PACIFIC

FABRICATION MANUAL

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Pacific Engineered Surfaces Pvt. Ltd. and/or its assigns are not responsible for errors or omissions, or damages recommendations of PACIFIC for fabricating countertops from slabs supplied by Pacific Surfaces or its distributors to fabricators. This manual does not replace normal industry standards for fabrication and craftsmanship – a basic knowledge of stone / quartz fabrication is required.

Any failure by a Fabricator to comply with there commended methods of fabrication of countertops from slabs may result in claims by an end user against the Fabricator and refusal of acclaim made by an end user under the 25 – year Warranty given by Pacific Engineered Surfaces Pvt. Ltd. to the end user. The terms and conditions of the 25 – year Limited Warranty to the end user are outlined in this manual.

NOTE: This manual is not for general distribution. This manual supersedes all previous manuals. Content is subject to change at any time without notice. The use of the term "Distributor" and "we" throughout this document refers to Pacific Engineered Surfaces Pvt. Ltd.

TECHNICAL SPECIFICATIONS

Material: Quartz
Thickness: 2 cm

S.No	Test Parameters	Test Results	Test Method
A	MECHANICAL TESTING		
1.	Water Absorption, % by mass	0.04	ASTM C 97
2.	Apparent Density, g/cm ^{3}	2.406	ASTM C 97
3.	Moh's Hardness	7	ASTM C 1895
4.	Flexural Strength, MPa	-	ASTM C 880
	Dry Condition	66.2	
	Wet Condition	78.5	
5.	Co-efficient of Linear Thermal Expansion,°C^{-1}	4.8 X 10 $^{-6}$	ASTM C 372
6.	Abrasion Resistance, H_a	31.1	ASTM C 241
B.	CHEMICAL TESTING		
7.	Resistance to Staining	Not Affected	ASTM C 1378

TECHNICAL SPECIFICATIONS

Material: Cristobalite
Thickness: 3 cm

S.No	Test Parameters	Test Results	Test Method
A	MECHANICAL TESTING		
1.	Water Absorption, % by mass	0.03	ASTM C 97
2.	Apparent Density, g/cm ^{3}	2.145	ASTM C 97
3.	Moh's Hardness	7	ASTM C 1895
4.	Flexural Strength, MPa	-	ASTM C 880
	Dry Condition	67.3	
	Wet Condition	91.1	
5.	Co-efficient of Linear Thermal Expansion,°C^{-1}	4.8 X 10 $^{-6}$	ASTM C 372
6.	Abrasion Resistance, H_a	29.4	ASTM C 241
B.	CHEMICAL TESTING		
7.	Resistance to Staining	Not Affected	ASTM C 1378

PHYSICAL PROPERTIES

Thickness	2 CM 3 CM	
Approx. Weight		2 CM - 350 kg 3 CM - 510 kg
Finishes	Polished, Suede, Matte	

137 in / 348 cm

79 in / 201 cm

Anti-microbial

Highly Durable

Acid-resistant

Non-porous

Scratch-resistant

Stain-resistant

Seamless

Heat-resistant

HEALTH & SAFETY GUIDELINES

Fabrications are asked to conform to the following safety rules.

• Read instruction manuals before operating the different tools.
• Keep guards in place and working order.
• Ground all tools.
• Remove adjusting keys and wrenches. Check to see that the keys and adjusting
wrenches are removed from the tool before turning them on.
• Keep the work area clean.
• Tools that may be exposed to water or moisture must be equipped with a Ground Fault Circuit Interrupter (GFCI).
• Keep children at a safe distance from the work area.
• Don't force tools.
• Use tools for the job for which it was designed.
•Wear proper apparel and non-slip footwear. Wear hair-protective covering to contain long hair. Wear ear / nose protectors and safety shoes.
• Always wear a dust mask and follow the U.S. Regulations for proper ventilation
– Slab dust contains silica which can be hazardous to your health.
• Use safety glasses or other eye protection.
• Use clamps or a vise to secure work when necessary.
• Keep proper footing and balance at all times.
• Maintain tools in top condition. Follow instructions for lubricating and changing accessories.

STORAGE

Slabs should be loaded/ unloaded from a container or truck with a forklift or lifting a device capable of handling at least 2,000 lbs. Use clamps or sling straps and lift the slabs face-to-face. For better grip, take care to clasp the slabs from the back side.

Warning: Keep a safe distance when handling/lifting the slabs.

HANDLING

Slabs must be stored in a manner that prevents warping. Use at least two support beams at an angle of 15° from the vertical, measuring a height of 50" and at a distance of 70" apart. Slabs should be stored in a manner that allows for easy identification of color and batch numbers.

Do not allow the slab's polished surface to be exposed to the sun. Storage temperatures should not exceed 129 °F. There should be no more than 20 slabs to each rack with the slabs face-to-face and back-to-back.

NOTE: Slabs are heavy and working with slabs can result in serious injury or death if not stored or handled properly. Slabs should be secured during storage to maintain a safe working environment.

COLOR MATCH & VISUAL SLAB INSPECTION

Quartz surfaces produce slight color variations between production cycles which is a natural result of blending. We recommend taking slabs from the same batch number to minimize color variations, however, this does not take the place of visual inspection.

FABRICATION INSTRUCTIONS

TOOLS & SAFETY EQUIPMENT

We ask Fabricators to use the proper tools and safety equipment including, but not limited to:

BASIC TOOLS:

- Bridge Saw
- Electric/Pneumatic Polisher (Variable speed preferred) Diamond grinding wheel and Diamond polishing pad
- Grinding Stone
- Core bits
- Diamond contour blade
- Wet profiling machine
- Stone carts/dollies
- A-Frame/Storage racks
- Fabrication stands
- Air compressor
- Seaming clamps
- Water Source

ADVANCED TOOLS:

- Waterjet
- CNC
- Automated Profiler
- Diamond Jig Saw

BASIC SAFETY EQUIPMENT:

- First-Aid kit
- Safety glasses
- Dust masks
- Work gloves
- Aprons
- Ear plugs

To do the finishing of Countertops by PACIFIC, use only water-cooled tools for cutting, drilling, and polishing. Do not re-polish, hone, seal, or otherwise alter the factory.

•Do not cut square corners (cross cut) as this may result in cracking.
•When cutting an inside corner, always use a core bit to avoid damaging the corner area with the cutting disc. Damage to the radius area will create a stress point
•Any internal angled corner must be
radiused. Cut with the saw up to the joint of the drilled hole, leaving the drilled hole intact. Avoid dry grinding/polishing of the corner since overheating the area may result in a crack.

INSIDE CORNERS

In the case of an angular shaped kitchen (L- or U-shaped), the surfaces of the countertop should be fabricated from a single slab. Inside corners must have a minimum of ⅜" radius.

CUTOUTS

- If the distance between the cutout and a joint is less than 6", the area needs to be supported by placing all joints at the junction of the base cabinets or fitting a solid slat under the joint.
- Cross cutting should be avoided.
- 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.
- Always allow an extra ⅛" between the appliance and the edge of the cutout for expansion.

SEAMS

- If a straight seam is not used, any internal angled corner in the seam must have a ⅜" radius.
- All seams should be made level by adjusting the material before adhesive sets.
- Use a state-of-the-art seam setter tool to minimize the size of the seam. Seams should not be more than 1/16" wide.

EDGE DETAILING

Our recommended minimum edge profile is a ⅛" bevel. Our preferred minimum edge profile is a ⅛" Pencil Round edge.

NOTE: Chiseled or hammered edges are not approved edge details

POLISHING EDGE PROFILES

Polishing any surface's edge profile should be done using only granite or marble diamond polishing pads. The quality of the pads being used will affect the time required to complete polishing and the quality of the finish. Polishing should be done by starting with a surface that is smooth, clean, and free from any residual adhesive.

NOTE: Do not polish edges beyond the factory surface polish.

Recommended polishing process:

• Honed finish 100, 200, 400-gritdiamond pad
•Polished finish 100, 200, 400, 500–800,
1500–2000, 2000–3000-grit diamond pad These recommendations are guidelines for achieving a polish equal to the factory surface polish. The type of tools, diamond pads, and fabrication techniques will affect actual polishing results. When polishing the edge profile, use water-cooled tools. Dry- polishing the edge profile may cause overheating, leaving the edge prone to chipping.

Use lower RPM on polishers when using
1000-grit or higher diamond polishingpads. Do not use stone "buff " pads on Quartz surfaces.

MITERED EDGES

•Mitered edges should be done at a 45˚ angle to ensure maximum strength. The joint should be clean, flush, and parallel
•Mitered edges have the greatest area of weakness and are most prone to chipping. (Our recommended minimum edge profile is a ⅛" bevel. Our preferred minimum edge profile is a ⅛" Pencil Round edge)
•Chipping is most prevalent where the application of the adhesive is not evenly distributed throughout the joint.
•Incorrect angles restrict the type of edge that can be produced, since the larger the edge profile, the larger the joint that is visible.

NOTE: Ensure that the adhesive is thoroughly distributed for maximum strength.

ADHESIVES

Use a flexible adhesive, such as 100% clear silicone adhesive to secure the counter tops to the cabinets, substrate, or to secure back splashes to the wall for limited thermal expansion.

Follow stone adhesive manufacturer's instructions.

SEAMING & LAMINATIONS

Follow the individual manufacturer's instructions for the use of their seaming adhesives, including but not limited to the minimum working temperatures for their product. PACIFIC recommends the use of a polyester resin knife grade adhesive as well as the Integra Estone 101 & Tri-Bond 30 cartridge system for all seaming and Laminations.

JOINT ADHESIVES, LAMINATIONS/ DOUBLE EDGES

In order to minimize visible seams, use pigmented adhesives similar in color similar to the slab being installed.

Edges When laminating, it is important to make sure that the lamination piece is the full length of the top piece and cut at 45˚ on the corners. If this cannot be done and a joining of the lamination pieces is unavoidable, the joint must be cut at 45˚.

The lamination strip should be cut from the same slab as the counter top surface material to ensure a color match. Add the lamination piece size to your cutting measurements, to obtain the same length and same color piece for the lamination.

SEAMING

- Use a state-of-the-art seam setter tool. Seams should not be more than 1/16"wide
- All seam surfaces should be smooth and free of debris.
- Use a colored glue for all seams.
- Grooves should be created in surfaces to be joined to allow space for glue. Extra glue should be placed at all corners and around joints.
- Plan seam locations to reduce visibility.
- Never install mechanical fasteners (screws, nails, etc.) into surfaces.

JOINT POSITIONS

• In a 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.

• When installing ¾" material, the plywood over the dishwasher must be isolated from the rest of the sub top.

• On seams, miters, and lamination areas, it is necessary to grind notches or grooves on the surfaces to be bonded together. The slab is nonporous and will not absorb the adhesive – these notches provide a space for the adhesive within the joint.

PROTECTIVE WEAR

Wear an approved face mask when fabricating to avoid exposure to the dust which contains silica and dangerous when inhaled.

Safety Glasses : Always wear approved eye protection.
Safety Gloves : Always wear approved hand protection.
Safety Shoes : Always wear foot protection when installing Quartz surfaces.

TRANSPORTATION

PACKING FOR TRANSPORT

• Consider portability and site access when planning and packing slabs for transport.
• Brace slabs to avoid flexing of the seams and corners.
• Transport only with sections touching face-to-face or back-to-back and properly contain the slab to avoid sliding.

RACKING FOR TRANSPORT

• Slabs should be securely fastened to the rack by straps. Be sure to protect the straps from being damaged or cut by the edge of the slabs.
• We recommend that two people deliver the product to the site.
• Keep a protective layer between the rack and the slab to prevent scratching or surface damage.

INSTALLATION INSTRUCTIONS

PREPARING BASE UNITS / CABINETS

Confirm the correct installation of cabinets and that they are level. The cabinet tops should be flat and true within 1⁄16" over 18". Confirm that cabinets are interlocked with each other and secured to the wall. For dishwashers, confirm that the surroundings of the opening of the counter are sufficiently supported.

NOTE: If the cabinets are not properly installed, notify the owner or project manager before proceeding.

SUPPORT

- Support the slab on a strong perimeter frame.
- Support the cabinet front to back every 24", using support strips 2.5"- wide
- Support all countertop joints.
- Support the top of a dishwasher space and over an under-counter oven.

OVERHANGS

The following guidelines are for Slabs overhangs for standard cabinets 24" in depth:

3/4 "

Less than 8"	No additional support required
8-16"	Use brackets at 24" intervals
Over 16"	Use Legs, Columns or Panels at 24" intervals

3/4” with 5/8” subtop

Less than 12”	No additional support required
12 - 20”	Use brackets at 24” intervals
Over 24”	Use Legs, Columns or Panels at 24” intervals

1 1/4”

Less than 16”	No additional support required
16 - 24”	Use brackets at 24” intervals
Over 24”	Use Legs, Columns or Panels at 24” intervals

FITTING

• Countertops by PACIFIC need room to expand so keep at least ⅛” at each wall for expansion and contraction.

• Use only dabs of flexible silicone 8–12” apart to affix to the surface. Joints and cutouts will require additional adhesive.

• Never use mechanical fasteners directly onto surfaces. Bolting is permitted.

SECURING OF COUNTERTOPS

- Use dabs of adhesive 8–12″ apart.
- Use adhesive on corners, joints and cutouts.
- Support overhangs over 8″ for ¾″ slabs and 16″ on 1¼″ slabs.
- Radius all inside corners on all cutouts
- Match the slab with the color adhesive to join these arms.
- Be careful not to under cut corners.
- Allow room for expansion between tops and walls.
- Confirm cabinets are level and supported

before installation of Quartz surfaces.

- Cabinets on adjustable legs, must be evenly tensioned.

SINKS & BASINS

Follow the sink manufacturers' recommendations for installation.

- For cutouts, follow the instructions for cutouts provided earlier in this manual. For under-mount installations, use the minimum edge profile recommendations around the cutout. The minimum edge profile should be ⅛″ bevel.
- Twin basin installations, with the tap hole in the counter top, ensure that there is sufficient material for strength. Use extra support to avoid cracking.
- Use drilled radius corners (minimum ⅜″) to prevent stress points in the top of sink cutouts.
- Sink installations must be fully supported independent of the surface top. Use a professional sink-setter or support rail system. Use front-to-back support strips 2.5″ wide to align with cutouts and periodic support. Support all counter top joints.
- For under-mount sink installations, polish the inside edges to match the surface.

NOTE: Never use mechanical fasteners (screws, nails, etc.) on surfaces.

WALL APPLICATIONS

If a wall surface is being covered, make sure the surface is sound, secure, rigid and complies with all applicable laws and engineering practices. Maximum allowable deflection is L/360 and should be uniform over the length of the wall and surfaces must be true and level within ⅛" over ten feet.

Use latex thin-set mortar adhesive or epoxy adhesive and grout for wall applications.

• The finished mortar and grout should be resistant to urine, diluted acid, diluted alkali, sugar, brine and food waste products.
• With proper preparation and the proper adhesives and grout, Quartz surfaces can be used over concrete, block and masonry-type surfaces, gypsum wallboard, plasters, cement backer board, plywood, asphalt and steel.
• You will still need to provide a waterproof membrane. For information on thin, load- bearing waterproof membranes, consult your preferred supplier.

All bedding and grouting mortars should be weather, frost, shock, and chemical-resistant, and meet the following physical requirements:

Compressive Strength	Thick-bed mortar	3000 PSI Minimum
Compressive Strength	Thin-bed, bonding, grouting mortars	500 PSI Minimum
Tensile Strength	Thin-bed, bonding, grouting mortars	500 PSI Minimum
Water Absorption		4%
Ozone Resistance	200 hrs. @ 200 ppm	No loss of strength
Smoke Contribution Factor		0
Flame Contribution Factor		0

• To bond Countertops by PACIFIC, ensure the surface is free of dust, oil, grease, paint, tar, wax, curing agents, primers, sealers, form release agents, or any other deleterious substances which may act as bond barriers.

• Handle, store, mix and apply all grout and adhesives in strict compliance with the manufacturer's directions.

• Comply with applicable building codes and regulations.

FINISHING TOUCHES

Protect PACIFIC Countertops by covering the entire top with protective material if additional work will be conducted on the site after installing surfaces.

Advise the customer that the new countertop cannot be used as a workbench or a stepping or a standing platform by others on site, and that any trades using solvents or adhesives must avoid and/or remove any spills created by their solvents or adhesives from the countertop.

A product designed by **PACIFIC ENGINEERED SURFACES**

MANUFACTURING PLANT

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