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# Dekton Ultra Compact Surface – Technical Material Specification

## 1.0 Material Overview & Common Uses

Dekton is an ultra-compact sintered stone surface manufactured by Cosentino. It is produced using a proprietary TSP (Technology of Sintered Particles) process that combines a blend of quartz, porcelain, glass, and other raw materials, subjected to extreme heat and pressure. The result is a non-porous, highly durable material with exceptional resistance to UV, thermal shock, stains, scratches, and impact.

Common industrial and architectural applications include kitchen countertops, bathroom vanities, exterior cladding, flooring, furniture surfaces, and laboratory benchtops. Its low water absorption (<0.05%) and high flexural strength make it suitable for both indoor and outdoor use in demanding environments.

## 2.0 Core Technical Properties & Sizing

- Density: 2.45 g/cm<sup>3</sup> (nominal)
- Water absorption: <0.05% (ASTM C373)
- Flexural strength: 55 MPa (ASTM C880)
- Modulus of rupture: 55 MPa (ASTM C99)
- Abrasion resistance: 4.5 (PEI rating, ASTM C1027)
- Coefficient of thermal expansion:  $8.5 \times 10^{-6}$  /°C (ASTM E831)
- Thermal shock resistance: Pass (EN 14617-6)
- UV resistance: Excellent (no yellowing or fading per ASTM D2565)
- Standard slab dimensions: 3200 mm x 1440 mm (126" x 56.7")
- Standard thicknesses: 12 mm, 20 mm, 30 mm (tolerance ±0.5 mm)
- Flatness tolerance: ±0.5 mm over 1 m length (EN 14617-13)
- Hardness: 7 on Mohs scale (quartz-like)
- Fire rating: Class A1 (non-combustible per EN 13501-1)

## 3.0 Processing, Machinability & Application

Dekton is a hard, brittle material that requires diamond tooling for cutting, drilling, and shaping. It cannot be cut with standard carbide tools due to its high abrasiveness. Water-cooled CNC routers or bridge saws with diamond-impregnated blades are mandatory. Feed rates must be controlled to avoid chipping or thermal stress.

- Cutting: Use a continuous rim diamond blade (grit size 40/50) at 3000-4000 RPM with water cooling. Feed rate: 1-2 m/min for 20 mm thickness.
- Drilling: Diamond core bits (wet use) at 2000-3000 RPM. Apply constant water flow to prevent overheating. Pilot hole recommended for large diameters.
- Edge profiling: Diamond profile wheels (grit 60-120) with water cooling. Multiple passes recommended for polished finish.

- Seaming: Use two-part epoxy adhesive (e.g., Cosentino Dekton Adhesive) with a 0.5 mm joint gap. Clamp for 24 hours at 20°C. Cure time: 48 hours before full load.
- Welding/gluing: Not weldable. Adhesive bonding only. Surface must be clean, dry, and lightly abraded for optimal adhesion.
- Polishing: Diamond polishing pads (wet) from grit 50 to 3000. Final buff with cerium oxide for high gloss.
- Thermal forming: Not applicable. Material is not thermoformable.

#### 4.0 Common Defects & Quality Control

- Reject if visible cracks or fissures exceed 1 mm in length under normal lighting conditions.
- Reject if surface pitting (pin holes) exceeds 0.3 mm diameter or more than 3 pits per 100 cm<sup>2</sup>.
- Reject if colour variation exceeds  $\Delta E$  2.0 (CIE Lab) from approved standard sample.
- Reject if edge chipping exceeds 0.5 mm depth or 2 mm length on finished edges.
- Reject if slab is out-of-square by more than 1 mm per 1 m diagonal.
- Reject if thickness variation exceeds  $\pm 0.5$  mm across the slab.
- Reject if any delamination or blistering is detected by visual inspection or tap test.
- Acceptance criteria: All slabs must pass a 100% visual inspection under 1000 lux lighting at 1 m distance.

#### 5.0 Storage, Handling & WHMIS Guidelines

Dekton slabs are heavy and fragile. Proper storage and handling are critical to prevent breakage and injury. WHMIS classification applies primarily to dust generated during cutting and grinding, which contains crystalline silica (quartz).

- Storage: Store slabs vertically in A-frame racks with rubber or foam padding at contact points. Maximum stack height: 10 slabs per rack.
- Environmental conditions: Store in a dry, covered area. Temperature range: 5°C to 40°C. Avoid direct sunlight on stored slabs to prevent thermal stress.
- Shelf life: Indefinite when stored properly. No degradation over time.
- FIFO protocol: Not required for material properties, but recommended for inventory management to avoid colour lot variations.
- WHMIS classification: Crystalline silica (quartz) dust is classified as a hazardous substance under WHMIS 2015. Signal word: Danger. Hazard statements: H372 (causes damage to lungs through prolonged or repeated inhalation), H350 (may cause cancer by inhalation).
- PPE requirements: During cutting/grinding: N95 respirator (or half-face respirator with P100 filters), safety glasses with side shields, hearing protection (if noise >85 dBA), cut-resistant gloves (ANSI A4 or higher), and steel-toed boots.
- Handling: Use mechanical lifting equipment (suction cups or clamps) for slabs over 20 kg. Two-person lift for smaller pieces. Never drag slabs across each other.
- Spill/breakage: Broken pieces are sharp. Use heavy-duty gloves and a dustpan/broom. Dispose as construction debris per local regulations.
- First aid: For dust inhalation, move to fresh air. For eye contact, flush with water for 15 minutes. For cuts, clean and bandage. Seek medical attention if symptoms persist.

**Regulatory Disclaimer:** This document is a generic technical material specification provided for educational purposes. The end-user assumes all liability for reviewing, adapting, and validating all tolerances, properties, and safety protocols against specific OEM data sheets and local regulations before deployment.