faucet should be installed on the underside of the counter top.

- Build-up should be installed around the perimeter of the sink using plywood or 5/8" MDF.
- All under-mount sink cutouts must have the inside edges polished to match the surface.
- All under-mount sinks should be sealed to the countertop using 100% silicone. The flange of sink should be cleaned with denatured alcohol before colour matched silicone sealant is applied.
- In order to reduce the risk of chipping for under-mount installations, follow the minimum edge profile recommendations around the cutout.
- On the outside of the brackets support strips should be installed from front to back.
- The sink and support strips should be flush with each other. Levelling brackets are to be installed.
- Under no conditions can mechanical fasteners (screws, nails, etc.) be affixed directly.



Completion

- Fabricators who pay close attention to details and quality throughout the fabrication process will ensure customer satisfaction and minimize costly call backs while at the same time maximizing the potential for future work or referrals.
- Thoroughly clean the work area and the countertops when you are done finishing the installation.
- Inspect the entire job upon completion with customer and ensure conformity to specifications and If the customer has any issues or concerns with the work, address them and try to fix any problems immediately. This will help in eliminating a return trip.
- Review care and maintenance procedures with the customer.
- Contact the customer after a month or two to see if they have any questions or concerns.
- Provide your company sticker or label to the inside cabinet door or inside cabinet wall below the sink for future maintenance or other questions relating to their top. This is helpful especially when the original customer has moved.
- If further construction work is to be performed at the job-site after the installation of the surface, ensure that the Quantum Quartz surface is properly protected by covering the entire surface with appropriate protective material.
- Please make your customer aware that any further modifications must not use the counter top as a workbench, a stepping or a standing platform, and any further modification using solvents or adhesives should take due care to avoid and remove any spills created by their solvents or adhesives.
- We strongly recommend that your customer confirm, in writing, their satisfaction with the material and workmanship at the end of the job to cover you against damages caused by others.

QUANTUM QUARTZ MATERIAL SAFETY DATA SHEET

Hazards Identification

Colour	Can be of any colour
Appearance	Sheets
Odour	Odourless

Under normal conditions of use, this product is not expected to create any unusual industrial hazards

Composition / Information on Ingredients

Component	CAS #	% by Weight
Crystalline Silica (Quartz) and other natural minerals	14808-60-7	85-94%
Resin and trace minerals including Fe2O3, Fe3O4 and TiO2	NA	6-15%
Cristobalite	14464-46-1	0-60%
Physical Description	Agglomerated Stone	

First Aid Measures

Primary Routes of Exposure	First Aid Procedures
Inhalation	Take the person to a place with ample amount of fresh air. Artificial Respiration can be used if required. Consult a doctor if symptoms persist.
Eye Contact	In case of contact, rinse eyes with plenty of water for at least 15 minutes, or until all material has been removed. Obtain medical attention if irritation persists.
Skin Contact	Flush skin with plenty of water. Obtain medical attention if irritation develops
Ingestion	Obtain medical attention.

Fire Fighting Measures

Extinguishing Media	Appropriate extinguishing media for surrounding fire
Special Fire Fighting Procedures	As in any fire, wear self-contained breathing apparatus pressure-demand, OSHA/NIOSH (approved or equivalent) full protective gear.

Accidental Release Measures

- a) Collect material/ waste generated during fabrication process and place in a disposable container. Obey relevant local, state, provincial federal laws and regulations
- b) Dampen the dust generated during fabrication operations with water or use vacuum avoiding dust generation. Wear recommended personal protective equipment. Obey relevant local, state, provincial federal laws and regulations for disposal.

Handling and Storage

Handling	The product is heavy and breakable, so it needs to be handled with proper handling equipment in order to avoid injury and damage. Use safety shoes and helmet while handling slabs.
Storage	Store in a cool, dry and covered place. Palletize on appropriate stands and in recommended numbers. Place finish to finish to avoid scratches

Exposure Controls and Material Protection

Engineering Controls
Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Components	CAS #	Control Parameters	Basis
Crystalline Silica	14808-60-7	0.025 mg/m3 TWA (respirable)	ACGIH
		0.05 mg/m3 TWA (respirable)	NIOSH
		((250)/(%SiO2 + 5) mppcf TWA (respirable))	OSHA-PELs
		((10)/(%SiO2+2)mg/m3TWA(respirable))	
		((30)/(%SiO2 + 2) mg/m3 TWA (total dust))	

Physical and Chemical Properties

Appearance	Sheet
Physical State	Solid
Colour	Can be of any colour
Odor	Odorless
Specific Gravity / Density	2.15 – 2.46g/cc
Water Solubility	Insoluble
pH Value	NA
Boiling Point	NA
Melting Point	NA
Freezing Point	NA
Vapor Pressure	NA
Evaporation Rate	NA
Viscosity	ND
% Total volatiles by Volume	<0.001mg/m3

Stability and Reactivity	
Chemical Stability	Stable
Materials/Chemicals to be avoided	Hot surfaces and strong bases
Hazardous Decomposition Products	Silica dissolves in Hydrofluoric Acid and produces corrosive gas silicon tetra fluoride
Hazardous Polymerization	Hydrocarbons, Carbon Dioxide, Carbon Monoxide and water be released upon decomposition

Ecological Information	
Environmental Toxicity	ND
Environmental Fate	ND
ISO 9001:2008	Quantum Quartz conforms to the Quality ManagementSystem Standard of ISO 9001:2008 and is certified by DNV-GL
NSF International	Quantum Quartz is NSF/ANSI 51 certified for food contact and splash zones. It complies with all applicable requirements.
Greenguard & Greenguard Gold	Quantum Quartz is Greenguard and Greenguard gold certified for low chemical emissions
US Green Building Council	Pokarna Engineered Stone Limited is a member of US Green Building Council
Kosher	Quantum Quartz is Kosher certified

Disposal Considerations	
General Disposal Guidance: Follow relevant local, state, provincial and federal laws and regulations for disposal.	

Transportation Information

Not Regulated

U.S. State Regulations

California Prop 65 List: Crystalline Silica (Quartz) is classified as a substance known to the state of California to be a carcinogen.

Toxicological Information

Chronic Effects - of crystalline silica powder generated during fabrication operations

Silicosis	Chronic Inhalation exposure to free silica may cause delayed lung injury, including silicosis, a disabling and potentially fatal lung disease, and/or cause or aggravate other lung diseases or conditions
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Carcinogenic Potential	The International Agency for Research on Cancer (IARC) classifies crystalline silica powder as a known human carcinogen. The National Toxicology Program (NTP), in its ninth Annual Report on Carcinogens, classified “silica, crystalline (respirable)” as a known carcinogen. The U.S. Occupational Safety and Health Administration (OSHA) does regulate crystalline silica (quartz) as a carcinogen. The EU Scientific Committee on Occupational Exposure Limits (SCOEL) has concluded that, there is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk. The American Thoracic Society concluded that “The available data support the conclusion that silicosis produces increased risk for bronchogenic carcinoma. The cancer risk may also be increased by smoking and other carcinogens in the workplace.” Adverse effects of Crystalline Silica Exposure, American Journal of Respiratory and Critical Care Medicine, Vol. 155, pp. 761-765 (1997).
Scleroderma	There is evidence that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of scleroderma, an immune system disorder manifested by a fibrosis (scarring) of the lungs, skin and other internal organs.
Tuberculosis	Individuals with silicosis are at increased risk to develop tuberculosis, if exposed to persons with tuberculosis.
Nephrotoxicity	There are several recent studies suggesting that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of kidney disorders.
Mutagenicity	No Data
Reproductive Effects	No Data
Developmental Effects	No Data

Regulatory Information	Other Information
SARA Title III Hazard Classes	National Fire Protection Association NFPA(R) and Hazardous Materials Identification System (HMIS) Hazard Ratings
Fire Hazard	No
Reactive Hazard	No
Release of Pressure	No
Acute Health Hazard	No
Chronic Health Hazard	Yes
All components of this product are on the TSCA inventory or are exempt from TSCA inventory requirements	Key Legend Information
	NA
	ND
	PEL
	TWA
	Not Applicable
	Not Determined
	Permissible Exposure Limit
	Time Weighted Average

The information contained herein is based on the data available to us and is believed to be correct. However, Quantum Quartz makes no warranties expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. The data is subject to revision as additional knowledge and experience is gained.