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SHEEN OVERSEAS

ENGINEERED QUARTZ SURFACES • TECHNICAL PUBLICATION

QUARTZ COUNTERTOP FABRICATION & CARE GUIDE



FEATURED DESIGN: CALACATTA IMPERIA • BRETONSTONE VIBRO-COMPRESSION 3200X1600MM

The authoritative engineering manual for international stone fabricators, CNC programmers, bridge saw operators, kitchen manufacturers, interior contractors, and quality inspectors. Standardized guidelines for handling, diamond cutting, tension relief, mandatory cutout radius geometry, edge profiling, seaming, mechanical undermount sink installations, and 15-year warranty care.

SHEEN OVERSEAS PRIVATE LIMITED

National Highway 8-A, Sartanpar Road, Morbi - 363642, Gujarat, India
ISO 9001:2015 • CE Certified • GreenGuard Gold • NSF/ANSI 51

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Jumbo Slab Collection (3200 x 1600 mm)



DOCUMENT CONTROL

Document Information & Master Edition Notice

Official engineering metadata, publication governance, and warranty validation protocols.

1. Publication Scope & Legal Status

This technical guide establishes the official standard for the handling, processing, machining, jointing, site fitting, and long-term surface preservation of **Sheen Overseas Engineered Quartz Surfaces**.

The instructions, cutting speeds, corner radii, and support spans detailed within this document reflect exhaustive empirical laboratory testing (ASTM International, European Standards EN 15285 / EN 15388) and professional stone masonry field practice across North America, Europe, Australia, and the Middle East.

CERTIFIED COMPLIANCE MANDATE

Adherence to the fabrication protocols set forth herein is mandatory to validate the **Sheen Overseas 15-Year Commercial and Residential Product Warranty**. Deviation from core guidelines (e.g., sharp 90° square cutouts, dry cutting, inadequate overhang brackets) automatically voids structural warranty claims.

2. Document Control & Metadata

Metadata Parameter	Official Field Record
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3. Technical Inquiries Desk

For custom engineering consultations, large commercial architectural project submittals, or complex mitered waterfall island support calculations, contact our technical team:

- **Global Desk:** contact@sheenoverseas.com
- **Export Department:** export@sheenoverseas.com
- **Online Architecture Portal:** www.sheenoverseas.com/technical-specs/



CORPORATE PROFILE

About Sheen Overseas — Heritage & Infrastructure

Global manufacturing excellence in engineered quartz surfaces and architectural sintered slabs.

1. Company Heritage & Industrial Vision

Founded at the heart of India's premier ceramic and mineral processing cluster in Morbi, Gujarat, **Sheen Overseas Private Limited** has evolved into a premier global manufacturer and international exporter of high-grade architectural surfaces.

Operating state-of-the-art automated Breton-compatible vacuum vibro-compression compaction lines and multi-stage diamond polishing trains, our industrial complex delivers over **1,800,000 square meters** of premium engineered quartz and sintered architectural slabs annually.

Sheen Overseas surfaces are exported directly through Mundra and Pipavav ports (within 210 km highway transit), supplying major commercial development projects, luxury residential towers, hotel resorts, and master distributors across more than 45 nations.

2. Industrial Precision & Environmental Quality

Facility Infrastructure	Technical Dimension
Compaction Technology	100-Ton Vacuum Vibro-Compression
Raw Material Purity	93% Pure Crushed Natural Quartz
Resin Formulation	High-Grade Unsaturated Polymer Resin (7%)
Slab Calibration Tolerance	± 0.5 mm Thickness Uniformity
Quality Accreditations	ISO 9001:2015, CE Marking, ASTM, NSF 51
Port of Loading	Mundra Port / Kandla Port, Gujarat

GLOBAL LOGISTICS RELIABILITY

All export shipments are palletized on reinforced A-frame iron pipe pallets with timber cushions and desiccated moisture protection, ensuring zero transit defect delivery to fabricators worldwide.

ANNUAL CAPACITY 1,800,000 M²

SHEEN QUARTZ MANUFACTURING PLANT Advanced Bretonstone-compatible automated compaction line in Morbi, Gujarat

SHEEN AUTHENTIC SURFACE



USER ROADMAP

How to Use This Technical Guide & Target Roles

Structured guidance customized for workshop managers, machine operators, and installation crews.

This manual is structured systematically to guide stonemasons, bridge saw operators, and installation crews through the complete lifecycle of a quartz countertop project—from raw slab delivery through final client handover.

FOR SHOP MANAGERS & ESTIMATORS

Review Sections 1, 2, and 3 for material properties, slab weight handling, storage requirements, slab yield planning, and vein layout for waterfall edges.

FOR CNC & SAW OPERATORS

Study Sections 4 and 5 closely for blade feed rates, RPM tables, tension relief score cuts, and the mandatory 10mm cutout inside corner radius rule.

FOR INSTALLERS & INSPECTORS

Focus on Sections 6, 7, 8, and 9 for cabinet leveling (< 2mm), overhang support steel brackets, undermount sink mechanical cradles, and warranty sign-offs.

STANDARDIZED TERMINOLOGY

In this manual, the term **SHALL / MUST** designates an absolute engineering imperative required for structural safety and warranty compliance. The term **SHOULD / RECOMMENDED** indicates industry best practice.



OCCUPATIONAL HEALTH

Important Health & Safety Notice — Silica Compliance

Mandatory engineering controls, wet processing protocols, and OSHA respirable silica standards.

CRITICAL OCCUPATIONAL HEALTH WARNING: RESPIRABLE CRYSTALLINE SILICA (RCS)

Engineered quartz surfaces contain 90% to 93% pure natural crystalline quartz (silica). Inhaling fine airborne silica dust generated during dry cutting, grinding, routing, or polishing causes irreversible and fatal lung diseases, including **Silicosis, Lung Cancer, and Chronic Obstructive Pulmonary Disease (COPD)**.

1. Absolute Dry Processing Prohibition

DRY CUTTING, DRY ROUTING, AND DRY HAND POLISHING OF SHEEN QUARTZ SURFACES ARE STRICTLY PROHIBITED IN ALL WORKSHOPS AND JOBSITES.

All bridge sawing, CNC machining, core drilling, edge profiling, and surface polishing operations **MUST** be performed under continuous, high-volume water flood suppression (> 20 Litres/min).

2. Personal Protective Equipment (PPE)

- **Respirators:** NIOSH-approved N95, N100, or P100 tight-fitting negative pressure half-mask respirators, or PAPR systems.
- **Eye Protection:** ANSI Z87.1 certified safety goggles.
- **Hearing Protection:** Earmuffs (NRR ≥ 25 dB) during saw operations.
- **Footwear:** Steel-toed safety boots with metatarsal guards.

3. Workshop Engineering Controls

Control Hierarchy	Engineering Standard
Dust Suppression	Water jets at blade contact point
Water Recycling	Automated closed-loop slurry filter presses
Air Monitoring	Personal air sampling (< 0.05 mg/m³ PEL)
Housekeeping	Wet slurry vacuuming; NO dry sweeping or compressed air blow-down

OSHA & INTERNATIONAL STANDARDS

Workshop managers must comply with OSHA 29 CFR 1910.1053, Safe Work Australia, and European Directive 2017/2398 crystalline silica regulations.



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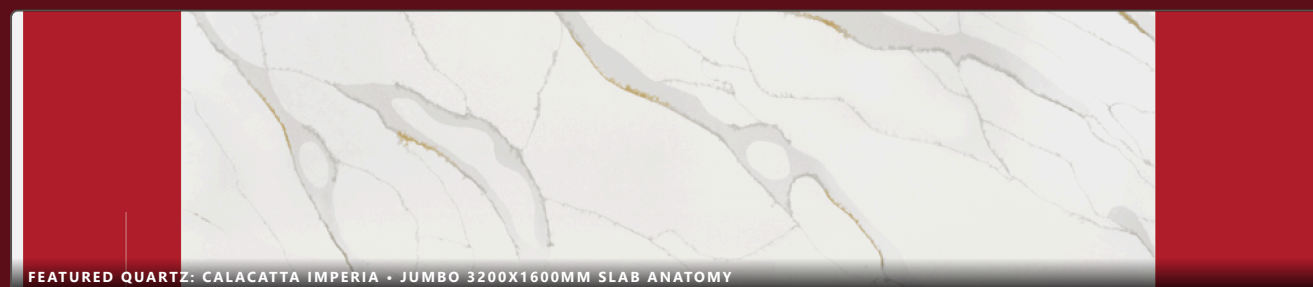
SECTION 1 • FIELD TECHNICAL DIVISION

QUARTZ COUNTERTOP OVERVIEW

Material composition, physical-mechanical benchmarks, performance comparisons, and architectural applications.

KEY TECHNICAL MODULES IN THIS SECTION:

- Raw material composition & polymer resin matrix
- ASTM certified physical and mechanical test values
- Quartz vs Granite vs Solid Surface performance matrix
- Residential, commercial, healthcare, and hospitality installations



FEATURED QUARTZ: CALACATTA IMPERIA • JUMBO 3200X1600MM SLAB ANATOMY



MATERIAL SCIENCE

What Is Engineered Quartz Surface

Composition, polymer cross-linking, vacuum vibro-compression, and structural density.

1. Raw Material Formulation

Sheen Overseas Engineered Quartz is an advanced non-porous composite surface engineered using **93% natural crystalline quartz aggregate** and **7% high-performance unsaturated polymer resin matrix** enriched with UV-stable mineral pigments.

Natural quartz is one of the hardest minerals on Earth, ranking **Mohs 7** on the mineral hardness scale. Through precision vacuum vibro-compression compaction at pressures exceeding 100 tons per square meter, all micro-voids and air pockets are expelled, producing a solid monolithic slab with structural density exceeding 2.42 g/cm³.

2. Curing & Calibration

Following compaction, slabs undergo controlled thermal curing in automated curing kilns at 90°C to cross-link the polymer resin matrix. Slabs are then calibrated for uniform gauge thickness (±0.5 mm) and polished across a 36-head sequential diamond abrasive train.

3. Raw Material Composition Table

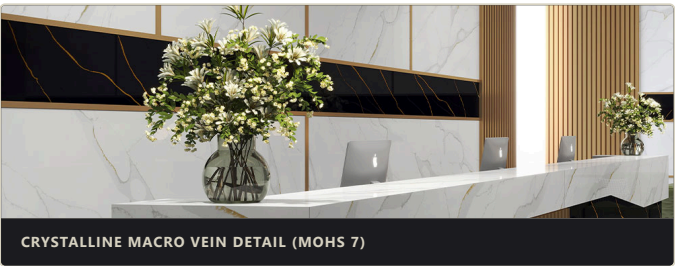
Component	Percentage	Function
Crushed Natural Quartz	90% – 93%	High hardness, scratch resistance, compressive strength
Polymer Polyester Resin	7% – 9%	Flexural bonding, elasticity, impact absorption
Mineral Pigments & Oxides	< 1.5%	Consistent color, veining aesthetics, UV stability
Coupling Agents (Silane)	< 0.5%	Molecular adhesion between silica and resin polymer

JUMBO FORMAT ADVANTAGE

Our flagship **3200 x 1600 mm (126" x 63")** jumbo format allows seamless execution of oversized kitchen islands up to 3.1 meters in length without visible joints.



SHEEN CALACATTA IMPERIA FULL SLAB (3200X1600MM)



CRYSTALLINE MACRO VEIN DETAIL (MOHS 7)



TEST STANDARDS

Quartz Countertop Performance Benchmarks

Official ASTM and EN physical, mechanical, and chemical laboratory test results.

The following laboratory test values represent audited physical, mechanical, and thermal performance benchmarks for **Sheen Overseas Engineered Quartz Surfaces** conducted in accordance with ASTM and European standards.

Physical / Mechanical Property	Test Standard	Standard Requirement	Sheen Quartz Test Result
Water Absorption	ASTM C97 / EN 14617-1	< 0.20%	0.10% (Typical < 0.03%)
Apparent Density	ASTM C97 / EN 14617-1	> 2.10 g/cm ³	2.20 – 2.45 g/cm³
Flexural Strength (MOR)	ASTM C880 / EN 14617-2	> 30.0 MPa (4350 psi)	> 45.0 MPa (5,000 – 6,500 psi)
Compressive Strength	ASTM C170 / EN 14617-15	> 100 MPa (14,500 psi)	> 115.0 MPa (16,680 psi)
Mohs Mineral Hardness	EN 101 / Mohs Scale	Class > 5	Class > 6 (6.5 – 7.0 Mohs)
Deep Abrasion Resistance	ASTM C241 / EN 14617-4	< 300 mm ³	156 mm³ (Superior wear rate)
Stain Resistance Index	ANSI Z124.6 / EN 14617-10	Max stain depth 0.12 mm	Index 45 • Max depth 0.10 mm (No damage)
Chemical Resistance	ASTM C650 / EN 14617-10	No visible damage	No Obvious Damage (Unaffected by common acids)
Thermal Expansion (CTE)	ASTM C531 / EN 14617-11	Max 25 x 10 ⁻⁶ K ⁻¹	16.5 x 10⁻⁶ K⁻¹
Fire Reaction Class	EN 13501-1	Euroclass B-s1, d0	B-s1, d0 (Flame retardant, low smoke)

LABORATORY AUDIT VERIFICATION

Test data derived from independent third-party laboratory evaluations on calibrated 20mm and 30mm Calacatta Luxe and Statuario Imperial quartz slabs.



BENCHMARK MATRIX

Quartz vs Granite vs Solid Surface Comparison

Comparative performance parameters across scratch, stain, flexural, and maintenance criteria.

Architects and fabricators frequently compare engineered quartz against natural granite and acrylic solid surface products. The matrix below illustrates why engineered quartz has become the preeminent global surface material for high-performance interior architecture.

Performance Criterion	Sheen Engineered Quartz	Natural Granite	Acrylic Solid Surface
Scratch Resistance	YES (Mohs 6.5 – 7.0)	YES (Mohs 6.0 – 6.5)	NO (Mohs 2.5 – 3.0 • Scratches easily)
Stain Resistance	YES (Non-porous, 0.10% abs)	POOR (Porous • Requires sealing)	YES (Non-porous)
Sealing Required	NO (Never requires sealers)	YES (Periodic impregnator sealant)	NO
Heat Resistance	YES (Thermal shock resistant)	YES (High heat tolerance)	POOR (Softens above 80°C)
Flexural Strength (MOR)	EXCELLENT (> 45 MPa)	MODERATE (10 – 15 MPa)	MODERATE (35 – 40 MPa)
Crack & Chip Resistance	YES (Polymer elasticity)	SUSCEPTIBLE (Natural fissure planes)	YES
Chemical / Acid Resistance	YES (Resists wine, vinegar, citrus)	POOR (Etches with acids)	MODERATE
Color & Vein Consistency	YES (Batch controlled)	NO (Natural variation & defects)	YES
Mold & Bacterial Growth	ZERO (NSF 51 Food Safe)	POSSIBLE (Pore absorption)	ZERO
Maintenance Effort	EXTREMELY LOW (Water & soap)	HIGH (Stripping & resealing)	LOW



APPLICATION SCOPE

Product Applications & Architectural Versatility

Overview of residential, commercial, healthcare, and hospitality surface capabilities.

1. Architectural Specification Spectrum

Engineered quartz combines aesthetic luxury with structural resilience, making it suitable across a broad spectrum of interior commercial and residential architectural environments.

Due to its zero-porosity structure, certified NSF/ANSI 51 food equipment compliance, and resistance to common household chemicals, Sheen Quartz is ideal for kitchen countertops, bathroom vanities, reception desks, and laboratory worktops.

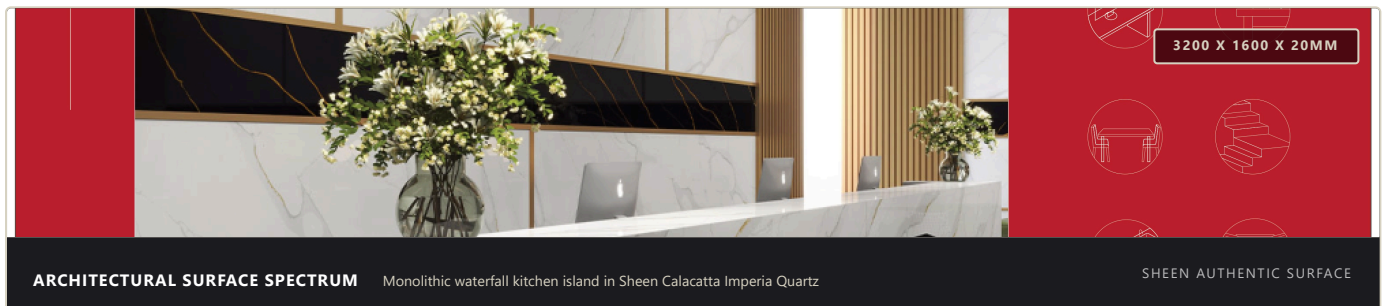
2. Key Application Sectors

- **Residential:** Chef's kitchens, waterfall islands, prep counters, pantries, dining tables, bathroom vanities, shower wall surrounds.
- **Commercial:** Bank teller counters, executive boardroom tables, corporate reception lobbies, luxury retail display tops.
- **Hospitality:** Cocktail bars, restaurant dining surfaces, hotel buffet lines, guestroom vanities.
- **Healthcare:** Clinical dental counters, nurse stations, cleanroom laboratory casework.

3. Important Environmental Boundary

INTERIOR USE SPECIFICATION ONLY

Sheen Engineered Quartz is formulated exclusively for **interior architectural applications**. Slabs contain polymer resin binders which can undergo color shifting, surface yellowing, or micro-crazing if subjected to continuous outdoor direct ultraviolet (UV) sunlight radiation. For outdoor kitchens and exterior ventilated facades, refer to *Sheen Sintered Porcelain Slabs (Manual 2)*.



ARCHITECTURAL SURFACE SPECTRUM

Monolithic waterfall kitchen island in Sheen Calacatta Imperia Quartz

SHEEN AUTHENTIC SURFACE



RESIDENTIAL DESIGN

Residential Kitchen Countertops & Waterfall Islands

High-performance requirements, food safety compliance, and waterfall edge design.

1. Kitchen Countertop Environments

Residential kitchens impose the highest thermal, chemical, and mechanical stresses of any home environment. Food preparation entails acidic liquids (lemon juice, tomato sauce, red wine), concentrated colorants (turmeric, saffron, coffee), heavy impact forces, and thermal challenges.

Sheen Quartz provides a virtually impervious surface with water absorption under 0.10%, preventing biological growth and bacterial harbor within countertop crevices.

2. Waterfall Island Architecture

Modern architectural design favors waterfall islands where the horizontal countertop transitions continuously down the vertical cabinet ends to the finished floor.

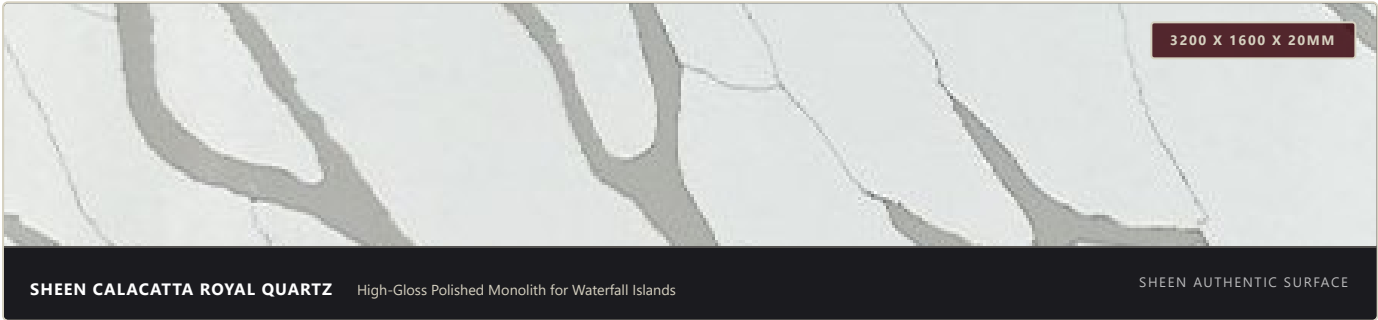
Executing an immaculate waterfall island requires 45° precision mitered jointing, continuous vein matching (bookmatching), and structural sub-floor clearance provisions.

3. Recommended Slab Thicknesses

Thickness	Recommended Kitchen Application
20 mm (3/4")	Standard countertops with full substrate; mitered drop-edge aprons (40mm to 80mm built-up fascia); waterfall gables.
30 mm (1-1/4")	Luxury monolithic solid countertops; self-supporting spans; contemporary profile finishes without laminated fascia.
15 mm (5/8")	Vertical kitchen splashbacks; integrated cabinet upstands; range hood feature cladding.

NSF/ANSI 51 FOOD ZONE CERTIFIED

Certified completely safe for direct food contact preparation without release of chemical residues or synthetic migration.





COMMERCIAL SURFACES

Commercial, Retail & Corporate Counter Surfaces

High-traffic wear endurance, reception counters, retail cash wraps, and executive desks.

1. Heavy Commercial Traffic Demands

In high-footfall commercial spaces—such as airport lounges, shopping malls, corporate headquarters, and financial institutions—counter surfaces face abrasive cleaning regimes, public luggage impacts, and continuous wear.

With an abrasion resistance volume loss of only 156 mm³ and flexural strength exceeding 45 MPa, Sheen Quartz withstands heavy daily usage without dulling or scratching.

2. Reception Counters & Transaction Desks

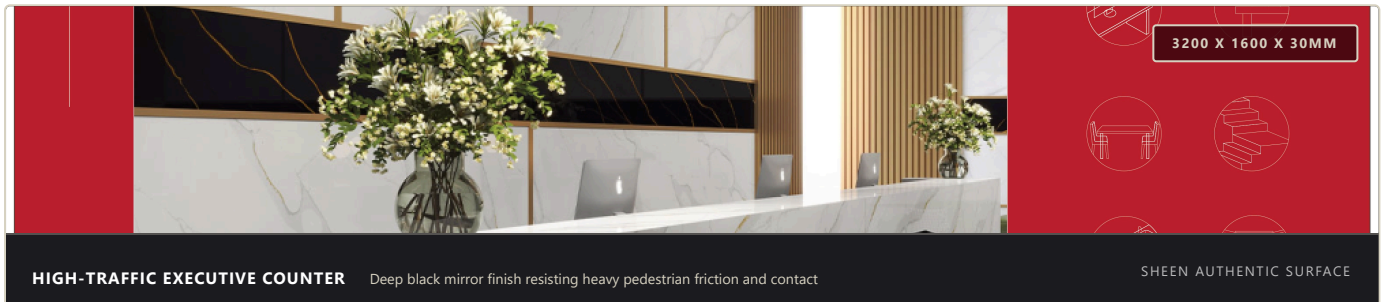
Curved and multi-faceted transaction desks require precision CNC milling, radius-corner jointing, and concealed steel framework support. Monolithic spans up to 3.2 meters minimize unsightly expansion seams in executive lobbies.

3. Retail Display & Checkout Casework

Retail cash wraps and product display fixtures benefit from Sheen Quartz's dimensional consistency and uniform thickness gauge, simplifying serial modular millwork manufacturing.

ARCHITECTURAL SPECIFICATION TIP

For commercial transaction counters with high coin and key friction, specify **Polished or Leathered finish** in darker tonal palettes (such as *Nero Marquina Quartz*) to maintain optimal aesthetic longevity.





BATHROOM APPLICATIONS

Bathroom Vanity Tops, Wet Areas & Integral Basins

Waterproof surface performance, cosmetic chemical resistance, and basin engineering.

1. Bathroom Wet Environment Dynamics

Bathrooms expose stone surfaces to continuous humidity, soap scum, toothpastes, cosmetics, hair coloring chemicals, and acetone-based nail polish removers.

Unlike marble—which etches instantly from acidic splashes—Sheen Quartz retains its factory gloss polish under daily cosmetic exposure.

2. Integrated Quartz Basins & Undermount Sinks

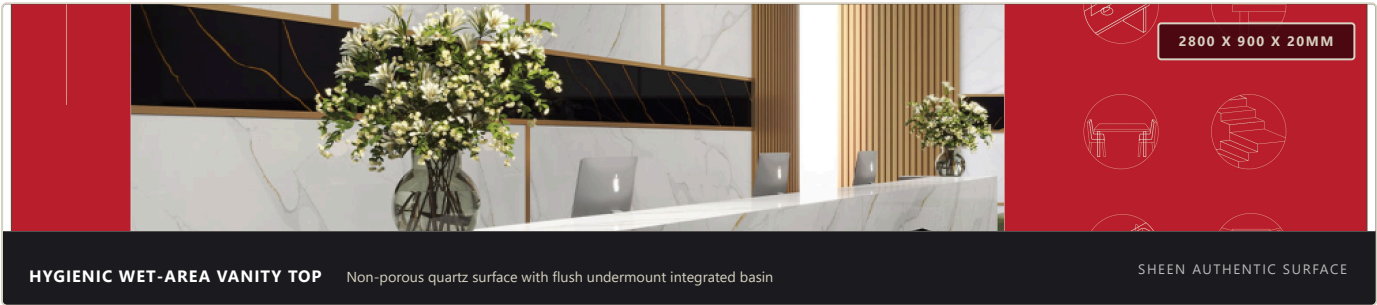
Custom vanity fabrications frequently feature integrated rectangular quartz sink basins crafted with matching mitered bottoms and concealed drain slots. All mitered basin joints must be assembled with structural waterproof methacrylate adhesive.

3. Vanity Top Dimensional Guidelines

Vanity Parameter	Standard Dimension
Standard Depth	560 mm – 610 mm (22" – 24")
Front Webbing Width	Min 80 mm (3-1/8")
Rear Faucet Webbing	Min 65 mm (2-1/2")
Backsplash Height	100 mm (4") or full wall height

CHEMICAL PRECAUTION

Avoid leaving acetone (nail polish remover) or harsh solvent cleansers on quartz vanity surfaces for prolonged periods. Rinse immediately with clean water.



HYGIENIC WET-AREA VANITY TOP Non-porous quartz surface with flush undermount integrated basin

SHEEN AUTHENTIC SURFACE



HOSPITALITY DESIGN

Hospitality, Bar Counters & Hotel Surfaces

Buffet counters, cocktail drink rails, bar die walls, and high-frequency cleaning resistance.

1. Hospitality Operational Challenges

Hotels, cocktail lounges, and restaurants demand luxurious aesthetics combined with bulletproof durability. Cocktail bar tops are subjected to citrus fruit acids, red wines, dark liqueurs, beer taps, and hot glassware washers.

Sheen Quartz offers non-staining surface chemistry that meets hospitality hygiene codes without ongoing maintenance downtime.

2. Buffet Lines & Heated Serving Wells

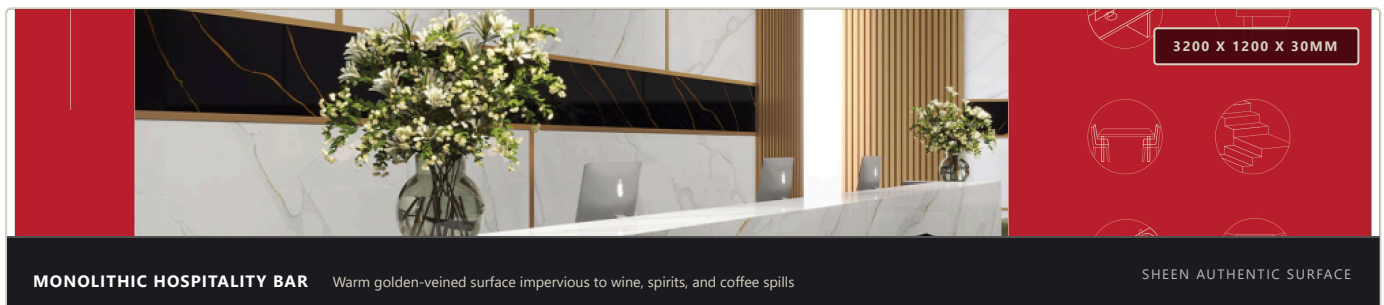
Drop-in food warmers, chafing dishes, and soup wells transfer thermal energy. Cutouts for heated equipment require mandatory minimum 10mm corner radii and thermal expansion perimeter air gaps.

3. Bar Die Walls & Footrests

Vertical bar fronts (die walls) clad in 15mm or 20mm quartz resist scuffs from patron footwear. Waterfall returns on bar ends provide cohesive modern styling.

DRINK RAIL ENGINEERING

When designing cocktail drink rails with recessed drain troughs, slope the routed bottom at minimum 1.5% towards the plumbed waste outlet to prevent standing liquid.





VERTICAL SURFACES

Interior Vertical Cladding & Flooring Systems

Feature wall mechanical anchorage, fireplace surround guidelines, and commercial stair treads.

1. Vertical Feature Wall Cladding

Sheen Quartz slabs (15mm and 20mm) can be hung vertically as interior feature walls, fireplace surrounds, elevator lobby facades, and executive boardroom panels.

Mechanical kerf clips, undercut anchors, and high-strength structural epoxies must be employed for vertical panels exceeding 2.0 meters in elevation.

2. Commercial Flooring & Stair Treads

For interior commercial flooring, cut-to-size quartz tiles provide high compressive strength (> 115 MPa) capable of supporting pallet jacks, shopping carts, and heavy stiletto foot traffic.

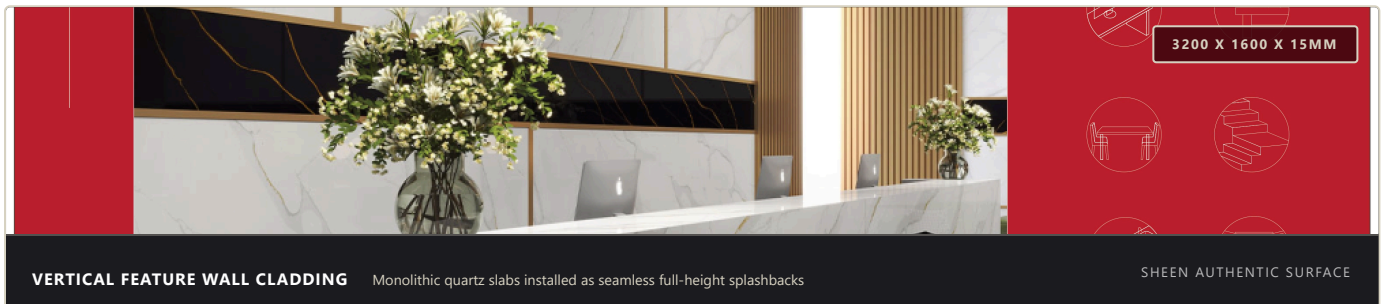
3. Fireplace Hearth Clearances

THERMAL PROXIMITY WARNING

Quartz surfaces used on fireplace surrounds must not be exposed to direct open flame or radiant heat temperatures exceeding 150°C (300°F). Maintain manufacturer clearances around gas fireplace fireboxes.

4. Stair Tread & Riser Details

Solid 30mm stair treads should be fabricated with a double straight rounded edge profile and routed non-slip brass or carborundum safety inserts for public buildings.



VERTICAL FEATURE WALL CLADDING Monolithic quartz slabs installed as seamless full-height splashbacks

SHEEN AUTHENTIC SURFACE



SECTION 2 • FIELD TECHNICAL DIVISION

PRODUCT HANDLING & LOGISTICS

Container unloading, warehouse storage engineering, A-frame geometry, and slab traceability.

KEY TECHNICAL MODULES IN THIS SECTION:

- Container receiving and bill of lading inspection verification
- Overhead crane booms, C-clamps, and vacuum lifting protocols
- A-frame vertical storage angle (80° to 85°) & timber bearer criteria
- Slab identification, batch number cross-matching, and traceability



FEATURED QUARTZ: CHARCOAL NOIR • MONOLITHIC HEAVY-DUTY SLAB LOGISTICS



LOGISTICS INTAKE

Receiving Slabs at Fabricator Facilities

Container logistics, unloading equipment capacity, and master slab weight calculations.

1. Container Arrival Logistics

Sheen Quartz slabs arrive in 20-foot heavy-duty ocean shipping containers, packed in certified iron pipe pallets or reinforced wooden A-frame bundles. A standard 20ft container carries between 18 and 28 metric tons of cargo depending on destination axle-load regulations.

Fabricator facilities must possess dedicated heavy-capacity unloading equipment, including overhead gantry cranes (capacity ≥ 5 tons) or heavy counterbalance forklifts equipped with certified slab spreader booms.

2. Weight Calculations by Slab Format

Handling crews must know exact slab weights before lifting. Weight per slab is calculated at nominal density of 2,420 kg / m³.

3. Slab Weight Reference Table

Slab Format	Thickness	Approx. Weight (kg)	Approx. Weight (lbs)
3200 x 1600 mm (Jumbo)	15 mm	186 kg	410 lbs
3200 x 1600 mm (Jumbo)	18 mm	223 kg	492 lbs
3200 x 1600 mm (Jumbo)	20 mm	248 kg	546 lbs
3200 x 1600 mm (Jumbo)	30 mm	372 kg	820 lbs

HEAVY OVERHEAD LOAD SAFETY

Never walk, position limbs, or stand beneath suspended quartz slabs. Keep transport pathways clear of personnel during crane movement.



QUALITY INTAKE

Delivery & Visual Inspection Protocols

Transit damage identification, 14-day claims window, and container unsealing checks.

1. Visual Intake Verification

Prior to signing receiving documentation (Proof of Delivery / Container Interchange Receipt), perform a thorough visual survey while slabs remain on the transport vehicle or container threshold.

Inspect for shipping container exterior impact marks, damaged door seals, shifted crate timbers, or snapped security banding.

2. Mandatory 14-Day Damage Window

In accordance with *Sheen Overseas Export Policy*, any physical shipping damage or missing piece counts must be reported within **14 calendar days of container arrival** supported by photographic uncrating documentation.

3. Intake Inspection Protocol

- | | |
|--|--|
| ☐ Verify Container Number & Seal ID | ☐ Check Bundles for Shifting / Lean |
| ☐ Inspect Slab Edges for Transit Chips | ☐ Verify Color & Series Label on Slabs |
| ☐ Cross-check Slab Quantity vs Packing List | ☐ Note any exceptions on Delivery Receipt |

MOISTURE CONDENSATION CHECK

During ocean transit, container rain condensation may form on protective films. Remove film and allow slabs to acclimate to ambient workshop humidity.



PACKAGING SAFETY

Packaging & Pallet Inspection Guidelines

Iron pipe pallets, ISPM-15 timber bundles, and steel strapping release precautions.

1. Bundle & Pallet Architecture

Sheen Overseas utilizes two standard export packaging systems engineered for global intermodal transport:

- **Iron Pipe Pallets (Heavy Duty):** Tubular steel frames welded to exact dimensions, lined with timber strips and high-density rubber cushions. Ideal for high-turnover automated warehouses.
- **Treated Timber Bundles (ISPM-15):** Fumigated pine A-frame bundles braced with cross-ties and heavy steel tension strapping (32mm x 0.8mm).

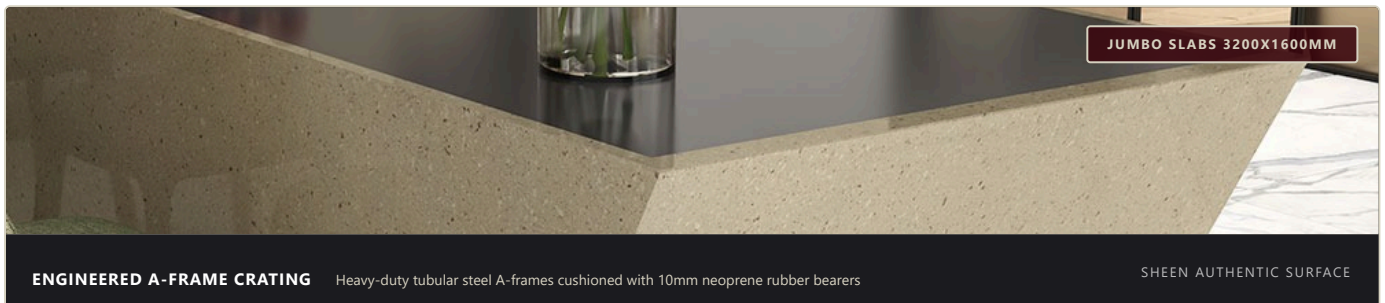
2. Unstrapping Caution Protocol

STORED SPRING TENSION HAZARD

Heavy steel tension banding contains significant stored elastic energy. Operators **MUST** wear safety glasses and cut strapping with heavy-duty shear cutters while standing to the side of the band plane. **NEVER** cut strapping while standing directly in front of the leaning slab face.

3. Timber Cushion Integrity

Verify that bottom timber bearers remain seated flat. If a timber bearer has split or dislodged during maritime transport, support the bundle base before cutting strapping.





RIGGING & HOISTING

Safe Container Unloading Procedures

Overhead crane booms, counterbalance C-clamps, and extraction procedures.

1. Mechanical Unloading Methods

Safe extraction of jumbo slabs (3200 x 1600 mm) from shipping containers requires specialized rigging:

- **Overhead Crane with C-Clamp / Boom:** The crane boom enters the container interior, engaging a counterbalance C-hook clamp around the slab bundle center of gravity.
- **Forklift Slab Spreader Attachment:** A forklift fitted with an extended jib boom and automatic scissor clamp (e.g., Aardwolf clamp).

2. Slab Extraction Step-by-Step

Step	Action Required
1	Position vehicle on level concrete; chock wheels
2	Remove container threshold bracing timbers carefully
3	Attach certified hoisting clamp to center of slab
4	Apply slight hoist tension; verify clamp rubber grip
5	Lift slab 50 mm clear of floor; withdraw horizontally
6	Lower slab onto workshop transport A-frame immediately

CLAMP CLEANLINESS RULE

Ensure scissor clamp polyurethane rubber pads are completely free from stone dust, grease, or water to prevent slab slippage.



ERGONOMICS & SAFETY

Manual Handling Field Protocols & Limits

Weight thresholds, two-person lift standards, and on-edge vertical carrying imperative.

1. Manual Handling Restrictions

Because full jumbo quartz slabs weigh between 186 kg and 372 kg, **full slabs must NEVER be lifted manually by human labor alone.** Manual handling is strictly restricted to smaller fabricated cut pieces, vanity tops, or narrow backsplashes weighing under 80 kg.

When manually transporting fabricated countertop components on the jobsite, observe the **two-person minimum lift rule** for any component exceeding 25 kg (55 lbs).

2. Carrying Orientation (Vertical Edge)

Fabricated quartz pieces must ALWAYS be carried vertically on edge—NEVER flat. Carrying a countertop piece flat induces extreme bending tension across narrow sink cutouts, resulting in catastrophic flexural failure.

3. Manual Handling Protocol Matrix

ERGONOMIC GRIP TOOLS

Use pump-action vacuum suction carrying handles (rated ≥ 60 kg per cup) positioned near the ends of the workpiece.

Component Weight	Minimum Personnel	Mandatory Equipment
0 – 25 kg (0 – 55 lbs)	1 Worker	Safety gloves, steel-toed boots
25 – 60 kg (55 – 132 lbs)	2 Workers	Dual suction grip handles; carry on edge
60 – 100 kg (132 – 220 lbs)	3–4 Workers	Rigid carrying bar frame with suction cups
> 100 kg (> 220 lbs)	Mechanical Only	A-frame transport cart / portable hoist



CRANE RIGGING

Mechanical Handling — Overhead Cranes & Lifters

Gantry crane capacities, dual-circuit vacuum lifters, and scissor clamp operations.

1. Gantry Crane & Vacuum Lifters

The safest method for maneuvering full jumbo quartz slabs within a fabrication shop is a motorized overhead bridge crane equipped with an industrial multi-pad vacuum lifter.

Vacuum lifters must feature dual independent vacuum pump circuits, an audible low-pressure warning alarm, and integrated vacuum reservoir tanks capable of maintaining suction for at least 20 minutes in the event of an electrical power outage.

2. Scissor Clamp Operation (Aardwolf Type)

Mechanical scissor clamps use slab gravity to increase clamping pressure. Always center the clamp along the slab's length (1600 mm mark) to prevent tilting.

3. Crane Inspection Checklist



Daily Hook & Wire Rope Inspection



Vacuum Gauge Reads in Green (> 18 inHg)



Check Rubber Vacuum Pads for Cuts



Verify Automatic Lock Latch Engagement



Test Low-Pressure Alarm Buzzer



Check Swivel Arm Movement

SLAB SURFACE CLEANLINESS

Wipe all loose grit, water, and protective plastic dust off the slab suction area before attaching vacuum lifter pads.



FACILITY DESIGN

Storage Facility Engineering & Floor Capacities

Floor structural load calculations, climate controls, and warehouse layout geometry.

1. Warehouse Floor Capacity

Slab storage areas concentrate immense static weight loads. A single A-frame holding 14 jumbo slabs of 20mm quartz imposes a load of approximately 3.5 metric tons, plus the tare weight of the steel rack.

Workshop concrete slabs must possess a minimum reinforced thickness of **150 mm (6 inches)** with a structural bearing capacity exceeding **5,000 kg / m² (1,000 lbs / sq.ft)**.

2. Environmental Climate Controls

Store slabs indoors in a dry, ventilated warehouse sheltered from rain, freezing conditions, and direct ultraviolet sunlight. Ambient temperatures should remain between 5°C and 40°C.

3. Storage Layout Standards

Facility Dimension	Engineering Specification
Aisle Width	Min 2.0 m (Forklift & cart clearance)
Ceiling Clearance	Min 3.5 m (Crane hook clearance)
Floor Slope	Level within < 0.5% (No side lean)
Lighting	Min 300 Lux (For surface color inspection)

FLOOR DRAINAGE

Ensure the slab storage floor is free from standing ponding water from nearby wet cutting operations.



VERTICAL STORAGE

Vertical Slab Storage Standards & Rules

Prohibition of flat stacking, face-to-face placement, and rack capacity limits.

1. The Absolute Flat Storage Prohibition

NEVER STORE SLABS HORIZONTALLY FLAT

Stacking full quartz slabs horizontally flat on top of one another causes immense hydrostatic compression on bottom slabs, trapping grit that severely scratches polished surfaces. Furthermore, retrieving lower slabs requires hazardous multi-slab handling operations.

2. Vertical Rack Alignment Rules

All quartz slabs must be stored vertically on structural A-frames or certified post-and-rail vertical storage racks.

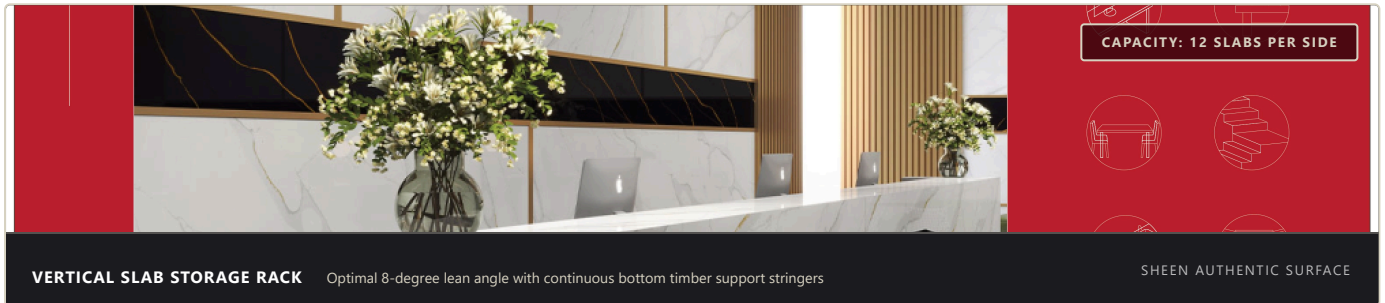
Slabs must be stacked face-to-face and back-to-back with clean protective foam or corrugated spacers between polished faces to prevent abrasive scuffing during insertion and extraction.

3. Maximum Rack Capacities

Slab Thickness	Max Slabs Per A-Frame Side	Total Rack Weight
15 mm	8 – 10 Slabs	~ 3,700 kg
20 mm	6 – 8 Slabs	~ 4,000 kg
30 mm	4 – 5 Slabs	~ 3,700 kg

SLAB SORTING PRACTICE

Organize racks by batch number and thickness gauge. Always place larger jumbo slabs at the rear of the rack and shorter slabs toward the front to prevent leaning distortion.





STORAGE GEOMETRY

A-Frame Storage Geometry & Base Bearers

Technical cross-section, 80°–85° lean angle standards, and rubber bearer padding.

The stability of vertical slab storage depends on maintaining an exact lean angle between **80° and 85° from horizontal** (5° to 10° tilt from vertical). Angles steeper than 85° risk accidental forward tipping, while angles shallower than 80° introduce excessive flexural bowing stress.

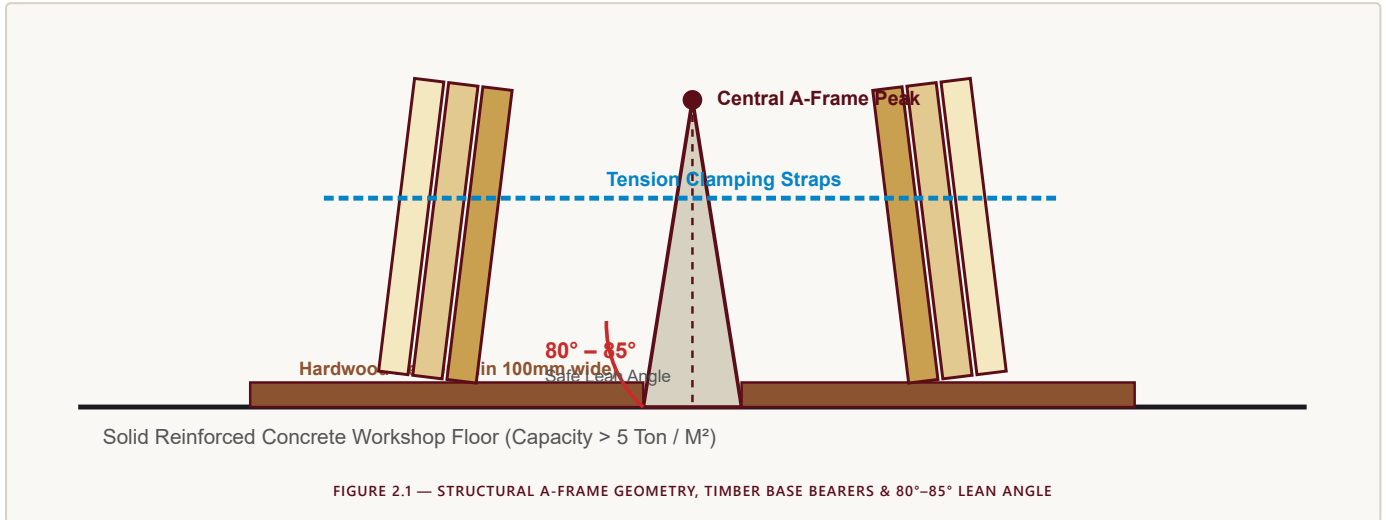


FIGURE 2.1 — STRUCTURAL A-FRAME GEOMETRY, TIMBER BASE BEARERS & 80°–85° LEAN ANGLE

Hardwood Base Bearers: The bottom ledge of the A-frame must feature solid hardwood timber bearers (minimum 100mm width) topped with 10mm high-durometer rubber to absorb shock and prevent edge chipping.

Safety Retention Straps: When personnel work near stored slabs, secure the bundle face with heavy-duty ratchet retention straps anchored to the central A-frame steel tower.



SURFACE PRESERVATION

Protecting Slabs During Storage — UV & Moisture

UV photo-oxidation prevention, protective film management, and slurry protection.

1. Ultraviolet (UV) Radiation Barrier

Engineered quartz contains polymer polyester resins. While highly stable in typical indoor residential lighting, direct raw sunlight emits intense UV wavelengths (290–400 nm) that trigger photo-oxidation of the resin matrix.

Prolonged UV exposure causes surface yellowing, loss of gloss, and localized discoloration. If warehouse doors permit direct sunbeams to strike storage racks, install UV-blocking shade curtains or opaque protective tarpaulins.

2. Dust & Concrete Slurry Shielding

Airborne cement dust and wet bridge saw slurry contain alkaline lime compounds (pH > 12). If allowed to settle and dry on polished quartz, alkaline deposits can etch the polymer surface. Keep raw slab storage separated from saw processing bays.

3. Protective Film Management

FACTORY PROTECTIVE FILM RULES

Sheen slabs arrive with temporary polyethylene surface protection film. This film is engineered for transit protection only.

Film Condition	Recommended Action
Storage > 60 Days	Peel film back 50mm from edges to prevent adhesive transfer; re-inspect.
Moisture Trapped	Remove film immediately to allow uniform evaporation; prevents condensation halos.
Prior to CNC Cutting	Peel film completely from cutting paths to prevent waterjet / tool gumming.



BATCH TRACEABILITY

Slab Traceability, Batch Tracking & Color Matching

Factory inkjet codes, sequential slab pairing, and same-batch fabrication rules.

1. Production Batch Identification

Every Sheen Quartz slab is stamped on its rear edge with a factory inkjet tracking code containing:

- **Product Series Name & Color Code** (e.g., Calacatta Luxe - CL801)
- **Nominal Format & Gauge Thickness** (3200x1600x20mm)
- **Production Batch / Heat Number** (e.g., BATCH #26A-0412)
- **Sequential Slab Sequence Number** (e.g., SLAB #014 of 028)

2. The Same-Batch Fabrication Mandate

ALL ADJACENT COUNTERTOPS, ISLANDS, AND SEAMS IN A SINGLE PROJECT MUST BE FABRICATED FROM THE SAME PRODUCTION BATCH.

Minor tonal variations can occur between distinct production runs due to natural variations in quarried quartz aggregate. Cross-matching slabs from different batches across a single continuous seam is strictly prohibited.

3. Digital Tracking Log Record

Tracking Field	Fabricator Record
Job Reference / Client	Villa 14 — Master Kitchen
Primary Slab Barcode	SO-CL801-26A-0412-014
Secondary Island Slab	SO-CL801-26A-0412-015 (Sequential)
Color Harmony Check	✓ Passed (Visual side-by-side)
Thickness Gauge Check	✓ 20.2 mm (Left) / 20.1 mm (Right)

SEQUENTIAL BOOKMATCHING

For bookmatched marble designs (Statuario Imperial, Calacatta Luxe), verify that sequential slabs (e.g., #014 and #015) were polished on alternating faces (A-face and B-face).



SECTION 3 • FIELD TECHNICAL DIVISION

FABRICATION PLANNING & TEMPLATING

Jobsite measurement, digital laser templates, CAD nesting, vein matching, and cutout architecture.

KEY TECHNICAL MODULES IN THIS SECTION:

- Jobsite substrate readiness survey and physical templating
- Digital laser measuring & Proliner coordinate CAD files
- Vein matching, bookmatching, and waterfall island layout
- Seam positioning architecture and high-stress cutout avoidance
- Minimum webbing rules (75mm) for sinks, cooktops, and appliances



FEATURED QUARTZ: CALACATTA AURELIA • RIBBON VEIN TEMPLATING & CAD NESTING



SHOP WORKFLOW

Fabrication Planning Master Workflow

Integrated 5-stage project lifecycle from millwork inspection to client sign-off.

1. The Master Planning Sequence

High-end architectural quartz fabrication requires a disciplined multi-stage planning sequence before a diamond blade ever touches the slab surface:

- **Stage 1: Jobsite Readiness Audit** (Cabinets 100% installed, plumb, and anchored).
- **Stage 2: Digital Laser Templating** (Capturing 3D wall out-of-square coordinates).
- **Stage 3: CAD Layout & Slab Nesting** (Positioning seams, cutouts, and vein flow).
- **Stage 4: Client Digital Sign-Off** (Vein match rendering approved by homeowner / architect).
- **Stage 5: Production Machining** (Sawing, CNC routing, edge polishing, QC).

2. Pre-Planning Information Required

Information Item	Source Requirement
Sink Specifications	Physical undermount sink on-site with cutout template
Cooktop Specifications	Exact manufacturer cutout dimensions and clearance specs
Faucet & Accessories	Hole diameters (standard 35mm / 1-3/8") and quantity
Edge Profile Selection	Architectural schedule (e.g., Demi Bullnose, Micro Bevel)
Overhang Cantilever	Base millwork drawings and steel bracket locations

NO EARLY TEMPLATING RULE

NEVER template over temporary cabinets or unfinished framing. Any subsequent cabinet adjustment voids template accuracy.



MEASUREMENT STANDARDS

Site Measurement Best Practices & Survey

Substrate verification, cabinet level tolerances, and wall scribing allowances.

1. Site Verification Pre-Requisites

Before initiating site measurements, the technician must inspect base millwork:

- All base cabinets must be permanently fastened to walls and secured to adjacent units.
- Flooring under cabinetry must be fully installed or shim heights accounted for.
- Cabinets must be leveled within **2 mm across any 2-meter span** (1/16" over 6 feet).
- Walls must be checked for squareness and bow using a precision 2m straightedge.

2. Wall Scribing Allowances

No drywall is perfectly straight or plumb. Scribe allowances (minimum 3mm to 5mm) must be incorporated into rear countertop edges to allow the quartz back edge to be profiled to match wall irregularities without exposing gaps.

BACKSPLASH OVERLAP RULE

Where a full-height tile or 20mm quartz backsplash will be installed, the wall-to-countertop gap can be up to 6mm, as the backsplash thickness will fully conceal the expansion gap.



MANUAL TEMPLATING

Physical Template Preparation (Coroplast / MDF)

Coroplast strips, hot-melt adhesive joints, diagonal bracing, and labeling standards.

1. Traditional Physical Strip Templating

Where digital laser measuring is unavailable, fabricators construct physical full-scale templates using 3mm corrugated plastic (Coroplast), thin MDF strips (75mm width), or stiff plywood strips joined with rapid-setting hot-melt adhesive.

Physical templates must be completely rigid and cross-braced diagonally to prevent dimensional distortion during transit back to the fabrication workshop.

2. Template Labeling Standards

Every physical template piece must be clearly inscribed with:

- Job Name, Room Name, and Section Identifier.
- "TOP FACE UP" indicator arrow.
- "FINISHED EDGE" marked in bold red marker.
- "WALL EDGE / SCRIBE" indicated along rear perimeter.
- Centerlines marked for all sinks, cooktops, and faucets.

3. Physical Template Limitations

FLEXIBILITY WARNING

Never use flexible paper, cardboard, or roll roofing felt for quartz templating. Atmospheric humidity changes cause paper templates to expand or shrink up to 10mm, resulting in miscut countertops.

Material	Suitability	Key Precaution
Coroplast (3mm)	EXCELLENT	Dimensionally stable, moisture-proof, lightweight
MDF Strips (4mm)	GOOD	Rigid; protect from rain exposure during transport
Craft Paper / Felt	POOR (BANNED)	Expands with humidity; unacceptably flexible



DIGITAL TEMPLATING

Digital Templating — Laser & Coordinate CAD

3D laser measurement, DXF layer standards, and automated machine tool paths.

1. 3D Digital Coordinate Templating

Digital measuring instruments—such as the **Proliner mechanical coordinate measuring machine** or **LT-2D3D Laser Templators**—represent the gold standard in contemporary countertop precision.

Digital measurement captures hundreds of coordinate points along wall contours, cabinet overhangs, and corner angles within **±0.5 mm accuracy**, generating DXF/DWG CAD files ready for direct bridge saw CNC nesting.

2. Digital Feature Tagging

In the digital CAD model, assign distinct color layers to designate machine tool paths: Layer 1 for bridge saw cuts (red), Layer 2 for waterjet sink routing (green), Layer 3 for edge profiling (cyan), and Layer 4 for seam joints (magenta).

3. Digital Templating Verification Gate

- ☐ Verify Reference Datum Points
- ☐ Check Diagonal Corner-to-Corner Specs
- ☐ Confirm Sink Centerline vs Plumbing Outlet
- ☐ Validate Cooktop Gas / Electric Clearances
- ☐ Check Full Appliance Door Swing Radii
- ☐ Export Verified DXF File to Server

DIGITAL PHOTO OVERLAY

Many digital systems capture calibrated slab photographs, allowing the programmer to overlay DXF part files directly over the photographed slab veins for client pre-approval.



NESTING GEOMETRY

Slab Layout Planning & CAD Part Nesting

Blade kerf allowances, perimeter trimming margins, and material yield optimization.

1. CAD Nesting Optimization

Nesting is the process of arranging all project parts onto raw 3200 x 1600 mm slab geometry within CAD software (e.g., AlphaCAM, Seam Phantom CAD, EasySTONE) to maximize material yield while preserving vein continuity.

Always maintain a minimum perimeter margin of **20 mm (3/4")** from raw slab edges. Factory slab perimeter edges can contain micro-chips or calibration bevels and must be squared away during initial bridge saw cuts.

2. Blade Kerf Allowance

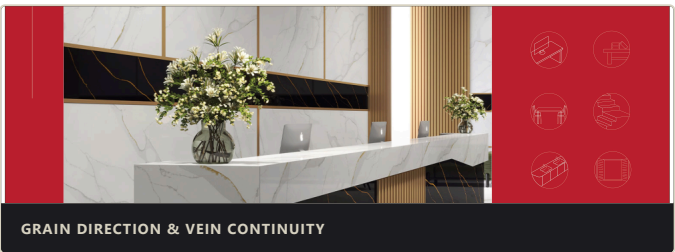
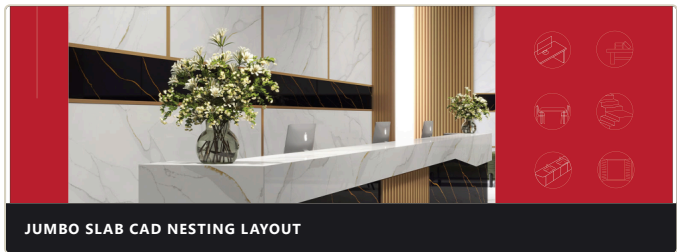
Account for diamond saw blade kerf thickness (typically **3.2 mm to 3.8 mm**) between nested pieces. Failure to include blade kerf in cutting layouts will result in undersized parts.

3. Nesting Margin Rules

Margin Parameter	Minimum Allowance
Perimeter Slab Trimming	Min 20 mm all four sides
Blade Kerf Spacing	3.5 mm (dependent on blade arbor)
Waterjet Piercing Margin	Min 5 mm from finished part edge
Seam Diamond Jointing Trim	2.0 mm per mating edge

NEVER NEST OVER IMPERFECTIONS

Thoroughly inspect the slab face before nesting. If a natural resin pool or surface inclusion is present, nest cutouts (sink/cooktop) directly over that area to eliminate waste.





VEIN ARCHITECTURE

Vein & Pattern Matching for Calacatta & Statuario

Directional vein flow, mirror bookmatching, and digital client sign-off mockups.

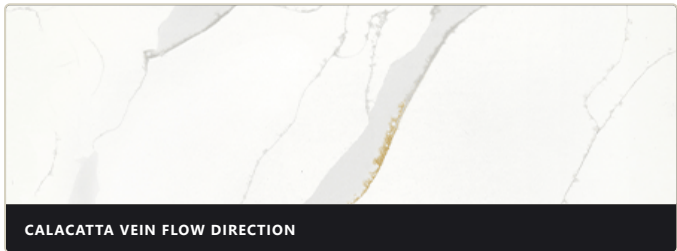
1. Veined Marble Series Architecture

Prominent veined quartz designs—such as Sheen's *Calacatta Luxe* and *Statuario Imperial*—feature bold, flowing directional veins that emulate natural Italian marble. In visual focus areas (L-shaped returns, island seams, waterfall gables), veins must align seamlessly.

Discontinuous, abrupt vein disruptions across seams are considered a craftsmanship defect in luxury architectural stone masonry.

2. Bookmatching (Mirror Slabs)

Bookmatching pairs two sequential slabs polished on opposite faces (A-slab and B-slab) to create symmetrical mirror-image patterns across a central seam. Bookmatching requires pairing slabs from the exact same production lot.



3. Vein Planning Protocols

DIGITAL VEIN MATCH MOCKUP

Always generate a digital photo mockup showing vein continuation across seams and waterfall edges, and obtain written client approval before cutting.



Verify Vein Direction on CAD Layout



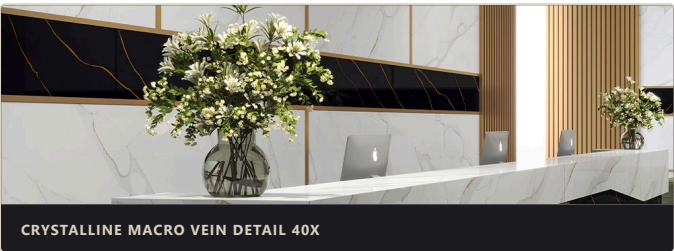
Check Vein Flow Across Main Seam



Match Waterfall Gable to Top Counter



Orient Veins Towards Natural Window Light





WATERFALL DESIGN

Waterfall Island Edge Vein Continuation & Miters

45° mitered edge vein flow, shared cut lines, and subfloor expansion gaps.

1. The 45° Mitered Waterfall Edge

A waterfall countertop extends the horizontal quartz surface down the vertical gable end of an island to meet the finished floor. To achieve authentic continuity, the horizontal top and vertical leg must be cut from the **same slab along a single shared cut line**.

Both edges are precision mitered at **45°** using a bridge saw or CNC miter blade, allowing the vein to flow seamlessly down the vertical face without interruption.

2. Floor Clearance Allowance

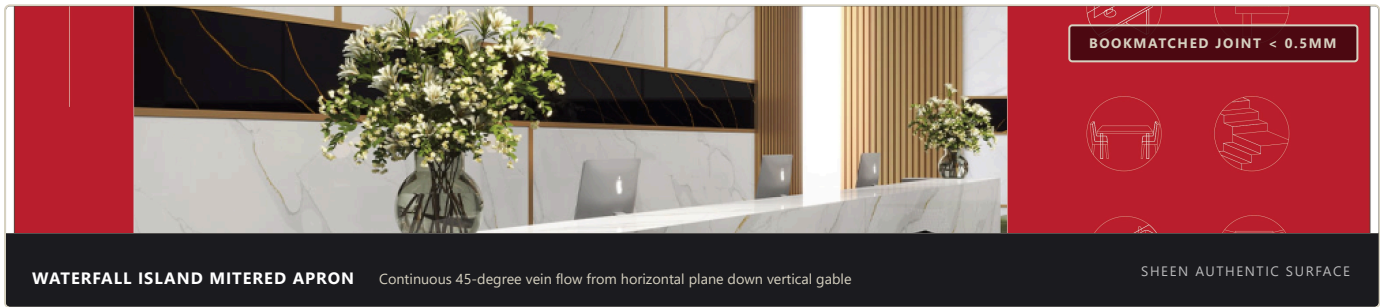
A waterfall gable leg must never rest directly on raw concrete or subfloor. Maintain a **3 mm to 5 mm expansion gap** off the finished floor filled with neutral silicone or concealed nylon leveling glides to prevent building settlement shock.

3. Waterfall Miter Assembly Rules

Component	Engineering Standard
Miter Angle	45.0° (± 0.2° precision)
Adhesive Type	Clear / Tinted 2-Part Methacrylate
Backer Substrate	Continuous 18mm plywood sub-frame
Internal Reinforcement	45° stone gusset blocks along interior seam

VEIN KERF LOSS MANAGEMENT

The 45° miter cut consumes approximately 4mm to 6mm of stone kerf. Slabs with wide branching veins absorb this loss invisibly; fine hairline veins require extra CAD alignment care.





OPTICAL HARMONY

Grain Direction & Surface Texture Orientation

Manufacturing grain orientation, light reflectance angles, and finish sensitivities.

1. Monochromatic & Fine-Grain Slabs

Even solid or fine-grain engineered quartz slabs (e.g., Carrara Elegance, Concrete Grey) possess a subtle manufacturing grain orientation imparted by the longitudinal rolling and polishing trains.

If two mating pieces are cut perpendicular to one another (one cut along slab length, the other along slab width), they will reflect ambient light differently once installed, causing an apparent color shade mismatch across the seam.

2. Directional Cutting Arrow Standard

Always mark the factory longitudinal direction on the back of each slab with chalk or grease pencil. Ensure all adjoining countertop sections are nested in the **same longitudinal direction**.

3. Light Reflection Across Seams

REFLECTANCE ANGLE TEST

In the fabrication shop, dry-fit all mating seam pieces under natural or 5000K daylight LED illumination. View the seam from multiple acute angles (15° to 45°) to ensure identical specular reflectance before applying adhesive.

Slab Finish	Grain Sensitivity
High Gloss Polished	Moderate (Specular reflection)
Suede / Matte / Honed	HIGH (Diffuse light scatter requires strict direction matching)
Leathered / Textured	VERY HIGH (Surface texture grain must run parallel)



SEAM ARCHITECTURE

Seam Positioning Architecture & Cabinet Support

Structural vertical gable support, straight vs diagonal seams, and prohibited locations.

1. Principles of Structural Seam Placement

Seams are necessary in complex kitchen layouts to accommodate slab size limits, facilitate site transport, and absorb thermal expansion. However, incorrect seam placement is the leading cause of field countertop cracks.

Seams must ALWAYS be positioned directly over a solid vertical cabinet gable or partition wall to provide complete structural support beneath the bonded joint.

2. Prohibited Seam Locations

- **NEVER** place a seam directly through an unsupported cabinet void (e.g., over a dishwasher).
- **NEVER** place a seam in the center of an unsupported overhang span.
- **NEVER** place a seam within 150 mm (6") of an inside corner.

3. Straight vs Diagonal (French) Miter Seams

Seam Architecture	Pros & Cons
Straight Butt Seam (90°)	RECOMMENDED: Shorter joint length (typically 600mm), easier clamping, superior structural support over cabinet partition.
Diagonal Miter Seam (45°)	LONGER JOINT (> 900mm), higher risk of lippage, difficult to clamp in field; strictly avoid in veined quartz.

AESTHETIC SIGHTLINE RULES

Keep seams away from primary room sightlines. Whenever possible, position seams behind cooktops or under appliance garages.



SEAM GEOMETRY

Seam Location Rules — Avoiding Cutout Zones

Mandatory 150mm buffer from sinks/cooktops and 300mm offset from inside corners.

1. The High-Stress Cutout Buffer Rule

Sink and cooktop cutouts concentrate structural bending stress and thermal expansion forces. Placing a seam through or adjacent to a cutout dramatically increases crack risk.

A minimum clearance of **150 mm (6 inches)** must be maintained between any seam and the edge of a sink or cooktop opening.

2. Corner Return Seam Offset

In L-shaped and U-shaped kitchens, avoid placing seams directly at the inside corner junction. Offset the seam a minimum of **300 mm (12 inches)** away from the inside corner along one of the straight counter runs.

3. Seam Location Standards Matrix

Feature	Minimum Required Distance
Edge of Sink Cutout	Min 150 mm (6")
Edge of Cooktop Cutout	Min 150 mm (6")
Inside Corner Vertex	Min 300 mm (12")
Dishwasher Cavity Edge	Min 75 mm (3")

THE "CENTER OF SINK" SEAM CONTROVERSY

While some fabricators place seams through the center of sink cutouts to hide joint length, this practice severely weakens narrow front and rear rails. If unavoidable, front/rear rails **MUST** be reinforced with under-mounted steel plates.



RAIL INTEGRITY

Cutout Planning & Minimum Webbing Requirements

Mandatory 75mm (3") front/rear webbing rails and cabinet depth allowances.

1. Structural Rail Webbing Dimensions

The narrow strips of quartz remaining at the front and back of a sink or cooktop opening are termed "webbing rails." These rails are subject to intense transport and handling stresses.

A mandatory minimum webbing width of **75 mm (3.0 inches)** must be maintained along both the front and rear rails of any cutout.

2. Deep Sinks on Standard Cabinets

On standard 600mm (24") deep base cabinets, large undermount sinks (e.g., 450mm deep) can compress front and back rails below 75mm. In such cases, the cabinet must be pulled forward or a shallower sink specified.

3. Webbing Width Standards

Cutout Location	Minimum Webbing Width
Front Rail (Sink / Cooktop)	Min 75 mm (3.0") • Preferred 90 mm
Rear Rail (Sink / Cooktop)	Min 75 mm (3.0") • Preferred 100 mm
Distance to End of Countertop	Min 100 mm (4.0")
Distance Between Adjacent Cutouts	Min 200 mm (8.0")

WEBBING BELOW 65MM PROHIBITION

Any front rail measuring less than 65 mm (2.5") WILL crack during transportation, installation, or user leaning. Webbing under 65mm voids warranty.



SINK ENGINEERING

Sink Cutout Planning — Undermount vs Drop-In

Undermount reveal options, interior polished rims, and physical template dry-fits.

1. Undermount Sink Architecture

Undermount sinks mount beneath the quartz top, exposing the solid quartz edge inside the bowl opening. The interior rim must be precision-routed, profiled, and polished to match the top surface.

Overhang Reveals: Specify one of three reveals in CAD:

- **Positive Reveal (1/8"):** Quartz set back slightly, exposing rim flange.
- **Zero Reveal (Flush):** Quartz exactly flush with sink sidewalls.
- **Negative Reveal (1/8"):** Quartz overhangs bowl interior slightly.

2. Drop-In (Top-Mount) Sinks

Drop-in sinks rest on top of the quartz surface with an overlapping rim. While the cut edge is concealed, corners still require mandatory **minimum 10mm radius drill holes** to prevent stress fracture propagation.

SINK TEMPLATE VERIFICATION

Always test the physical sink directly against the cut opening in the fabrication workshop before dispatching the piece to the jobsite.



THERMAL CLEARANCE

Cooktop & Induction Hob Openings — Thermal Rules

Thermal expansion gaps, aluminum foil heat-shield barriers, and ventilation margins.

1. Thermal Clearance Architecture

Gas burners and electric induction cooktops generate significant heat. A cooktop chassis must NEVER touch the quartz cut edges directly.

A continuous thermal expansion gap of **3 mm to 5 mm (1/8")** must be maintained between the cooktop metal body and the quartz perimeter on all four sides.

2. Thermal Barrier Insulation Tape

Line the entire perimeter cut edge of the cooktop opening with **heavy-gauge adhesive aluminum foil heat-shield tape**. This reflects radiant heat away from the quartz resin matrix.

3. Cooktop Cutout Specification Matrix

Cooktop Parameter	Engineering Requirement
Corner Radius	Min 10 mm (3/8") Core Drill
Perimeter Air Gap	3 mm – 5 mm all sides
Heat Shield Barrier	Heavy aluminum foil tape applied
Under-Cooktop Clearance	Min 50 mm for ventilation airflow

SQUARE CUT COOKTOP PROHIBITION

Cooktop openings cut with sharp 90° corners WILL crack within months of household thermal cycling. Every corner MUST be rounded.



ACCESSORY CUTOUTS

Appliance Clearances & Flush-Mount Fittings

Flush-mount routed rebates, downdraft extractor slots, and faucet grommet spacing.

1. Flush-Mount Cooktops & Sinks

Ultra-modern kitchen architecture frequently specifies flush-mount cooktops or sinks that sit level with the countertop surface within a routed perimeter rebate.

Rebating quartz removes top material thickness, concentrating stress. The routed rebate depth must not exceed **8 mm**, and the remaining quartz shelf thickness must be at least **12 mm** on 20mm tops, or **22 mm** on 30mm tops.

2. Downdraft Extractor Cutouts

Telescopic pop-up downdraft ventilators require narrow slot cutouts positioned immediately behind cooktops. This creates an extremely narrow stone divider strip.

3. Downdraft Webbing Reinforcement

DIVIDER STRIP STEEL REINFORCEMENT

The divider strip between cooktop and downdraft extractor must be at least **75 mm wide** and **MUST** be reinforced from underneath with a 6mm x 25mm structural steel bar bonded into an epoxy channel.

Appliance Accessory	Minimum Clearance
Pop-up Power Grommet	Ø 60mm – 100mm • Min 100mm from edge
Soap Dispenser	Ø 28mm – 32mm • Min 50mm from bowl rim
Water Filter Tap	Ø 22mm – 35mm • Min 50mm from bowl rim



| SECTION 4 • FIELD TECHNICAL DIVISION

FABRICATION EQUIPMENT & TOOLING

Bridge saws, 5-axis CNC machines, waterjets, diamond tooling hierarchy, and silica dust control.

KEY TECHNICAL MODULES IN THIS SECTION:

- Bridge saw blade selection, arbor alignment, and bed maintenance
- 5-Axis CNC center programming, suction pod placement, and milling
- Waterjet garnet abrasive pressure dynamics and pierce speeds
- Diamond tooling grit progression (50 to 3000 grit) & wet processing



FEATURED QUARTZ: CALACATTA LINEA • PRECISION WATERJET & 5-AXIS CNC TOOLING



MACHINERY OVERVIEW

Recommended Fabrication Equipment Suite

Core workshop machinery, CNC centers, bridge saws, and water recycling systems.

1. Industrial Shop Machinery Hierarchy

Professional quartz processing requires industrial equipment engineered for dense, hard composite materials (Mohs 7). Commercial fabrication shops should possess:

- **Bridge Saw:** Automatic multi-axis bridge saw (minimum 15 kW motor) with variable blade RPM inverter and laser alignment guide.
- **CNC Workcenter:** 3-axis or 5-axis stone machining center for sink routing, drainboards, and intricate edge profiling.
- **In-Line Edge Polisher:** Multi-head automated straight/bullnose edge polisher for commercial volume output.
- **Water Treatment Plant:** Slurry collection, flocculation silo, and chamber filter press for closed-loop water recycling.

2. Hand Tooling Inventory

Tool Category	Recommended Equipment
Wet Hand Polishers	Pneumatic or GFCI-protected electric (2000–4000 RPM)
Seam Levelers	Omni-Cubed or Gorilla Grip vacuum seam setters
Mitering Clamps	Mitre Clamps / Integra 90° miter lock systems
Core Drills	Pneumatic center-water-feed drills with guide suction bases

POWER STABILITY MANDATE

Machinery must operate on clean, voltage-stabilized 3-phase power to prevent spindle RPM fluctuations that cause blade chatter marks.



TECHNOLOGY COMPARISON

Cutting Equipment Comparison — Saw vs Waterjet vs CNC

Operating physics, feed rates, precision tolerances, and cost efficiencies.

Three primary cutting technologies dominate stone workshops: Diamond Bridge Saws, Abrasive Waterjets, and 5-Axis CNC Routers. Each possesses distinct technical capabilities, advantages, and operational boundaries.

Technology	Operating Physics	Primary Application	Key Advantages	Limitations
Bridge Saw	Diamond segmented blade rotating at 1600–1800 RPM with water flood	Straight linear cuts, 45° edge miters, perimeter slab squaring	Fastest linear cut speeds (1.5–2.5 m/min); lowest consumable cost per meter	Cannot execute curved sink cutouts or inside corner radiuses
Abrasive Waterjet	Ultra-high pressure water (55,000–60,000 psi) mixed with 80-mesh garnet abrasive	Sink cutouts, cooktops, intricate curves, inside radius corners	Zero thermal tension; cuts any geometry; knife-edge accuracy (< 0.2mm)	Slower cut speeds; higher operational cost per hour; consumable garnet disposal
5-Axis CNC	High-torque spindle with diamond router bits and profiling wheels	Sink routing, edge profiles, fluted drainboards, complex 3D shapes	Full automation; combined cutting and polishing in single setup	Requires meticulous vacuum pod placement; longer cycle times for basic cuts



CNC MACHINING

5-Axis CNC Center Operations & Vacuum Pods

Vacuum pod spacing, tool presetting, feed rates, and internal spindle cooling.

1. Vacuum Pod Workholding Geometry

On CNC workcenters, slabs are held firmly against the machine bed using pneumatic vacuum suction pods. Pod placement is critical to prevent slab flexure during heavy diamond routing.

Position suction pods within **50 mm (2 inches)** of all cutout routing paths to provide rigid support directly beneath the cutting tool path, eliminating vibration chatter.

2. Tool Calibration & Presetting

Calibrate diamond tool diameter and profile height using an automated laser tool presetter. Measure diamond tool wear every 50 linear meters to compensate tool path offsets in CAD/CAM software.

3. CNC Spindle Speed Protocols

Tool Operation	Spindle Speed (RPM)	Feed Rate
Roughing Finger Bit	4,500 – 5,500 RPM	300 – 500 mm/min
Core Drill (Ø 35mm)	2,000 – 2,500 RPM	15 – 25 mm/min
Diamond Profile Wheel #1	4,000 – 4,800 RPM	800 – 1,200 mm/min
Polishing Wheel #4	2,500 – 3,000 RPM	1,000 – 1,500 mm/min

SPINDLE INTERNAL WATER COOLING

Verify center-spindle water flow (minimum 15 L/min at 3 bar) before engaging diamond finger bits. Cutting quartz without internal cooling instantly melts the bit bond.



TOLERANCE: ± 0.2MM

5-AXIS CNC MACHINING BED

Diamond milling of undermount sink cutout with continuous flood coolant

SHEEN AUTHENTIC SURFACE



WATERJET PHYSICS

Waterjet Cutting Dynamics & Garnet Abrasive Feeds

60,000 PSI intensifier dynamics, soft-pierce protocols, and 80-mesh garnet feed rates.

1. High-Pressure Waterjet Hydraulics

Abrasive waterjets utilize intensifier pumps generating **55,000 to 60,000 PSI (3,800 to 4,100 bar)** of hydrostatic pressure, driving water through a diamond or sapphire orifice (0.010" to 0.014" diameter) at Mach 3 velocities.

Alluvial garnet abrasive (80-mesh) is entrained into the jet stream inside a carbide mixing tube (0.030" to 0.042" diameter), slicing cleanly through 20mm and 30mm quartz.

2. Low-Pressure Piercing Protocol

Raw quartz can fracture under the instantaneous hydraulic shock of a full-pressure jet piercing through the slab. Always program a **vacuum-assist low-pressure soft pierce (20,000 PSI)** before ramping to full cutting pressure.

3. Waterjet Cutting Parameters Table

Slab Thickness	Garnet Feed Rate	Linear Cut Speed
15 mm	350 – 400 g/min	350 – 450 mm/min
20 mm	400 – 450 g/min	250 – 350 mm/min
30 mm	450 – 500 g/min	150 – 220 mm/min

LEAD-IN POSITION RULE

Always position the pierce hole lead-in inside the scrap cutout zone at least 15mm away from the finished edge line to prevent blowout notches.



SAW CALIBRATION

Bridge Saw Calibration & Bed Maintenance

Dial indicator arbor runout tests, sacrificial wood bed planing, and laser alignment.

1. Bridge Saw Spindle Calibration

Bridge saws must be regularly checked for alignment. The blade arbor must run exactly perpendicular to the bridge gantry rail (blade lead angle = 0.00°). Any blade toe-in or toe-out will cause blade pinching, blade deflection, edge chipping, and premature diamond segment loss.

Check blade arbor runout using a dial test indicator mounted to the table. Total radial and axial runout must not exceed **0.05 mm (0.002 inches)**.

2. Wooden Bed Layer Maintenance

The sacrificial wooden or composite bed layer beneath slabs must be resurfaced regularly. Rotted, grooved, or uneven wooden beds allow slabs to sag under blade pressure, resulting in bevelled cuts and broken ends.

3. Routine Saw Maintenance Matrix

☐ Check Arbor Bearing Axial Runout (< 0.05mm)	☐ Resurface Wood Bed (Tolerance < 1.0mm)
☐ Inspect Water Nozzles for Clogging	☐ Verify Laser Line Calibration to Cut Path
☐ Grease Gantry Rails & Linear Bearings	☐ Check 45° Miter Head Tilt Accuracy

BRIDGE LEVELING VERIFICATION

Verify that bridge rails are level from front to back and end to end using an engineer's precision level (0.02 mm/m sensitivity).



BLADE METALLURGY

Diamond Saw Blades — Silent Core & Metallurgy

Soft cobalt-bronze bond formulation, silent-core sandwich steel, and blade dressing.

1. Blade Metallurgy for Quartz

Standard granite or marble blades MUST NEVER be used on engineered quartz. Quartz requires specialized **silent-core diamond blades** formulated with soft cobalt-bronze metal matrix bonds.

Because quartz (Mohs 7) is extremely dense, a soft bond matrix wears away at a calibrated rate, continuously exposing fresh, sharp diamond crystals (30/40 mesh synthetic diamond). Hard bond blades will "glaze over", overheat, and cause catastrophic slab cracking.

2. Silent-Core Technology

Silent-core blades sandwich a thin viscoelastic dampening copper foil between two laser-welded steel core plates, absorbing blade resonance and reducing cutting noise below 85 dB.

3. Diamond Blade Specification Table

Blade Diameter	Segment Height / Width	Recommended RPM
300 mm (12")	10 mm / 2.8 mm	2,000 – 2,200 RPM
350 mm (14")	10 mm / 3.2 mm	1,700 – 1,900 RPM
400 mm (16")	10 mm / 3.6 mm	1,500 – 1,700 RPM
450 mm (18")	10 mm / 4.0 mm	1,300 – 1,500 RPM

BLADE DRESSING BRICK PROTOCOL

If the blade slows or begins sparking, it has glazed over. Make three dressing cuts through an abrasive aluminum oxide dressing brick or soft sandstone brick to strip glazed metal and expose new diamond grit.



DRILLING PROTOCOLS

Diamond Core Drilling — Speeds & Water Swivels

Plumbing hole core bits, 45° angle start technique, and bottom blowout prevention.

1. Diamond Core Bit Dynamics

All plumbing penetrations (faucets, soap dispensers, air gaps) and cutout corner relief holes require diamond core bits. Core bits feature continuous or crowned segmented diamond rims.

Always drill using a **variable-speed drill fitted with a center-water-feed swivel adapter** or submerged drilling template ring. Never drill dry.

2. The 45° Angle Approach Technique

When hand drilling with a core bit without a drill press or template jig, start the bit at a **45° angle** to score a shallow crescent groove in the quartz. Once the groove engages, slowly pivot the drill perpendicular (90°) while maintaining light, continuous downward pressure.

3. Core Drilling Speed Matrix

Core Bit Diameter	Optimal Drill Speed	Water Flow Rate
Ø 20 mm – 25 mm (Corner Relief)	1,800 – 2,400 RPM	Min 3 L/min
Ø 32 mm – 35 mm (Standard Faucets)	1,400 – 1,800 RPM	Min 4 L/min
Ø 50 mm – 65 mm (Shower Valves)	900 – 1,200 RPM	Min 6 L/min
Ø 90 mm – 115 mm (Basin Wastes)	600 – 800 RPM	Min 8 L/min

SLUG BLOWOUT PREVENTION

As the core bit nears breakthrough on the bottom face, ease downward pressure. Excessive pressure causes the bottom quartz layer to "blow out" in an irregular cone fracture.



EDGE POLISHING

Edge Polishing Machines & Hand Polishers

Multi-spindle automatic polishers, pneumatic hand units, and spindle pressures.

1. In-Line Automatic Edge Polishers

For straight runs and standard bevels, multi-spindle horizontal in-line edge polishers (e.g., Comandulli, Marmo Meccanica) deliver superior factory quality. Slabs travel on a heavy rubber conveyor belt past sequential oscillating polishing spindles.

Maintain pneumatic spindle air pressures between **2.0 and 3.5 bar**. Excessive pneumatic pressure burns the quartz resin, leaving cloudy white friction marks.

2. Hand Polishing Units

For curved sink cutouts and custom vanity profiles, fabricators utilize pneumatic (air-powered) wet hand polishers or variable-speed electric wet polishers (GFCI protected) operating at **2,500 to 4,000 RPM**.

3. Spindle Pressure & Water Flow Settings

Polishing Head #	Grit Rating	Pneumatic Head Pressure
Spindle 1 (Calibrator)	Diamond Metal Cup	3.5 bar
Spindle 2 (Shape Rough)	50 Grit Diamond Resin	3.0 bar
Spindle 3 (Refine)	100 / 200 Grit Resin	2.8 bar
Spindle 4 (Pre-Polish)	400 / 800 Grit Resin	2.4 bar
Spindle 5 & 6 (Final Gloss)	1500 / 3000 Grit Resin	2.0 bar

EQUAL POLISH REFLECTION

The finished fabricated edge must match the top factory surface gloss reading (minimum 85 Gloss Units on 60° glossmeter).



TOOLING METALLURGY

Diamond Tooling Hierarchy & Resin Matrix Bonds

Metal-bond vs resin-bond tools and white vs black resin transfer warnings.

1. Metal-Bond vs Resin-Bond Tooling

Diamond tooling operates across three distinct metallurgical matrix bonds:

- **Electroplated Diamond:** Single layer of exposed diamond bonded by nickel plating. Aggressive material removal for rough calibrating; fast cutting but short lifespan.
- **Metal-Bond (Sintered):** Diamond crystals fused within bronze, cobalt, or iron alloy. Used for rough profiling wheels (#1 and #2) on CNC machines.
- **Resin-Bond:** Diamond micro-particles suspended in heat-cured phenolic or polyimide resin. Used for fine smoothing and high-gloss polishing (400 to 3000 grit).

2. White Resin vs Black Resin Matrix

USE WHITE RESIN PADS ON WHITE QUARTZ

Never use black resin-bonded polishing pads on white or light-colored quartz surfaces (e.g., Calacatta Luxe, Statuario Imperial). Frictional heat causes dark phenolic resin transfer, permanently staining porous micro-scratches with dark streaks. Always specify **White-Matrix or Copper-Bond pads** for light stones.

Quartz Color Family	Mandatory Polishing Pad Type
White / Cream / Light Marble	White Resin Matrix / Translucent Bond
Grey / Mid-Tone	White or Neutral Grey Resin Matrix
Black / Nocturne Series	Black, Copper, or Hybrid Resin Matrix



POLISHING SEQUENCE

Diamond Polishing Pad Grit Sequences (50 to 3000)

Comprehensive 7-stage grit progression, dwell times, and inspection standards.

Achieving a mirror-like factory polish on quartz edges requires rigorous adherence to the complete diamond grit sequence. **Skipping a grit stage leaves sub-surface scratches that remain visible under oblique light.**

Grit Step	Color Code	Tool Purpose	Inspection Standard Before Advancing
50 Grit	Blue	Heavy stock removal, removes saw blade marks and steps	Uniform matte surface; all blade lines eliminated
100 Grit	Yellow	Initial scratch refinement; profiles edge radius	Smooth uniform texture; 50-grit scratches replaced
200 Grit	Orange	Intermediate smoothing; tightens surface matrix	Surface feels smooth to dry fingertips; no micro-chips
400 Grit	Red	Pre-polish transition; begins optical reflection	Soft satin sheen emerges; no visible individual scratch lines
800 Grit	Dark Green	Semi-gloss polish development	Reflective gloss visible; light bulb reflection sharpens
1500 Grit	Light Blue	High-gloss refinement	High luster polish; matches factory surface tone
3000 Grit	Grey	Final ultra-gloss finish & micro-seal	100% specular mirror reflection; zero haze or clouding

DWELL TIME RULE

Spend approximately 30 to 45 seconds per linear foot per grit stage. Move the polishing pad continuously in overlapping circular motions; never dwell in one spot to prevent dishing or heat scorch.



WET PROCESSING

Dust Management & Wet Processing Standards

Water delivery volumes, nozzle positioning, and recycled water filtration quality.

1. Continuous Water Flow Engineering

Wet processing achieves two simultaneous engineering goals: it completely captures micro-silica dust before it can become airborne, and it continuously cools the diamond matrix to prevent thermal degradation of the quartz resin binder.

Water flow must be delivered directly onto the cutting interface. Water nozzles directed 2 inches away from the blade contact zone provide inadequate cooling, resulting in blade glaze and silica plume generation.

2. Minimum Water Delivery Standards

- **Bridge Saw (350–400mm blade):** Min 20 – 30 Litres / min
- **CNC Machining Spindle:** Min 15 – 25 Litres / min
- **Hand Edge Polisher:** Min 2 – 4 Litres / min center-feed
- **Core Drill Bit:** Min 3 – 5 Litres / min internal feed

3. Water Pressure & Quality Parameters

Water Parameter	Acceptable Workshop Range
Supply Pressure	2.5 – 4.5 bar (35 – 65 psi)
Total Suspended Solids (TSS)	< 50 ppm (Recycled clarified water)
Water pH Value	pH 6.5 – 8.0 (Neutral non-corrosive)
Water Temperature	10°C – 28°C (Prevent boiling at tool tip)

DIRTY SLURRY RECYCLING HAZARD

Recycled water containing high suspended silica sediment will act as liquid sandpaper, eroding diamond router bits and scoring polished slab surfaces. Maintain clarifying flocculant dosage.



SAFETY COMPLIANCE

Workshop Safety & Silica Regulatory Compliance

OSHA 50 µg/m³ PEL standards, medical surveillance, and HEPA housekeeping rules.

1. The Written Silica Control Plan

Under OSHA 29 CFR 1910.1053, every stone fabrication shop must maintain an active **Written Exposure Control Plan** designating a trained Competent Person to audit engineering controls daily.

The Permissible Exposure Limit (PEL) for respirable crystalline silica is **50 micrograms per cubic meter of air (50 µg/m³)** averaged over an 8-hour workday, with an Action Level of **25 µg/m³**.

2. Housekeeping Protocols

- Clean floors daily using dedicated industrial HEPA-filtered wet slurry scrubbers.
- **NEVER** use compressed air hoses to clean stone dust off clothing, machines, or floor slabs.
- **NEVER** dry sweep workshop floors with brooms.

3. Worker Health Monitoring

Medical Protocol	Mandatory Frequency
Baseline Chest X-Ray (B-Reader)	Prior to employment
Pulmonary Function Spirometry	Every 3 years
Respirator Fit Testing (Quantitative)	Annually
Personal Air Sampling Badges	Semi-annually across high-exposure bays

WORKER SAFETY PLEDGE

A safe, silica-compliant fabrication shop protects skilled masons, ensures regulatory compliance, and delivers superior quality countertops.



SECTION 5 • FIELD TECHNICAL DIVISION

CUTTING & FABRICATION EXECUTION

Bridge saw feed parameters, mandatory 10mm corner radius, edge profiles, and cutout reinforcement.

KEY TECHNICAL MODULES IN THIS SECTION:

- Bridge saw feed rates, blade RPM, and tension relief cuts
- 10 Official Sheen edge profiles and joint possibilities
- The 90° square cut prohibition physics & mandatory 10mm radius
- Undermount sink routing, cooktop thermal gaps, and steel rodding



FEATURED QUARTZ: CALACATTA ROYAL • MASTER WATERFALL & EDGE PROFILING



TENSION RELIEF

Slab Pre-Cut Inspection & Tension Relief Cuts

Internal manufacturing tension, 4-edge perimeter trimming, and drop-cut safety.

1. Pre-Cut Inspection Checklist

Before placing the slab on the bridge saw table, perform a final visual audit under bright raking light:

- Check surface for transit micro-scratches or resin pools.
- Inspect perimeter edges for micro-fissures from handling.
- Verify slab thickness gauge at all four corners with a digital caliper.

2. Relieving Internal Slab Tension

Like all manufactured composite materials, raw quartz slabs hold minor internal residual casting tension from the compression and curing process. Slicing into a full slab without relieving tension can cause the slab to snap ahead of the blade.

Mandatory Procedure: Always trim a minimum of **20 mm (3/4")** off all four perimeter edges of the slab before executing interior finished cuts. This releases boundary tension safely.

3. Tension Relief Trimming Sequence

Cut Order	Edge Trim	Feed Rate
Cut #1	First Long Side (3200mm edge)	1.5 m/min
Cut #2	Opposite Long Side	1.8 m/min
Cut #3	First Short End (1600mm edge)	1.5 m/min
Cut #4	Opposite Short End	1.8 m/min

THE "DROP CUT" HAZARD

When executing the final cut on a narrow strip, never allow the cut piece to drop unsupported into the saw tank. Unsupported drops break off corners and snap webbing. Support the drop piece with foam blocks.

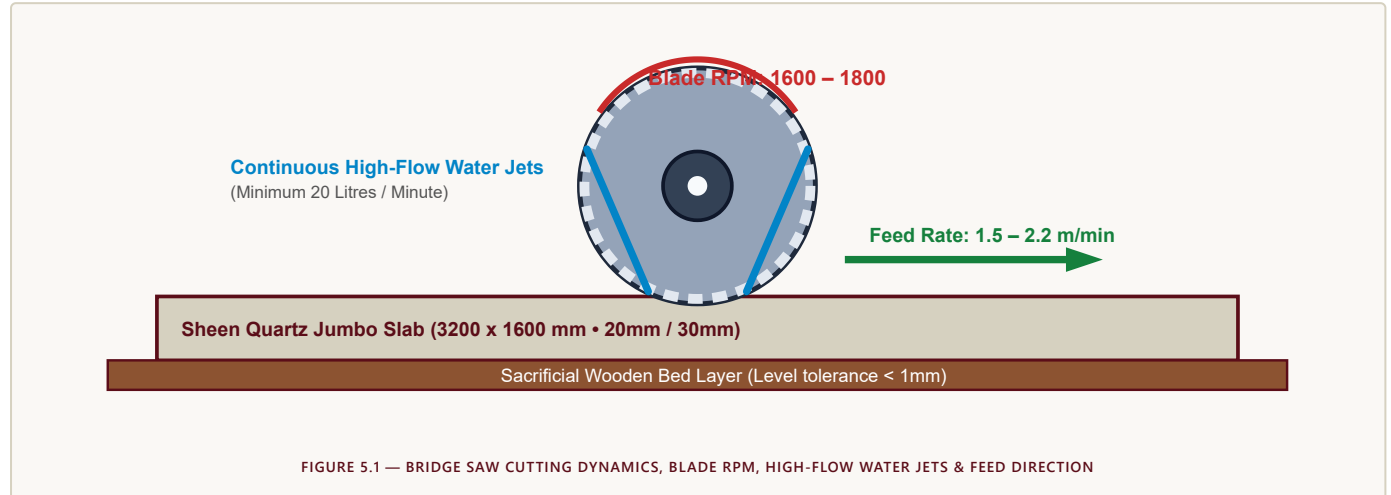


SAW PARAMETERS

Bridge Saw Cutting Speeds & Feed Rate Matrix

Spindle RPM, entry/exit deceleration, and thickness-dependent feed rate tables.

Operating bridge saws at correct feed rates prevents blade deflection, edge chipping, and thermal resin burn. The diagram and parameter matrix below specify certified feed parameters for Sheen Quartz.



Slab Thickness	Blade Diameter	Spindle Speed (RPM)	Entry Feed Rate (First 100mm)	Full Cut Feed Rate	Exit Feed Rate (Last 100mm)
15 mm	350 mm (14")	1,700 – 1,900 RPM	1.0 m/min	2.0 – 2.5 m/min	1.0 m/min
20 mm	350 mm (14")	1,700 – 1,900 RPM	0.8 m/min	1.5 – 2.0 m/min	0.8 m/min
30 mm	400 mm (16")	1,500 – 1,700 RPM	0.6 m/min	1.0 – 1.4 m/min	0.6 m/min
45° Miter Cut (20mm)	350 mm (14")	1,600 – 1,800 RPM	0.5 m/min	0.8 – 1.2 m/min	0.5 m/min



WATERJET QUALITY

Waterjet Cutting Parameters & Edge Quality Classes

Q1 to Q5 quality classes, taper compensation heads, and feed parameters.

1. Waterjet Quality Classes (Q1 to Q5)

Waterjet CAD/CAM software controls cut edge quality across 5 standard speed classes:

- **Q1 (Separation Cut):** Fastest feed rate; coarse striations and significant jet lag taper. Suitable only for rough scrap extraction.
- **Q3 (Standard Commercial):** Balanced speed and finish. Minor edge striations acceptable on concealed edges.
- **Q5 (Precision Architectural):** Slowest feed rate; perfectly vertical, striated-free cut face (< 0.05mm taper). Mandatory for visible undermount sink cutouts and mitered joints.

2. Waterjet Feed Rates by Thickness

Thickness	Q3 Commercial Feed	Q5 Precision Cutout Feed
15 mm	400 – 480 mm/min	220 – 280 mm/min
20 mm	300 – 380 mm/min	180 – 240 mm/min
30 mm	200 – 260 mm/min	110 – 160 mm/min

TAPER COMPENSATION HEADS

5-axis waterjets with tilting cutting heads automatically tilt 1° to 2° outwards, completely neutralizing natural waterjet stream taper for perfectly square 90° edges.



EDGE CALIBRATION

Edge Preparation & Thickness Calibration

Underside calibration milling, micro-arris dressing, and solvent cleaning rules.

1. Edge Calibration Milling

When creating laminated or mitered edge fascias (e.g., building up a 20mm slab to appear as a 40mm or 60mm solid edge), the bottom mating strip and top slab underside must be calibrated to exact uniform thickness.

Run a diamond calibrating cup wheel along the bottom underside contact zone (typically 50mm width) to eliminate any nominal slab thickness variance ($\pm 0.5\text{mm}$), ensuring a hairline seam line.

2. Edge Squaring & Arris Removal

Fresh bridge-saw cuts leave sharp 90° knife-edges (arises) that are vulnerable to chipping. Immediately dress the top and bottom sharp edges with a 200-grit hand diamond block, imparting a subtle **1.0 mm micro-bevel arris**.

3. Pre-Profile Surface Cleaning

Before applying edge profiling wheels or adhesives, clean all cut faces with denatured alcohol (methylated spirits) to remove diamond tool slurry and grease.

NEVER USE SOLVENT THINNERS

Do not clean raw quartz edges with paint thinners, turpentine, or mineral spirits. These oily solvents leave an oily film that weakens epoxy and methacrylate adhesive bonds by over 50%.

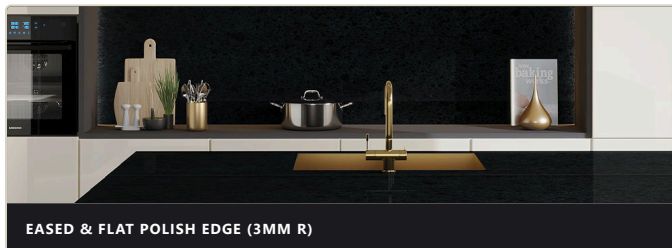
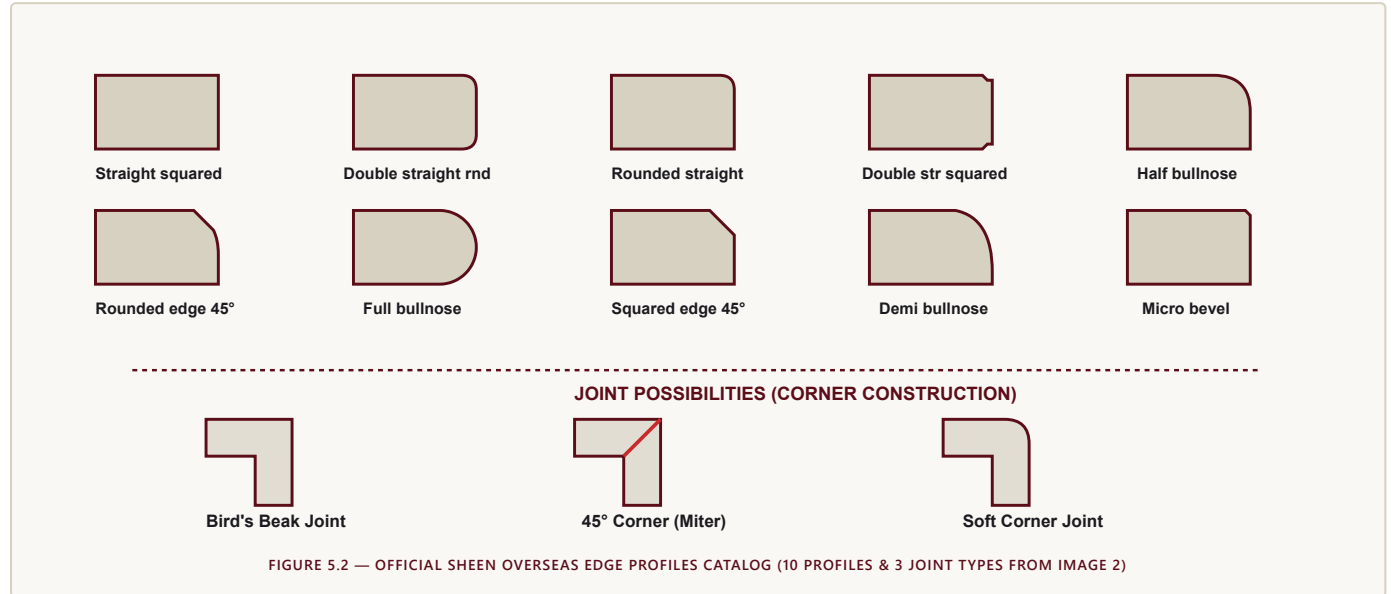


EDGE CATALOG

Edge Profiles Catalog — 10 Official Profiles (Image 2)

Vector cross-sections: Straight squared, Double straight rounded, Bullnose, and Bevels.

The catalog below illustrates the 10 official edge profiles certified for Sheen Quartz Surfaces, matching user technical benchmark standards. Rounded profiles distribute impact forces more effectively than sharp square edges.





PROFILE SELECTION

Edge Profiles — Architectural Application Guide

Impact resistance rankings, chip deflection physics, and room design harmony.

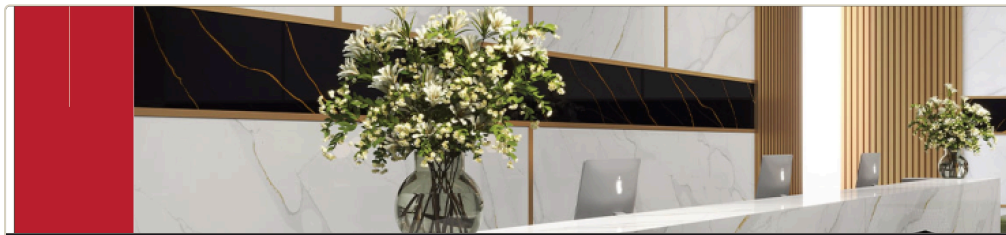
1. Profile Selection & Impact Resistance

The mechanical longevity of a countertop edge is directly correlated with its profile radius:

- **Sharp Square Edges:** Maximum chip vulnerability. Dropped heavy pots or belt buckles will chip sharp 90° corners. Always incorporate at least a 1.5mm to 2mm micro-bevel arris.
- **Eased / Rounded Edges (R ≥ 3mm):** High chip resistance; recommended for modern kitchens.
- **Demi & Full Bullnose:** Maximum impact deflection; liquids roll safely without chipping stone edges.

2. Profile Suitability Matrix

Edge Profile	Impact Rating	Recommended Setting
Straight Squared (Micro Arris)	Moderate	Modern minimalist kitchens, commercial desks
Double Straight Rounded	VERY HIGH	Family kitchens, high-traffic islands
Rounded Straight Edge	HIGH	Contemporary vanities, bar counters
Half / Demi Bullnose	EXCELLENT	Heavy-use residential prep counters
Full Bullnose	EXCELLENT	Traditional cabinetry, hospitality buffet tops
45° Miter Apron	HIGH (if reinforced)	Luxury waterfall islands (40mm to 100mm fascias)



HONED VELVET FINISH



ARCHITECTURAL PROFILE APPLICATION 30mm solid eased edge counter with integrated 60mm mitered waterfall return

SHEEN AUTHENTIC SURFACE



POLISHING PROTOCOL

Step-by-Step Edge Polishing Execution

Four-step diamond polishing workflow, speed modulation, and resin scorch prevention.

1. The Wet Polishing Technique

Follow this precise step-by-step protocol when hand polishing quartz edges using variable-speed wet polishers:

- **Step 1 (Shape & 50 Grit):** Mill the desired edge profile with diamond profiling router wheels. Use 50-grit pad to remove any mill ridges.
- **Step 2 (100 & 200 Grit):** Polish with continuous center-feed water at 3,500 RPM. Maintain flat contact across the edge. Inspect for uniform matte texture.
- **Step 3 (400 & 800 Grit):** Reduce speed to 3,000 RPM. A smooth satin glow will develop. Rinse edge with clean water to inspect scratch removal.
- **Step 4 (1500 & 3000 Grit):** Reduce speed to 2,500 RPM. Use white resin pads. Work until edge reflection matches top factory slab gloss exactly.

2. Critical Polishing Rules

NEVER USE DRIED-OUT BUFFING COMPOUND

Never attempt to "dry buff" quartz with tin oxide or chemical polishing waxes. Frictional heat exceeding 120°C burns the polymer polyester resin matrix, leaving permanent yellow/white scorched patches that cannot be polished away.

WIPE BETWEEN GRITS

Always wipe the edge with a clean microfiber sponge between grit stages to prevent coarse grit particles from contaminating the subsequent fine polishing pad.



SINK ROUTING

Undermount Sink Cutout Routing Protocols

CNC tool paths, manual plunge saw techniques, and slug drop-out prevention.

1. CNC & Waterjet Cutout Routing

Undermount sink cutouts should ideally be executed on CNC workcenters or abrasive waterjets to ensure perfect symmetry and radius accuracy. The cutout path follows the sink manufacturer's DXF profile.

When roughing out with a CNC diamond finger bit, use a sequential step-down tool path (5mm depth per pass at 400 mm/min) with flood coolant.

2. Manual Bridge Saw & Core Drill Method

If fabricating manually without CNC:

- Core drill four Ø 25mm (1") holes at all four corners first.
- Plunge cut straight lines between drill holes using bridge saw.
- STOP blade before touching the corner holes; finish cuts by hand with a wet angle grinder.

3. Cutout Edge Tolerances

Cutout Feature	Tolerance Standard
Corner Radius Accuracy	R ≥ 10.0 mm (Never square)
Linear Rim Straightness	± 0.5 mm over 800 mm
Sink Reveal Variance	± 1.0 mm uniform perimeter reveal
Edge Polish Gloss Level	Min 80 Gloss Units

DROP-OUT CORE WEIGHT WARNING

The central quartz sink slug weighs 15 to 25 kg. Clamp suction cups and support boards beneath the slug so it does not drop and break the front webbing rail when the final cut separates.



RIM PROFILES

Sink Edge Profiling & Inside Rim Polishing

Internal radius polishing, pot impact chip deflection, and faucet hole spacing.

1. Sink Rim Edge Profiles

The interior edge of an undermount sink cutout is continuously exposed to wet pans, heavy pots, and cutlery. Sharp square internal rims chip easily when struck by cast iron cookware.

Always machine an **eased edge (R ≥ 3mm to 6mm)** or a **half bullnose profile** on the interior rim of the sink opening. This rounds the impact zone, dramatically reducing chip risk.

2. Polishing Internal Curves

Polishing the four internal radius corners requires 3-inch or 4-inch flexible diamond polishing pads mounted on soft rubber backing pads, or dedicated CNC profile wheels.

3. Faucet Anchor Hole Spacing

Core drill the main mixer faucet hole (standard Ø 35mm / 1-3/8") on the countertop centerline, maintaining a minimum clearance of **45 mm (1-3/4")** between the drilled hole edge and the sink cutout rim.

SILICONE ADHESION PRE-ETCH

Leave the bottom underside 15mm rim of the sink opening with a rough ground finish (100-grit). Do not polish the underside where silicone sealant bonds to the sink flange; rougher texture dramatically enhances silicone tensile adhesion.





COOKTOP CUTOUTS

Cooktop Cutouts & Heat Dissipation Margins

Appliance expansion clearances, aluminum tape barriers, and overcut prevention.

1. Cooktop Mechanical Execution

Cooktops do not require polished interior edges since the appliance flange conceals the cutout rim. However, they demand strict dimensional precision and thermal protection:

- Cut opening **6 mm to 10 mm larger** than cooktop chassis dimensions (3mm to 5mm expansion gap all sides).
- Ensure all four inside corners possess a **smooth radius of at least 10 mm**.
- Inspect corners with a magnifying loupe to confirm zero saw overcut notches exist.

2. Heat Shield Foil Application

Apply certified heat-reflecting aluminum tape (nominal thickness $\geq 0.1\text{mm}$) along the entire vertical cut face and folding 10mm over the top surface under the appliance gasket.

DIRECT COOKTOP WEIGHT PROHIBITION

Ensure the cooktop weight is supported by the cabinet frame or appliance mounting brackets, NOT resting unsupported on the quartz webbing.



CORE DRILLING

Faucet & Accessory Hole Core Drilling Standards

Plumbing hole diameters, minimum edge clearances, and wet drilling protocols.

1. Core Drilling Field Standards

All plumbing penetrations—including single-lever mixers, three-piece tapware, soap dispensers, hot water taps, and air switches—must be core drilled using continuous diamond core bits with continuous water flood cooling.

Never hammer-drill or use impact tools on quartz. Rotary wet drilling only.

2. Minimum Webbing Clearances

Maintain the following minimum edge distances for all drilled penetrations:

- Minimum **45 mm (1-3/4")** from the edge of a sink cutout.
- Minimum **50 mm (2.0")** from any wall or back edge.
- Minimum **35 mm (1-3/8")** between adjacent drilled holes.

3. Standard Hole Diameters Table

Plumbing Fixture	Standard Hole Diameter
Single-Lever Kitchen Mixer	Ø 35 mm (1-3/8")
Bathroom Basin Mixer	Ø 32 mm – 35 mm (1-1/4" – 1-3/8")
Soap Dispenser	Ø 28 mm – 32 mm (1-1/8" – 1-1/4")
Garbage Disposal Air Switch	Ø 32 mm – 35 mm (1-1/4" – 1-3/8")
Water Filter Dispenser	Ø 22 mm – 25 mm (7/8" – 1.0")

PRE-DRILL IN WORKSHOP

Whenever faucet models are confirmed, drill all accessory holes in the fabrication shop under controlled water conditions rather than on the customer's finished jobsite.



DRAINER FLUTES

Recessed Drainboards & Fluted Drainer Grooves

Fluted groove geometry, sloped drainage fall, and maximum 6mm depth limits.

1. Drainer Grooves Architecture

Drainer grooves are fluted channels routed into the quartz surface adjacent to an undermount sink to drain water from drying dishes directly into the sink bowl.

Grooves are cut using CNC ball-nose diamond router bits or precision bridge saw slitting discs. Standard specifications:

- Quantity: Typically 4 to 6 parallel grooves.
- Width: 10 mm to 12 mm wide.
- Depth: Sloped from **2 mm deep** at the far end to **5 mm deep** at the sink rim.
- Slope Gradient: Minimum 1.5% fall towards sink.

2. Recessed Wet Areas (Drop-Down Trays)

A recessed wet tray steps down the quartz surface by **3 mm to 5 mm** around the sink. This milling operation removes surface material and must be polished back to a high gloss using sequential CNC polishing wheels.

MAXIMUM DEPTH RESTRICTION

Never route drainer grooves deeper than **6 mm** on 20mm quartz slabs (or 8mm on 30mm slabs). Deeper grooves unacceptably reduce the residual web thickness, creating a structural fracture line.



STRESS MECHANICS

The 90° Square Cut Prohibition — Stress Physics

Stress concentration factors (800%), notch sensitivity, and crack propagation paths.

The single most critical fabrication rule for engineered quartz is the **absolute prohibition of sharp 90° square interior corners**. Understanding the mechanical physics of stress concentration illustrates why sharp corners fail.

1. Finite Element Stress Concentration

When a slab undergoes ambient thermal expansion, building settlement, or countertop live loads (such as a person leaning against the front rail), internal tension stresses flow through the material.

At a smooth rounded corner (Radius $\geq 10\text{mm}$), stress lines distribute evenly across the curved arc. But at a sharp 90° square vertex, stress lines converge onto an infinitely small point, multiplying mechanical tensile stress by up to **800%**.

2. Crack Propagation Mechanism

Even minor daily thermal expansion from a hot dishwasher or cooktop will exceed the quartz flexural strength at a sharp 90° notch, initiating a micro-fracture that propagates diagonally through the entire slab.

OVERCUT PROHIBITION

A bridge saw blade overrunning past the corner point creates a sharp notch that acts like a glasscutter score. **Overcuts are strictly banned.**



CORNER RADIUS

Mandatory Minimum 10mm Inside Corner Radius

Technical vector illustration: 90° failure vs 10mm relief core drill standard.

Every internal corner on a Sheen Quartz countertop—including L-shaped returns, sink cutouts, cooktop cutouts, and column wrap-arounds—MUST possess a minimum internal radius of **10 mm (3/8")**.

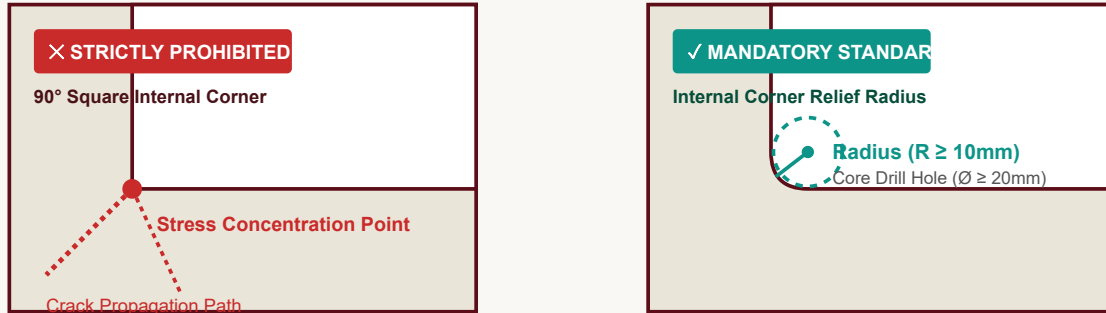


FIGURE 5.3 — PROHIBITED 90° SQUARE CUTOUT VS. MANDATORY MINIMUM 10MM INSIDE CORNER RELIEF RADIUS

Mandatory Core Drill Method: When fabricating without a CNC, drill all corner relief holes first using a minimum **Ø 20 mm (or Ø 25mm)** diamond core bit. Then execute straight cuts tangent into the outer edge of the drilled hole.

Quality Verification: Inspect every inside corner with a radius gauge tool. Any corner with a radius under 10mm (or showing saw overcuts) must be corrected with a diamond drum wheel before dispatch.



RODDING METHODS

Cutout Webbing Reinforcement — Rodding Protocols

Stainless steel and fiberglass rodding channels, 100% solids epoxy, and rust prevention.

1. Webbing Reinforcement Techniques

Narrow front and rear sink rails (75mm to 90mm width) are vulnerable during transport and installation. Reinforcing these rails prevents accidental snapping.

Three industry techniques are used for cutout reinforcement:

- **Underside Embedded Steel / Fiberglass Rodding:** Routing a 6mm x 10mm slot on the bottom face, embedding a stainless steel or fiberglass flat rod in high-strength epoxy.
- **Surface Clamp Bars:** Clamping rigid aluminum channel bars across the cutout during transport.
- **Continuous Plywood Subtop:** Fully supporting the rails on site with solid 18mm plywood sub-framing.

2. Rodding Metallurgy & Epoxy Rules

NEVER USE MILD STEEL OR POLYESTER RESIN

Mild steel rusts when exposed to moisture beneath sinks. Rust expansion exerts immense hydraulic pressure, splitting the quartz from the inside out. ALWAYS use **304/316 Stainless Steel or Solid Fiberglass Rods** fully encapsulated in 100% solids epoxy (never shrinking polyester).

Rod Material	Epoxy Slot Dimensions	Corrosion Status
Fiberglass Flat Rod	6 mm wide x 8 mm deep	IMMUNE (Zero rust)
304 Stainless Steel	6 mm wide x 8 mm deep	EXCELLENT
Mild Carbon Steel	PROHIBITED	RUSTS • CAUSES SPLITS



TRANSIT CLAMPING

Narrow Webbing Handling & Clamping Devices

Omni-Cubed Sink Hole Savers, vertical transport, and jobsite release sequences.

1. Transport Clamping of Cutouts

The highest risk of quartz breakage occurs during handling between the bridge saw and the customer's kitchen cabinets. Even a properly radiused sink cutout can snap if the slab flexes dynamically during transport.

Prior to lifting any piece containing a cutout off the saw table, install temporary **aluminum sink rail clamps (Omni-Cubed Sink Hole Savers)** spanning across the entire cutout opening.

2. Clamp Removal Protocol

The sink saver clamps must remain firmly attached throughout loading, vehicle transport, jobsite carrying, and dry-fit placement onto base cabinets. Clamps should **ONLY** be loosened once the countertop is resting flat on cabinet gables.

3. Field Handling Guidelines



Attach Clamp Before Lifting from Saw



Check Vacuum Grip on All Clamp Pads



Carry Piece Strictly on Vertical Edge



Never Twist or Torsion Piece Through Doors



Support Both Ends Uniformly During Stairs



Release Clamps **ONLY** After Setting Flat

THE "WINDOW CUT" ALTERNATIVE

Some automated shops leave a 50mm stone tab in the center of the sink cutout until site delivery, cutting the tab on site to keep the piece rigid during transit.



L-SHAPED TOPS

Large Monolithic L-Shaped & U-Shaped Pieces

Monolithic vs seamed L-pieces, torsional transit physics, and 25mm inside radius.

1. Monolithic L-Pieces vs Seamed Assemblies

Architects occasionally request seamless monolithic L-shaped countertops cut from a single jumbo slab. While visually continuous, monolithic L-pieces carry severe operational risks:

- Extremely difficult to transport through standard residential doorways and stairwells.
- The inside corner vertex is subjected to high torsional twisting stress during transport.
- Slab yield is low, creating large unusable off-cut waste.

2. The Fabricator Recommendation

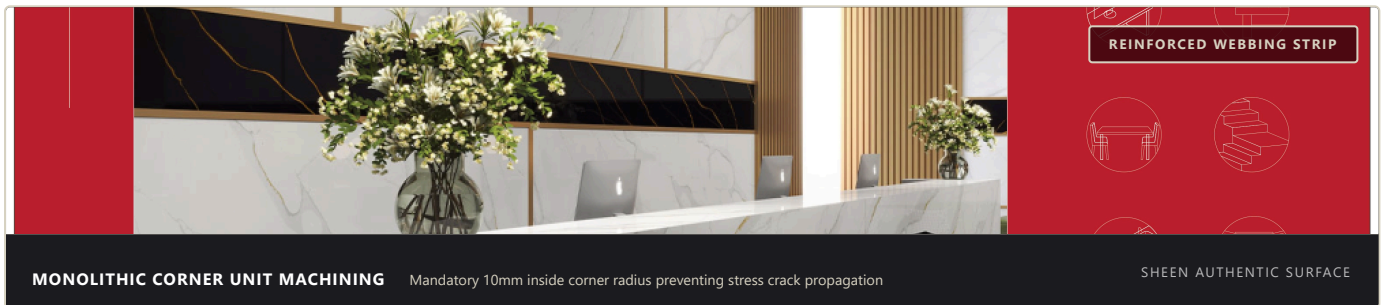
Fabricators should strongly advocate for a **precision diamond seamed joint** positioned 300mm to 600mm away from the corner rather than an oversized monolithic L-shape, unless the piece is ground-floor accessible.

3. Monolithic L-Piece Handling Rules

MANDATORY INTERNAL RADIUS: $R \geq 25\text{MM}$

If a monolithic L-shape is approved, the internal corner **MUST** have a large radius of at least **25 mm (1.0 inch)** or a curved diagonal inside transition. A sharp 10mm radius is insufficient for handling torsional loads on monolithic L-pieces.

Corner Dimension	Mandatory Specification
Inside Corner Radius	Min 25 mm (1.0")
Support Frame	Diagonal steel truss clamp installed
Crew Size	Minimum 4 to 6 workers for transit





QUALITY CONTROL

Quality Inspection Gate & Shop Dispatch Checks

Dimensional tolerances, gloss level verification, and pre-dispatch sign-off.

1. The Shop Quality Gate Protocol

Before any fabricated countertop piece is loaded onto jobsite delivery A-frames, it must pass a rigorous multi-point Quality Gate inspection conducted under 1000-Lux inspection lighting.

Catching mistakes in the workshop saves thousands of dollars compared to discovering defects on the customer's jobsite.

2. Dimensional Tolerance Standards

- Length and Width: ± 1.5 mm (1/16") of approved CAD shop drawing.
- Squareness: Diagonal variance within ± 1.5 mm across rectangular pieces.
- Edge Profile Uniformity: Smooth, wave-free profile across entire linear run.

3. Quality Gate Inspection Sheet



All Inside Radii Checked ($R \geq 10$ mm)



No Blade Overcuts at Corners



Edge Polish Matches Factory Top (>85 GU)



Dry-Fit Mating Seams on Flat Table



Verify Faucet Hole Clearances



All Pieces Labeled & Padded with Foam

FINAL SHOP SIGN-OFF

Inspection technician must sign and date the quality label attached to the underside of each finished piece.



SECTION 6 • FIELD TECHNICAL DIVISION

SEAMS & ASSEMBLY

Diamond joint edge prep, adhesive chemistry, color tint matching, mechanical seam clamps, and lippage standards.

KEY TECHNICAL MODULES IN THIS SECTION:

- Seam edge micro-jointing and dry-fit alignment verification
- Two-part methacrylate vs epoxy adhesive performance
- Pigment tinting system for Sheen white, grey, and dark quartz series
- Vacuum seam pulling clamps and razor flashing finishing (< 0.1mm lippage)





SEAM PREPARATION

Seam Edge Preparation & Diamond Jointing

Micro-jointing milling, 0.5° back-beveling pockets, and hairline joint tolerances.

1. Micro-Jointing Diamond Preparation

Standard bridge saw cuts leave microscopic blade chatter marks and chipping along the top arris. Joining two raw saw-cut edges will result in a wide, visible, irregular glue line.

All mating seam edges must undergo **diamond micro-jointing** using a precision seam milling tool (e.g., Omni-Cubed Seam Phantom, CNC seam bit, or calibrated milling rail) removing approximately **1.0 mm to 1.5 mm** of stone.

2. Back-Beveling Seam Edges

Slightly back-bevel the mating vertical faces at an angle of **0.5° to 1.0°** so the top visible arris touches tight while a narrow 1mm cavity opens at the bottom. This pocket allows excess adhesive to squeeze out without hydraulic resistance.

3. Seam Joint Quality Standards

Seam Joint Parameter	Engineering Tolerance
Finished Seam Width	≤ 1.0 mm – 1.5 mm (Hairline)
Lippage Across Joint	≤ 0.1 mm (Imperceptible to fingernail)
Top Arris Chipping	ZERO allowable micro-chips
Adhesive Penetration	100% full-depth bonded contact

ACETONE DECONTAMINATION

Wipe both mating seam edges thoroughly with fast-evaporating denatured alcohol or acetone immediately before bonding to remove dust and hand oils.



DRY FIT PROTOCOL

Dry Fit Seam Alignment & Coplanar Verification

Pre-adhesive dry-fitting, micro-shimming, and blue tape perimeter masking.

1. Pre-Adhesive Dry-Fit Protocol

Never apply adhesive until a comprehensive dry fit has verified complete coplanar alignment on the customer's leveled base cabinets.

Position both countertop pieces onto the cabinets. Slide the seam edges together dry. Inspect the joint along its full length with a straightedge and high-intensity LED light.

2. Correcting Dry-Fit Irregularities

- **Joint Taper (Gap at one end):** Adjust cabinet shims or re-scribe wall edge.
- **Lippage (One piece higher):** Adjust cabinet leveler legs or insert micro-shims under low piece until surfaces run completely flush.

3. Dry-Fit Verification Checklist

- | | |
|---|---|
| ☐ Fingernail Test: Smooth Transition Across Seam | ☐ Straightedge Test: Coplanar within 0.1mm |
| ☐ Vein Alignment Matches CAD Rendering | ☐ Full Substrate Support Directly Under Joint |
| ☐ Check Vacuum Seam Clamp Landing Zones | ☐ Protect Surrounding Top with Blue Painter's Tape |

TAPE MASKING STANDARD

Apply blue masking tape exactly 1.0 mm back from the seam edge on both pieces to catch squeeze-out and prevent adhesive spread onto polished faces.



ADHESIVE CHEMISTRY

Adhesive Chemistry — Methacrylate vs Epoxy Systems

MMA reactive acrylics vs epoxy acrylates, shear strength, and polyester bans.

Selecting the correct adhesive chemistry determines seam strength, color longevity, and joint invisibility. Standard stone polyester resin is unsuitable for quartz seams due to high shrinkage and poor bond strength.

Adhesive Category	Chemical Formulation	Shear Bond Strength	Cure Speed	Primary Recommendation
Methyl Methacrylate (MMA) (e.g., Integra Adhesives, Akemi Platinum)	Two-part reactive acrylic monomer with pre-colored cartridge mixing nozzles	EXTREMELY HIGH (> 25 MPa • Exceeds stone matrix)	15 – 25 minutes handling cure	FIRST CHOICE for all interior quartz seams. Non-shrinking, pre-tinted, flexible.
Epoxy Acrylate / Knife-Grade (e.g., Tenax Titanium, Bellinzoni)	Vinyl-ester / epoxy hybrid knife-grade paste with BPO paste hardener	HIGH (> 20 MPa)	20 – 35 minutes	Excellent for custom manual color matching, thick build-ups, and sink anchors.
Standard Polyester Resin (Traditional marble mastic)	Unsaturated orthophthalic polyester with liquid hardener	POOR (< 8 MPa)	10 – 15 minutes	PROHIBITED: High shrinkage (up to 8%), yellows with age, brittle bond fails.



TENSILE STRENGTH > 25 MPA



COLOR-MATCHED STRUCTURAL SEAM Two-part methacrylate adhesive formulation cured to an imperceptible joint

SHEEN AUTHENTIC SURFACE



COLOR MATCHING

Color Matching Pigments & Tinting System

Pre-colored cartridge charts, manual pigment formulas, and the half-shade darker rule.

1. Pre-Colored Cartridge Systems

For consistent results, Sheen recommends using pre-colored MMA cartridge adhesive systems (e.g., Integra Surface Bonder Xi) matched specifically to Sheen color references using factory color charts.

Cartridge systems utilize static mixing tips that guarantee perfect 10:1 mix ratios without air bubble entrainment.

2. Manual Knife-Grade Tinting Rules

When manually tinting knife-grade adhesives with concentrated polyester pigments, always mix color pigments **BEFORE adding the paste hardener**. Hardener shifts translucent resins slightly yellow-amber.

3. Sheen Quartz Color Tinting Guide

Sheen Quartz Color	Base Resin	Color Pigment Formulation
Calacatta Luxe	Pure White Base	Drop of Titanium White + micro-drop Raw Umber (soft warm white)
Statuario Imperial	Translucent Clear	Titanium White + trace Cool Grey
Nero Marquina	Deep Black Base	Lamp Black + drop of Carbon Black (zero white)
Carrara Elegance	Soft Pearl Base	Titanium White + Raw Sienna + trace Slate Grey

THE "SLIGHTLY DARKER" RULE

Always tint adhesive a half-shade *darker* than the background stone. A seam tinted lighter than the quartz background stands out as a glaring white chalk line; a slightly darker seam mimics natural stone shadow.



VACUUM CLAMPING

Mechanical Seam Clamping & Vacuum Setters

Vacuum seam pullers, horizontal closing tension, and joint starvation prevention.

1. Vacuum Seam Setter Equipment

Never rely on hand pressure or wood block hot-glue clamps to close quartz seams. Hand clamping cannot apply uniform closing force and allows lippage movement as adhesive cures.

Always utilize professional **vacuum seam pullers (e.g., Omni-Cubed Pro 90, Gorilla Grips)**. These systems feature dual vacuum suction cups spanning the seam, controlled by precision threaded tension rods and vertical leveling cams.

2. Application & Clamping Sequence

- Separate dry-fitted pieces by **10 mm (3/8")**.
- Purge initial 25mm of adhesive from mixing nozzle to verify mix ratio.
- Apply generous continuous bead of adhesive filling the joint cavity.
- Engage seam setter vacuum cups onto both slabs.
- Tighten horizontal tension screws to close joint until adhesive squeezes out continuously along full length.
- Adjust vertical micro-leveling cams to eliminate any tactile lippage.

3. Clamping Force Limits

AVOID "STARVING" THE JOINT

Do not over-tighten horizontal tension screws to extreme clamping force. Excessive pressure squeezes out all adhesive, creating a "dry starved joint" with zero residual bond strength. Leave a uniform 0.5mm to 1.0mm glue line.

Clamp Stage	Action Duration
Adhesive Application	Complete within 3 minutes
Tension Clamping	Close joint within 5 minutes
Leveling Cam Adjustment	Complete within 8 minutes
Curing Under Tension	Hold clamp locked for min 25 minutes



SEAM FINISHING

Seam Curing, Squeeze-Out Trimming & Finishing

Rubber gel tape release, 45° razor shaving technique, and power polishing bans.

1. The "Rubber Gel" Trimming Stage

As methacrylate adhesive cures, it passes through three chemical phases: liquid, rubber gel, and rock-hard polymer.

At approximately **10 to 15 minutes** after mixing, the adhesive reaches the rubber gel state. Carefully peel away the blue masking tape; the majority of squeeze-out flashing will lift cleanly with the tape.

2. Razor Blade Flashing Shaving

Once fully cured (approx. 25–35 minutes), remove residual squeeze-out using a brand-new single-edge stainless steel razor blade:

- Hold the razor blade at a flat **30° to 45° angle** to the stone surface.
- Mist the seam with denatured alcohol or soapy water to lubricate blade movement.
- Shave excess cured adhesive flush using smooth slicing strokes.
- **NEVER** hold the razor blade perpendicular (90°) or scrape dry; this can scratch the quartz polish.

3. Final Seam Buffing Protocol

Clean the seam area with denatured alcohol and a clean white microfiber cloth. For matte or suede finishes, rub gently with a fine grey Scotch-Brite pad (light pressure only) to harmonize gloss levels.

NEVER USE POWER POLISHERS OVER SEAMS

Never attempt to grind or power-polish a finished field seam with diamond pads. Grinding a seam will dish out a noticeable depression across the joint, destroying the factory polish and creating a dull reflection shadow.



QUALITY TOLERANCES

Seam Quality Standards & Tolerances (< 0.1mm)

NSI / MIA international joint standards, feeler gauge metrics, and 1-meter viewing rules.

1. International Seam Quality Benchmarks

In accordance with the **Natural Stone Institute (NSI)** and **MIA Dimension Stone Design Manual**, an acceptable field seam on engineered quartz must satisfy strict tactile and visual metrics:

- **Width Tolerance:** Finished joint width must not exceed **1.5 mm (1/16")** along its entire length.
- **Lippage Tolerance:** Maximum allowable vertical height differential (lippage) across the seam is **0.1 mm (0.004")**. An ordinary fingernail pulled perpendicular across the seam must glide smoothly without catching.
- **Visual Uniformity:** Adhesive color must be consistent with zero voids, pinholes, or dark contamination flecks.

2. Official Seam Audit Checklist

- | | |
|---|---|
| ☐ Fingernail Test Passed (Zero Catch) | ☐ Feeler Gauge Test: Lippage $\leq$ 0.1 mm |
| ☐ No Joint Voids or Missing Adhesive Pockets | ☐ Adhesive Color Matches Background Stone |
| ☐ Zero Razor Scratches on Surrounding Polish | ☐ Under-Seam Structural Support Verified |

CLIENT VIEWING STANDARD

Evaluate seam aesthetics from a standing distance of **1.0 meter (3 feet)** under normal ambient lighting. Countertops viewed with microscopic magnifiers or flashlight glares do not reflect valid trade inspection standards.



TROUBLESHOOTING

Seam Troubleshooting & Field Remediation Guide

Correcting lippage, filling pinholes, re-capping off-color joints, and structural fixes.

If a field seam exhibits defects during quality inspection, apply the certified stone masonry remediation protocols below before signing off the installation.

Observed Seam Defect	Probable Root Cause	Approved Field Remediation Protocol
Lippage Catch (> 0.1mm)	Cabinet out of level; uneven vertical clamp tension	If adhesive is fresh (< 2 hours), heat seam carefully with heat gun (120°C max) to soften MMA bond; separate with wedges, re-shim cabinets, and re-bond. Never power grind surface flush.
Pinholes / Joint Voids	Air trapped in adhesive; incomplete bead squeeze-out	Dremel out the pinhole cavity using a 1mm diamond burr to clean stone. Clean with alcohol. Re-fill with color-matched liquid UV acrylic resin; cure with UV lamp; shave with razor.
Adhesive Too Light / Dark	Incorrect pigment ratio; hardener color shift	Rake out top 1.5mm of joint using specialized tungsten carbide seam raker or oscillating diamond multi-tool blade. Clean cavity thoroughly. Re-cap joint with accurately tinted MMA.
Joint Separating / Cracking	Cabinet deflection under joint; building settlement	Structural failure. Cabinet framework must be reinforced from beneath. Strip old adhesive completely, re-level gables with steel shims, and re-execute entire seam bonding sequence.



SECTION 7 • FIELD TECHNICAL DIVISION

JOBSITE INSTALLATION

Cabinet survey, leveling shims, substrate spans, cantilever overhang engineering, and sink cradles.

KEY TECHNICAL MODULES IN THIS SECTION:

- Jobsite readiness survey and cabinetry levelness tolerances (< 2mm over 2m)
- Full perimeter plywood subtop vs structural web frame support
- Overhang cantilever support calculations, corbels, and concealed steel plates
- Mechanical undermount sink support brackets and cooktop heat barrier shielding



SHEEN ENGINEERED QUARTZ • CALACATTA IMPERIA 3200X1600MM



SITE READINESS

Jobsite Environmental Readiness & Trade Sequencing

Finished trade requirements, HVAC conditioning, and transport pathway clearance.

1. Site Environmental Readiness Criteria

Quartz countertops represent high-value finished joinery and must be installed only when the jobsite has achieved "finished trade status":

- Building envelope must be 100% weather-tight (exterior doors and windows installed and glazed).
- HVAC heating/cooling systems operational, maintaining conditioned ambient temperatures (18°C to 24°C / 65°F to 75°F).
- Drywall, plastering, and ceiling texturing completely dry.
- Wet trade masonry and concrete subfloors fully cured.

2. Trade Sequencing Coordination

NEVER INSTALL BEFORE DRYWALL PAINTING

Never install luxury quartz countertops while heavy overhead drywalling, ceiling painting, or tile cutting trades remain active. Dropped hammers, ladders, and scaffolding will damage polished quartz surfaces.



Clear Transport Path from Truck to Kitchen



Staircases Padded & Free of Clutter



Plumbing Rough-In Valves Capped Tight



Electrical Outlets De-Energized for Safety



SUBSTRATE LEVELING

Cabinet Substrate Tolerances & Shimming Protocols

The 2mm across 2-meter flatness rule, base shimming, and carcass anchoring.

1. The 2mm Level Tolerance Rule

Because engineered quartz is a rigid mineral slab with high flexural modulus (> 45 MPa), it cannot bend or conform to sagging millwork without generating internal tension cracks.

Base cabinets must be leveled so that the maximum deviation from a true flat plane does not exceed **2.0 mm across any 2.0-meter span (1/16" over 6 feet)**, and no more than **3.0 mm across the entire kitchen run**.

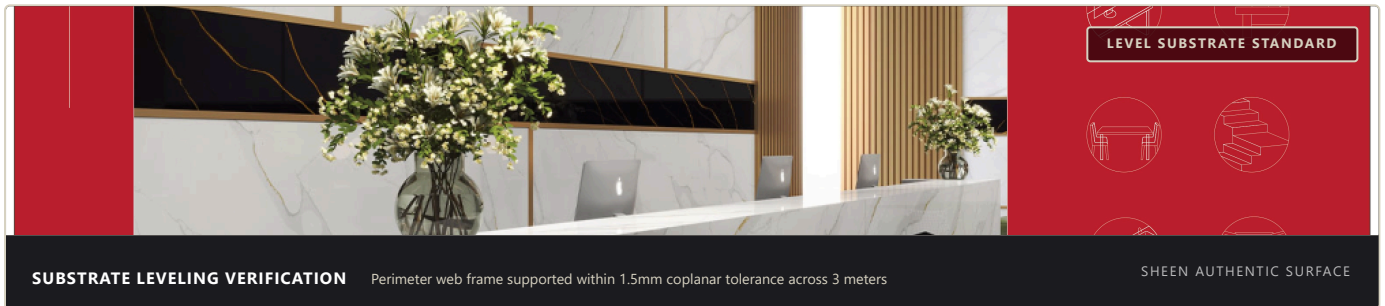
2. Cabinetry Fastening Verification

Verify that all base cabinets are lag-screwed securely into wall studs and anchored together through side face frames with 30mm cabinet connector screws.

3. Shimming Best Practices

If cabinets exhibit low spots, level them using heavy-duty plastic composite shims placed directly **between the cabinet base and the subfloor**. Never place stacks of shims directly between the cabinet top rail and the quartz countertop; this creates hollow unsupported spans.

Substrate Condition	Maximum Allowable Variance
Cabinet Coplanar Level	≤ 2.0 mm over 2.0 m run
Adjacent Cabinet Step-Up	≤ 0.5 mm at junction gables
Cabinet Front-to-Back Level	≤ 1.0 mm across 600mm depth





SUBTOP SYSTEMS

Perimeter Substrate vs Solid Web Frame Support

18mm exterior plywood subtop requirements for 20mm quartz and particleboard bans.

1. 20mm Slabs: Full Subtop Requirement

When installing **20 mm (3/4") quartz countertops** in residential kitchens, Sheen strongly recommends installing a **full perimeter 18mm (3/4") exterior-grade plywood or high-density marine ply subtop** over base cabinets.

A full plywood subtop provides uniform structural load distribution, deadens impact acoustics, and accommodates mitered drop-edge fascias (40mm built-up edge returns).

2. 30mm Slabs: Solid Top Carcass Support

30 mm (1-1/4") quartz countertops possess high section modulus and can be installed directly onto open-top cabinet carcasses, provided vertical gable partitions are spaced at maximum **600 mm (24") intervals**.

3. Subtop Material Restrictions

NEVER USE PARTICLEBOARD OR STANDARD MDF

Standard particleboard and raw MDF expand up to 300% when exposed to moisture from plumbing leaks or sink overflows. Expanding particleboard exerts immense upward pressure that splits quartz countertops. ALWAYS use **Exterior-Grade Plywood (CDX) or Moisture-Resistant Marine Ply**.

Slab Thickness	Subtop System Required
15 mm	Solid 18mm plywood subtop mandatory everywhere
20 mm	Full 18mm plywood subtop or rigid web rails (max 450mm span)
30 mm	Direct to cabinet carcass; open spans up to 600mm permitted

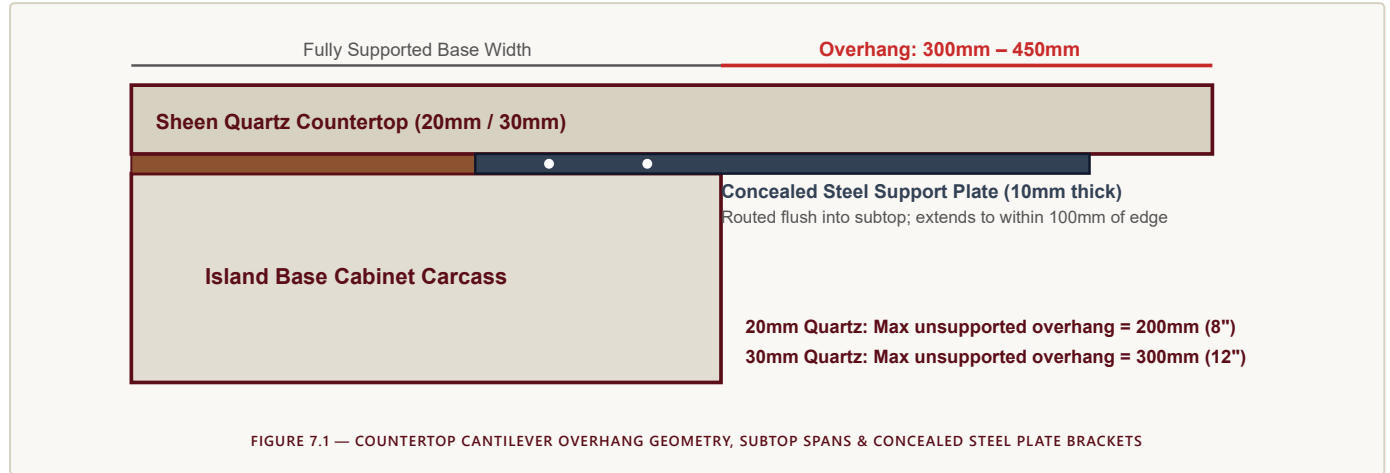


OVERHANG RULES

Overhang Engineering & Cantilever Support Limits

Technical diagram: 20mm vs 30mm overhang thresholds and cantilever support plates.

Kitchen breakfast bars and island dining counters frequently feature cantilevered overhangs where people sit on barstools. Overhangs must be engineered to prevent catastrophic tipping or cantilever fracture.



Quartz Slab Thickness	Max Unsupported Overhang	Overhang Requiring Steel Plates	Overhang Requiring Posts / Columns
20 mm (3/4")	Up to 200 mm (8 inches)	200 mm to 400 mm (8" to 16")	Overhangs exceeding 400 mm (16")
30 mm (1-1/4")	Up to 300 mm (12 inches)	300 mm to 450 mm (12" to 18")	Overhangs exceeding 450 mm (18")



CANTILEVER BRACKETS

Overhang Structural Brackets & Concealed Steel Plates

Flush-routed 10mm steel plates, 600mm spacing rules, and 150 kg live load capacity.

1. Concealed Steel Support Plates

Modern luxury design avoids bulky visible corbels that hit knees. To achieve a clean floating overhang, install **concealed solid steel support plates** (minimum 10mm / 3/8" thickness by 65mm / 2.5" width).

Plates are routed flush into the 18mm plywood subtop or cabinet top rail. They must extend to within **100 mm (4") of the outer countertop edge** and anchor securely through cabinet walls with heavy lag screws.

2. Bracket Spacing Rules

Install support plates or decorative structural corbels at maximum intervals of **600 mm (24 inches) on center** along the overhang length, with the first bracket placed 150mm from the end gable.

3. Overhang Live Load Criteria

150 KG CONCENTRATED LOAD STANDARD

Overhang supports must be engineered to withstand a concentrated vertical live load of at least **150 kg (330 lbs)** applied directly at the outer edge, accommodating a heavy person sitting or leaning on the island edge.

Overhang Depth	Recommended Steel Plate Specs
300 mm (12")	60mm wide x 8mm thick solid steel • Spaced 600mm O.C.
400 mm (16")	65mm wide x 10mm thick solid steel • Spaced 500mm O.C.
> 450 mm (> 18")	Structural steel C-channel or solid decorative table legs

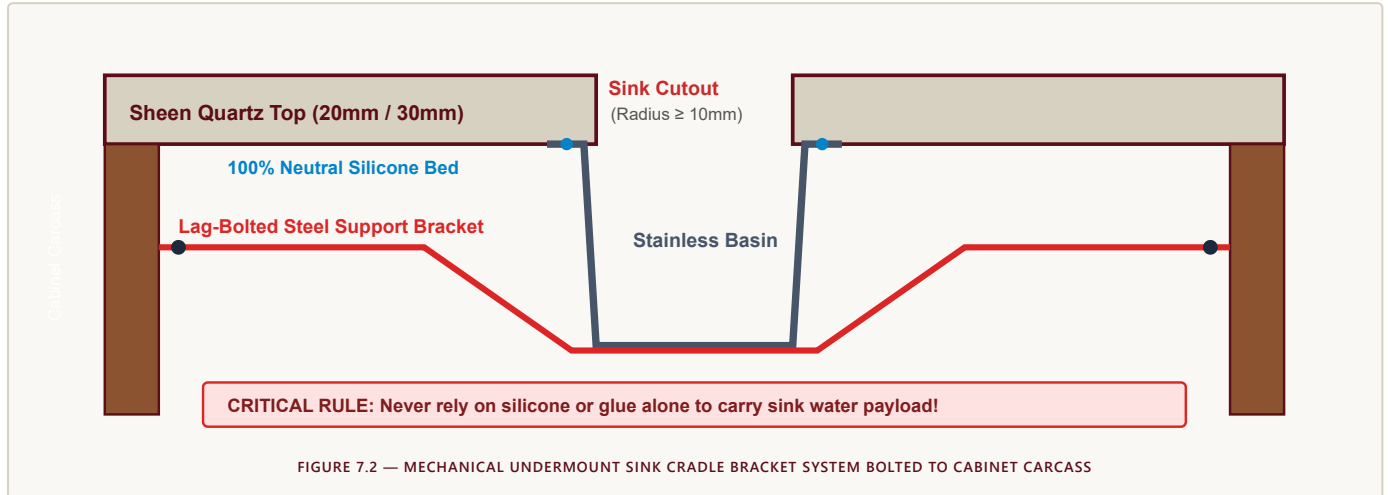


SINK CRADLES

Undermount Sink Mechanical Support Systems

Technical diagram: Lag-bolted cradle brackets, 80kg water loads, and silicone gasket rules.

A filled double-bowl kitchen sink with water, dishes, and waste disposer weighs over **60 kg to 80 kg (130 to 175 lbs)**. Hanging this immense dead weight exclusively from the underside of the quartz countertop using silicone or glued anchor studs will lead to catastrophic delamination.



Mandatory Mechanical Support: All undermount sinks **MUST** be supported by mechanical steel cradle brackets (e.g., Sink Straps, Braxton-Bragg Sink Brackets) lag-bolted directly into the vertical cabinet carcass sidewalls.

Silicone Seal Function: 100% neutral-cure silicone applied between the sink rim and quartz functions strictly as a *waterproof gasket seal*—NOT as a structural weight-bearing adhesive.



THERMAL INSULATION

Cooktop Thermal Insulation & Heat Shielding

Radiant heat shielding, aluminum tape barriers, and free-floating appliance gaskets.

1. The Heat Dissipation Imperative

High-output gas burner burners and commercial-style cooktops generate radiant temperatures exceeding 300°C at burner level, transferring intense heat down through appliance metal casings.

If intense heat conducts into the quartz cut edge without thermal insulation, the polymer resin matrix will experience severe localized expansion, causing thermal shock fracture lines radiating from cutout corners.

2. Foil Tape Barrier Installation

Line all four vertical cut faces of the cooktop opening with **heavy-gauge adhesive aluminum foil heat-shield tape**. Ensure the tape folds 6mm over the top surface under the appliance foam seal, reflecting radiant heat away from the stone.

3. Cooktop Clearances Verification

Clearance Dimension	Mandatory Specification
Perimeter Air Gap	3 mm to 5 mm (1/8") continuous all 4 sides
Under-Cooktop Airspace	Min 50 mm (2") vertical drop to drawer/shelf
Gas Pipe Penetration	Never contact stone; isolate with rubber grommet
Appliance Foam Gasket	Install continuous factory neoprene gasket

NEVER GLUE COOKTOP DOWN

NEVER glue or silicone a cooktop chassis into the quartz cutout. The appliance must rest freely on its perimeter gasket to accommodate independent thermal movement.



SETTING METHOD

Countertop Setting Procedure & Silicone Bonding

Flexible neutral silicone dollop spacing and construction adhesive prohibitions.

1. Setting the Tops in Place

Once all dry fits, seam dry checks, and bracket elevations are verified, prepare the base cabinets for permanent countertop setting:

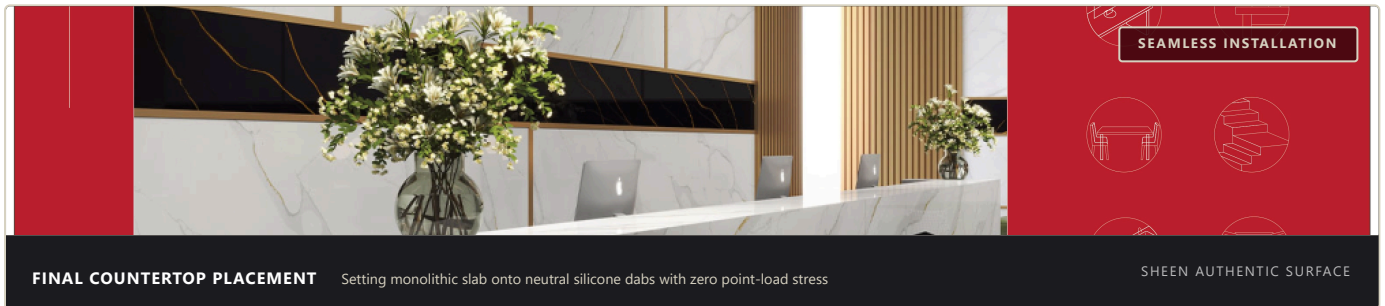
- Vacuum all sawdust and debris off cabinet top rails.
- Apply generous dollops of **100% neutral-cure silicone adhesive** (size of a quarter coin) at **300 mm to 450 mm intervals** along all cabinet top perimeter rails.
- Lower the quartz countertop into place carefully using team lifting grips.
- Press the top down firmly to spread silicone dollops.

2. Strict Construction Adhesive Prohibition

NEVER USE RIGID LIQUID NAILS OR EPOXY

NEVER bond quartz countertops to cabinets using rigid polyurethane construction adhesives (e.g., Liquid Nails, PL Premium) or rigid epoxies. Wood cabinets expand and contract with seasonal humidity. Rigid adhesives transfer cabinet movement directly into the quartz, causing stress fractures. ALWAYS use **flexible 100% neutral-cure silicone**.

Adhesive Type	Suitability
100% Neutral-Cure Silicone	MANDATORY (Elasticity absorbs cabinet movement)
Polyurethane Construction Adhesive	PROHIBITED (Too rigid • voids warranty)
Rigid Stone Epoxy to Cabinets	PROHIBITED (Will crack stone upon wood movement)





PERIMETER CAULK

Backsplash Installation & Perimeter Soft Joints

Flexible silicone soft joints, full-height cladding shims, and cement grout bans.

1. Backsplash Installation Protocols

Standard quartz backsplashes (100mm height or full-height wall cladding) are bonded to drywall or cement board using flexible neutral silicone applied in vertical serpentine beads.

Maintain a **1.5 mm to 2.0 mm expansion gap** between the bottom edge of the backsplash and the countertop surface. Never rest the full weight of heavy full-height wall slabs directly on the countertop without perimeter setting blocks.

2. Perimeter Joint Sealant (Soft Joints)

Seal the junction between countertop and backsplash with a continuous, clean bead of color-matched **100% mildew-resistant neutral silicone**. Smooth the bead with a soapy water tool.

3. The Grout Prohibition at Transitions

NEVER USE CEMENT GROUT AT PERIMETER

Never seal the junction between the countertop and wall/backsplash using rigid cementitious tile grout. Buildings settle dynamically, causing rigid grout to crack, crumble, and fall out within weeks. All horizontal-to-vertical plane changes require **flexible silicone soft joints**.

Joint Location	Approved Sealant Material
Countertop-to-Wall / Splash	100% Neutral Mildew-Resistant Silicone
Between Backsplash Tile Units	High-Performance Tile Grout
Undermount Sink Rim Junction	100% Pure Sanitary Silicone



SECTION 8 • FIELD TECHNICAL DIVISION

CARE, MAINTENANCE & SURFACE PRESERVATION

Daily cleaning, stain prevention, chemical hazards, heat management, and chip repair.

KEY TECHNICAL MODULES IN THIS SECTION:

- Everyday maintenance regimen using neutral pH detergents
- Zero porosity stain immunity and spill response protocols
- Chemical exposure warnings and strictly prohibited compounds
- Thermal shock prevention, mandatory trivets, and chip restoration



FEATURED QUARTZ: EMERALD VEIL • CHEMICAL RESISTANCE & PRESERVATION



DAILY CLEANING

Everyday Cleaning Regimen & Recommended Products

Neutral pH detergent cleaning, microfiber towels, and approved commercial brands.

1. Routine Daily Cleaning Protocol

Sheen Engineered Quartz is inherently low-maintenance. Thanks to its zero-porosity structure and 93% pure quartz crystal density, keeping surfaces pristine requires simple, non-toxic cleaning measures:

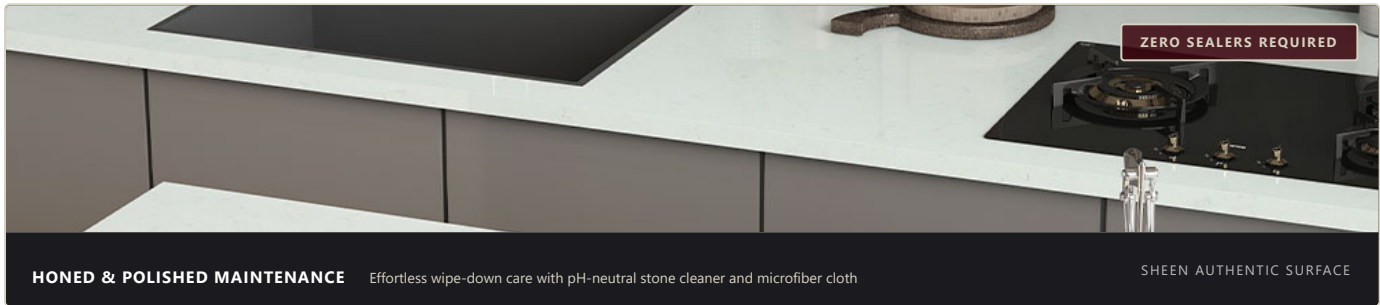
- Wipe the surface daily using a soft microfiber cloth or sponge dampened with warm water and a few drops of **mild neutral pH dishwashing detergent (pH 6 to 8)**.
- Rinse the surface with clean warm water to remove residual soap film.
- Dry thoroughly with a clean microfiber towel to prevent mineral streaks from hard municipal tap water.

2. Approved Daily Cleaning Products

Cleaner Category	Approved Brand Examples
Neutral Dish Soaps	Dawn, Palmolive, Fairy (Diluted in warm water)
Dedicated Stone Cleaners	Method Daily Granite, Weiman Quartz Clean, Akemi Crystal Clean
Glass & Surface Sprays	Windex Ammonia-Free (diluted, rinse immediately)

ABRASIVE PAD WARNING

NEVER use green or red abrasive Scotch-Brite scouring pads, steel wool, or wire brushes. Abrasive scouring pads will permanently dull factory polish.





MATERIAL SCIENCE

Zero Porosity Material Science & Natural Immunity

Capillary pore elimination, certified 0.03% absorption, and no-sealer mandate.

1. Material Science of Zero Porosity

Natural stones like marble and granite contain interconnected microscopic capillary pores that absorb liquids through capillary draw, leading to deep sub-surface stains and harboring bacteria.

In contrast, Sheen Quartz undergoes 100-ton vacuum vibro-compression compaction during manufacturing, eliminating capillary channels. With certified water absorption under **0.10% (typically < 0.03%)**, liquids cannot penetrate below the surface plane.

2. Absolute Sealant Prohibition

SHEEN QUARTZ SURFACES NEVER REQUIRE SEALING. Penetrating stone sealers and topical wax coatings are formulated for porous stone and cannot penetrate quartz. Applying sealers leaves an unsightly cloudy chemical film that attracts dirt.

3. Porosity Benchmark Comparison

Surface Material	Water Absorption (ASTM C97)	Porosity Level
Natural Carrara Marble	0.30% – 0.60%	High (Stains rapidly)
Natural White Granite	0.20% – 0.40%	Moderate (Requires sealers)
Travertine / Limestone	1.00% – 3.00%	Very High (Porous)
Sheen Engineered Quartz	0.02% – 0.10%	ZERO POROSITY (Impervious)

HYGIENIC NSF/ANSI 51 COMPLIANCE

Certified non-porous structure prevents mold, mildew, and bacteria from penetrating the surface, providing a certified food-safe prep zone.



SPILL RESPONSE

Spill Management Protocol — Wine, Turmeric & Oil

Prompt spill cleanup, acidic liquid management, and turmeric stain remedies.

1. Common Household Spills

While quartz does not absorb liquids, concentrated food stains left to dry can adhere chemically to the polymer surface. Wipe spills promptly using a damp cloth:

- **Acidic Liquids:** Red wine, lemon juice, lime juice, balsamic vinegar, tomato sauce.
- **Intense Food Colorants:** Turmeric, curry powder, saffron, beet juice, mustard, coffee, soy sauce.
- **Oils & Greases:** Extra virgin olive oil, melted butter, cooking fat splatters.

2. Emergency Spill Response Protocol

Step	Action Required
1. Blot Immediately	Blot liquid with paper towel; do not spread across surface
2. Wash Area	Wipe with warm water and neutral dishwashing detergent
3. Stubborn Marks	Apply isopropyl alcohol (rubbing alcohol) to microfiber cloth; wipe gently
4. Rinse & Dry	Rinse with clean water; dry thoroughly with microfiber cloth

TURMERIC & CURRY STAINS

Turmeric contains the powerful natural pigment curcumin. If a yellow turmeric stain persists after dish soap, apply isopropyl alcohol (rubbing alcohol) or a mild baking soda paste; let sit 5 minutes, then wipe clean.



STUBBORN RESIDUE

Difficult Stains, Limescale & Residue Removal

Plastic scrapers, Bar Keepers Friend liquid cleanser, and limescale vinegar treatments.

1. Dried Food & Hardened Residue

For dried chewing gum, hardened grease, candle wax, or dried paint splatters:

- Gently scrape the bulk residue off using a rigid plastic putty knife or a brand-new single-edge razor blade held flat at a **30° angle**.
- Apply a damp cloth soaked in isopropyl alcohol to dissolve sticky residue.
- Wipe clean with warm water and neutral detergent.

2. Hard Water Limescale Deposits

Mineral scale around faucets can be treated with a 50/50 dilution of white vinegar and water. Apply for **no more than 2 minutes**, scrub gently with a soft sponge, then rinse thoroughly with clean water.

3. Bar Keepers Friend (BKF) Usage

BAR KEEPERS FRIEND SOFT CLEANSER PROTOCOL

For stubborn metallic pot marks or stubborn stains, use **Bar Keepers Friend (Liquid Cleanser formulation only)**:

☐ Squeeze Dime-Sized Amount on Wet Sponge

☐ Rub Gently in Light Circular Motions

☐ Do NOT Apply Excessive Downward Force

☐ RINSE THOROUGHLY within 1 Minute

☐ Dry with Clean Microfiber Towel

☐ Verify Stain Elimination



THERMAL SHOCK

Heat Management — Thermal Shock & Trivet Rules

Thermal shock fracture physics, mandatory trivets, and slow cooker hazards.

1. The Thermal Shock Mechanism

While natural quartz mineral is heat resistant, the polymer resin binder matrix expands when exposed to sudden, extreme temperatures exceeding **150°C (300°F)**.

Placing a hot cooking vessel directly off a stove burner onto a cold quartz countertop induces **thermal shock**—the top surface layer expands violently while the cold bottom layer resists, causing sudden crescent fracture cracks.

2. Mandatory Trivet & Hot Pad Rule

ALWAYS USE TRIVETS & INSULATED HOT PADS

NEVER PLACE HOT POTS, PANS, SKILLETS, OR APPLIANCES DIRECTLY ON QUARTZ.

Always place cookware on heat-insulating trivets with rubber feet, silicone hot mats, or wooden cutting boards.

3. High Heat Appliance Hazards

Electric appliances that generate continuous downwards heat can crack quartz if operated directly on the countertop without thermal insulation:

- Air fryers and countertop convection ovens.
- Electric crockpots / slow cookers (heat base conducts downward for 8 hours).
- Electric griddles, waffle makers, and panini presses.

Cookware / Appliance	Surface Temp	Safety Requirement
Frying Pan (off burner)	200°C – 280°C	Mandatory heavy trivet
Oven Baking Dish	180°C – 230°C	Mandatory heavy trivet
Slow Cooker Base	100°C – 140°C	Insulated cutting board under unit



CHEMICAL HAZARDS

Scratch Prevention & Chemical Hazards Blacklist

Cutlery cutting boards, Mohs hardness facts, and prohibited chemical compounds.

1. Scratch Resistance vs Cutting Boards

Sheen Quartz possesses a Mohs hardness of 6.5 to 7.0, making it harder than standard cutlery steel (Mohs 5.0 to 5.5). Normal food preparation knives will not scratch quartz; in fact, the hard quartz surface will dull fine knife blades.

However, ceramic chef's knives (zirconia, Mohs 8.5) and diamond sharpeners CAN scratch quartz. **Always use wooden or plastic cutting boards for food slicing.**

2. Prohibited Chemical Compounds

Exposure to aggressive chemicals will dissolve, bleach, or permanently pit the resin matrix. Rinse immediately with water if accidental contact occurs.

3. Prohibited Chemicals Blacklist

Chemical Hazard	Common Household Source
Methylene Chloride / Acetone	Paint strippers, furniture varnish removers
Sodium Hydroxide (Lye, pH > 13)	Caustic drain openers (Drano), oven cleaners
Hydrofluoric / Muriatic Acid	Masonry cleaners, rust removers
Concentrated Chlorine Bleach	Un-diluted commercial bleach (causes fading)
Trichloroethane / Solvents	Industrial degreasers, dry-cleaning fluids

CHEMICAL DAMAGE EXCLUSION

Surface pitting, clouding, or color fading caused by caustic drain cleaners, oven cleaners, or paint strippers is excluded from warranty coverage.



SURFACE RESTORATION

Minor Chip Repair with Color-Matched UV Resin

UV-curing acrylic flow resins, 395nm light cure, and razor flush shaving.

1. Field Chip Repair Dynamics

Impact from heavy dropped pots can occasionally chip the exposed edge of a quartz countertop. Small chips (under 10mm diameter) can be restored virtually invisibly using professional **color-matched UV-curing acrylic resin kits** (e.g., Himglitz, Tenax, Akemi Light Cure).

2. Step-by-Step Chip Restoration

- Clean the chipped cavity thoroughly with pure acetone on a Q-tip; let dry completely.
- Tint liquid UV-cure acrylic flow resin to match background stone shade.
- Apply resin into chip cavity, slightly overfilling the void.
- Place a clear curing strip film over the resin; flatten with fingertip.
- Expose to high-intensity 395nm UV LED curing light for **60 seconds** until rock hard.
- Peel off film; shave excess resin flush using a sharp single-edge razor at 30°.
- Polish lightly with 3000-grit diamond paste to blend gloss.

3. Professional Restorer Tools

Repair Kit Component	Function
UV-Cure Flow Resin	Fills chip cavity; zero shrinkage
Curing Strip Film	Oxygen barrier allowing full surface cure
395nm UV Curing Light	Triggers photo-initiator hardening in 60s
Diamond Micro-Polish Paste	Harmonizes repaired chip gloss level

CERTIFIED FABRICATOR SERVICE

Homeowners should not attempt chip repair with superglue or craft epoxy. Contact a certified Sheen fabricator for professional restoration.



LIFETIME CARE

Long-Term Surface Preservation & What Never to Do

Prohibited maintenance practices, annual inspection schedules, and homeowner handovers.

1. Long-Term Surface Integrity

When maintained according to this guide, Sheen Engineered Quartz countertops retain their rich color depth, mirror polish, and structural integrity for decades without deteriorating.

Unlike natural stone, which requires periodic stripping and resealing, quartz requires only basic housekeeping discipline.

2. What NEVER to Do — Summary

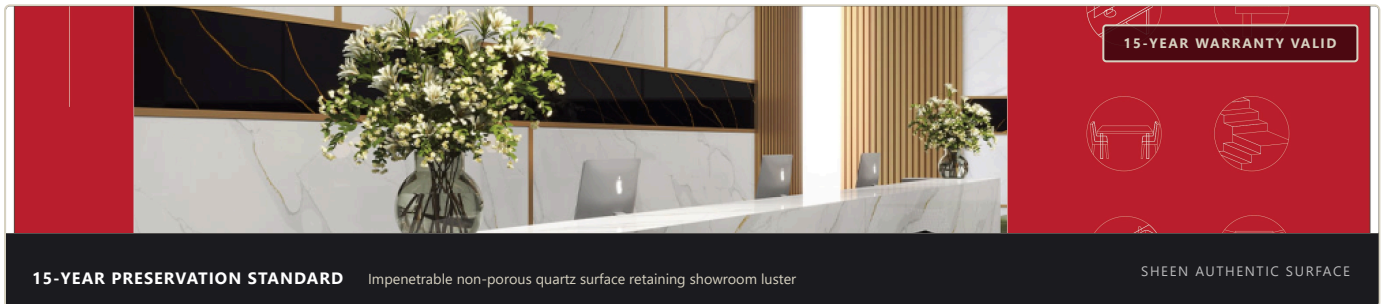
- **NEVER** apply penetrating stone sealers, wax, or linseed oil.
- **NEVER** place hot cookware directly on the surface without trivets.
- **NEVER** use abrasive scouring pads, pumice powder, or wire brushes.
- **NEVER** stand, sit, or kneel on countertops or island overhangs.
- **NEVER** use caustic oven cleaners, lye drain openers, or paint strippers.

3. Recommended Maintenance Schedule

Interval	Recommended Action
Daily	Wipe with warm water and neutral dish soap; dry with microfiber
Weekly	Inspect perimeter silicone caulk around sinks for seal integrity
Monthly	Deep clean with approved stone spray (e.g., Method Daily Granite)
Annually	Check undermount sink cradle bracket bolt tightness under cabinet

HOMEOWNER HANDOVER CARE CARD

Fabricators should leave a laminated Sheen Overseas Care Card with the homeowner upon completing installation.





SECTION 9 • FIELD TECHNICAL DIVISION

TROUBLESHOOTING, CHECKLISTS & WARRANTY

Shop troubleshooting, installation diagnostics, quality checklists, and 15-year warranty.

KEY TECHNICAL MODULES IN THIS SECTION:

- Master fabrication troubleshooting matrix for bridge saws and CNCs
- Master jobsite installation troubleshooting matrix
- Fabricator pre-cutting quality assurance checklist
- Jobsite client sign-off form and official 15-Year Surface Warranty terms



FEATURED QUARTZ: STARLIGHT WHITE • QUALITY INSPECTION & 15-YEAR WARRANTY



SHOP DIAGNOSTICS

Master Fabrication Troubleshooting Matrix

Blade chipping, blade binding, edge scorch, and inside corner crack remediation.

This master diagnostic matrix provides immediate corrective actions for common fabrication issues encountered during bridge sawing, CNC machining, and edge polishing.

Problem Encountered	Probable Root Cause	Immediate Corrective Action
Chipping on Bottom Edge of Cut	Blade feed rate too fast; blade glazed; saw bed timber uneven	Reduce feed rate by 30%; dress blade with abrasive brick; plane sacrificial wood bed flat.
Blade Pinching / Binding	Internal slab tension; blade lead angle out of square; arbor runout	Execute 20mm perimeter relief cuts first; align blade lead angle to 0.00°; check arbor runout (< 0.05mm).
Cloudy / Scorched Polish	Water flow insufficient; excessive hand pressure; dry buffing	Increase center-feed water flood; reduce hand polisher speed to 2,500 RPM; never dry polish.
Crack at Inside Corner	Sharp 90° square cut; saw overcut notch; lack of relief radius	SCRAP PART. Inside corner MUST be core drilled with minimum Ø 20mm bit (R ≥ 10mm). No overcuts.
Waterjet Cut Edge Taper	Feed rate too fast; jet stream lagging; nozzle orifice worn	Reduce feed rate to Q5 precision speed; replace mixing tube; engage 5-axis taper compensation.
White Streaks on Polished Edge	Black resin pad used on light quartz; resin transfer	Strip edge with 200-grit white pad. Re-polish using only WHITE or copper-matrix diamond pads.



JOBSITE DIAGNOSTICS

Master Installation Troubleshooting Matrix

Rocking countertops, seam lippage, sink separation, and dishwasher span support.

This diagnostic matrix addresses field installation challenges encountered during jobsite leveling, seaming, sink mounting, and post-installation inspections.

Installation Problem	Probable Root Cause	Field Resolution Protocol
Countertop Rocks on Cabinets	Base cabinets out of level (> 2mm over 2m span)	Lift top; shim base cabinets from floor level; verify with 2m straightedge before silicone bonding.
Visible Seam Lippage (> 0.1mm)	Uneven cabinet gables; mechanical seam clamp slipped	Re-level cabinet gables under joint; use vacuum seam setters with vertical leveling cams to pull flush.
Undermount Sink Drops / Gaps	Sink held only by silicone; no mechanical cradle brackets	Install lag-bolted steel sink cradle brackets or under-cabinet strapping supporting full sink weight.
Crack Over Dishwasher	No support over 600mm appliance void; steam heat	Install continuous rear wall ledger angle iron and side gable brackets across dishwasher cavity.
Caulk Pulling Away at Wall	Building settlement; rigid grout used instead of silicone	Remove old caulk; re-seal with 100% flexible neutral-cure mildew-resistant silicone soft joint.
Cantilever Island Deflection	Overhang exceeds unsupported limits; no steel plates	Install concealed 10mm steel support plates spaced maximum 600mm O.C. routed flush into subtop.



SHOP CHECKLIST

Fabricator Pre-Cutting Quality Checklist

10-point mandatory shop verification gate prior to bridge saw or CNC cutting.

Machine operators and quality inspectors must execute and sign this verification checklist before commencing bridge sawing or CNC machining on any Sheen Quartz slab order.

☐ Slab Barcode & Batch Number Matches Job Ticket	☐ Visual Inspection: No Surface Blemishes or Defects
☐ Thickness Gauge Checked with Digital Caliper	☐ Longitudinal Grain Direction Aligned with Drawing
☐ 20mm Perimeter Tension Relief Cuts Planned	☐ All Inside Corners Programmed with R ≥ 10mm
☐ Front & Rear Webbing Rails Measure ≥ 75mm	☐ Physical Sink & Cooktop Templates on Hand
☐ Blade Dressing Checked; Water Jets Flowing >20 L/min	☐ Transport Clamps (Sink Savers) Ready at Table

Shop Project ID: _____	Machine Operator Signature: _____	Date: __/__/2026
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HANDOVER SIGN-OFF

Jobsite Final Installation & Client Handover Form

Joint installer-client quality inspection, punch list resolution, and care handover.

Upon completing on-site installation, the lead installer and client (general contractor, interior designer, or homeowner) must inspect the installation together and execute this handover form.

☐ All Surfaces Cleaned & Free of Adhesive Haze

☐ All Seams Inspected: Width $\leq$ 1.5mm, Lippage $\leq$ 0.1mm

☐ Perimeter Silicone Soft Joints Complete & Smooth

☐ Undermount Sink Mechanically Supported

☐ Cooktop Thermal Gap & Foil Insulation Verified

☐ No Surface Scratches, Chips, or Cracks Present

☐ Laminated Homeowner Care Guide Handed Over

☐ Trivet Usage & No-Sealer Rules Explained to Client

CLIENT HANDOVER ACKNOWLEDGMENT

"I hereby confirm that I have inspected the completed quartz countertop installation. All pieces, seams, and edge profiles are accepted in pristine condition. I have received the official Sheen Overseas Care & Maintenance Guide."

Client Name: _____

Signature: _____

Date: __ / __ / 2026



WARRANTY CERTIFICATE

Official 15-Year Quartz Surface Warranty Terms

Official warranty wording from project policy, scope of coverage, exclusions, and claims.

1. Scope of 15-Year Warranty Coverage

Sheen Overseas Private Limited warrants to the original residential and commercial owner that installed engineered Quartz surfaces will be free from manufacturing structural defects and material delamination for a period of **15 years** from the date of initial installation.

This warranty applies strictly when surfaces are fabricated and fitted by certified stone fabricators following Sheen Overseas Official Installation Guidelines and cleaned using neutral pH non-abrasive detergents.

2. Warranty Exclusions

- Damage resulting from fabrication/installation non-compliance (sharp 90° inside corners, lack of overhang support, dry cutting).
- Thermal shock fractures caused by direct placement of hot pots or pans without trivets.
- Chemical damage caused by caustic drain cleaners, oven cleaners, or paint strippers.
- Exterior outdoor installations exposed to direct UV sunlight.

3. Official Warranty Certificate

15-YEAR SURFACE WARRANTY REGISTRATION	
Project / Owner:	_____
Installation Address:	_____
Slab Batch Number:	_____
Installing Fabricator:	_____
Installation Date:	___ / ___ / 2026

Register online at www.sheenoverseas.com/warranty/ within 90 days of installation.

Claims Service: In the event of a verified manufacturing defect, Sheen Overseas will, at its option, repair or replace defective quartz slabs on an FOB port basis.