WOQIN AERO-STONE: FLEXIBLE STONE THERMAL LAMINATE

TECHNICAL MASTER GUIDE & INSTALLATION PROTOCOL

(Exterior Facade & Premium Interior Edition)

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PART 1: SYSTEM PHILOSOPHY & DUAL-PATENTED ARCHITECTURE

1.1 Product Definition

Aero-Stone is a high-performance **Flexible Stone Thermal Laminate** that fuses authentic architectural stone textures with an ultra-efficient silica aerogel core. It is the ultimate solution for European "Heritage & Conservation" projects, providing radical thermal upgrades while maintaining the original building’s aesthetic and historical integrity.

1.2 The Dual-Patented Advantage: 3D Interpenetrating Network

Aero-Stone utilizes a **Dual-Patented System** characterized by an **in-situ penetration anchoring process**.

The Mechanism: During the manufacturing stage, the inorganic mineral slurry (MCM) is controlled to penetrate 0.5mm to 2.0mm into the nanoporous structure of the silica aerogel core.

The Result: This forms a **3D Interpenetrating Network**. The decorative facing and the insulation core are physically locked at a molecular level, offering bond strength that ensures zero delamination even under extreme thermal cycling.

1.3 Key Architectural Benefits

Extreme Weight Advantage: * Approx. 6 kg/m2 (for 13mm thickness).

Up to 8-10 kg/m2 (for thicker profiles).

(Compare to traditional 20mm stone cladding at 60-100 kg/m2).

Quantified Flexibility: For panels up to 13mm: Minimum bending radius of 200mm.

For thicker panels: Consult our technical team for custom curving.

PART 2: VERIFIED TECHNICAL DATA (SGS & GB/T STANDARDS)

All metrics are verified per international standards to ensure European building code compliance.

2.1 Thermodynamic Properties (Tested per GB/T 10295)

Thermal Conductivity (at 25°C):

Standard Grade: ≤ 0.020 W/mK.

Premium S-Class: ≤ 0.017 W/mK.

Target U-Value (Example): Upgrading a 225mm solid brick wall (Baseline U=2.10 W/m2K) with **Aero-Stone 23** can achieve an upgraded U-value of approx. **0.75 W/m2K**, saving 80% more space than traditional EPS systems.

2.2 Fire Safety & Reaction to Fire

MCM Decorative Facing: Class A2-s1, d0 (SGS Certified) – Non-flammable, zero toxic smoke.

Aerogel Core: Class A1 (Non-Combustible) – Inorganic silica base.

System Compliance: Engineered to meet A2/A1 requirements for EWI (External Wall Insulation) applications.

2.3 Mechanical & Hygrothermal Integrity

Density: 1702 kg/m3 (High-impact surface for hail and anti-vandalism protection).

Wind Pressure Resistance: High-performance bonding designed for extreme wind loads (Data available per project spec).

Water Absorption: 8.13% Average (SGS Verified).

Core Hydrophobicity: ≥ 99.7%.

PART 3: CONFIGURATION MATRIX

Product Designation	MCM Facing	Aerogel Core	Total Profile
Aero-Stone 13	3mm	10mm	**13mm**
Aero-Stone 18	3mm	15mm	**18mm**
Aero-Stone 23	3mm	20mm	**23mm**

PART 4: THE "ONE-STEP" REVOLUTION (LABOR ROI)

4.1 The Comparison

Traditional EWI requires a 5-layer wet-trade process (Insulation + Mesh + 2x Base coat + Primer + Paint).

Aero-Stone replaces this with a 1-Step factory-finished deployment.

4.2 Economic Impact

70% Labor Reduction: Eliminates multi-stage onsite rendering.

Site Velocity: A 2-week facade project is compressed into **48 hours**.

Interior IWI Advantage: For premium interiors, it provides a "Stone-Finish" feature wall that is **Zero-VOC** (when used with low-emission adhesives), requiring no plastering and no painting.

PART 5: STEP-BY-STEP ADHESIVE INSTALLATION PROTOCOL

Aero-Stone is engineered for rapid, full-bed adhesive bonding. This "One-Step" method eliminates the need for traditional base coats and fiberglass mesh.

Step 1: Substrate Readiness & Requirements

Surface Condition: The substrate (masonry, concrete, or existing render) must be structurally sound, dry, and clean.

Levelness: Surface deviation must be less than or equal to +/- 5mm per 2m. For significantly uneven walls, a leveling coat must be applied prior to installation.

Pull-off Strength: For retrofit projects, the minimum tensile bond strength of the existing substrate surface must be greater than or equal to 0.6 MPa.

Step 2: Adhesive Selection & Dosage Estimation

Technical Standard: Use a high-quality C2S1 or C2S2 Class cementitious polymer-modified adhesive (compliant with EN 12004). The S1/S2 rating ensures the adhesive bed can accommodate thermal expansion and contraction between the panel and the substrate.

Estimated Dosage: Approximately 4 to 6 kg/m2, depending on substrate roughness and notched trowel size.

Step 3: Bonding & Pressing Technique

Application: Use an 8mm to 10mm notched trowel to apply the adhesive to the wall. For exterior applications, we recommend the "back-buttering" method (applying a thin layer to the panel back) to ensure 100% full-bed coverage and prevent moisture-trapping cavities.

Curvature Application: Leverage the system’s flexibility for organic designs:

For panels less than or equal to 13mm: Minimum bending radius (R) greater than or equal to 200mm.

For thicker panels: Consult our technical team for custom bending protocols.

Step 4: Seamless Grouting (The Aesthetic Masterstroke)

Joint Width: A joint of 3mm to 5mm is recommended.

Exclusive Grout: Joints must be filled using Woqin Exclusive Color-Matched Grout. This grout is pigment-matched to your specific Aero-Stone batch, concealing seams and delivering a 100% monolithic, authentic stone/brick appearance.

Movement Joints: For exterior projects in extreme climates, use a modified silicone sealant with +/- 25% movement capacity at structural expansion joints.

PART 5.5: SPECIAL NOTE FOR PREMIUM INTERIORS (IWI)

When utilized for interior feature walls, Aero-Stone provides a high-end, "Dry-Trade" solution:

Zero-VOC Finishing: Combined with low-emission adhesives, the system requires no plastering and no painting, allowing for immediate occupancy after installation.

Instant Stone Texture: Delivers the haptic and visual quality of natural stone or historic brick without the weight or complexity of traditional masonry.

PART 6: SUPPLEMENTARY MECHANICAL ANCHORING (FOR HIGH-RISE)

In accordance with European safety standards (e.g., ETAG 004):

Building Height > 22 Meters: For installations exceeding 22m, mechanical anchoring is required as a secondary safety reserve.

Anchor Specification: Use stainless steel or high-durability resin anchors at a density of 4 to 6 anchors per m2.

Invisible Fixing: Anchors should be installed within the joint lines and subsequently covered by the color-matched grout to maintain aesthetic integrity.

Performance: Each anchor must achieve a minimum pull-out strength of greater than or equal to 0.6 kN from the substrate.

PART 7: BESPOKE HERITAGE REPLICATION SERVICE

To assist architects in securing approval from strict "Listed Building" or "Conservation Area" authorities, Woqin offers an elite customization service:

Digital Matching: Provide a high-resolution photo or physical fragment of an existing historic facade.

Up to 90% Visual Accuracy: Our laboratory will replicate the specific color palette, texture variance, and "weathering" effects, ensuring architectural continuity while delivering modern thermal efficiency.

PART 8: LOGISTICS, STORAGE & QA

8.1 Site Management

Storage: Store panels on level pallets, at least 100mm above ground level. Cover with a waterproof tarp to protect from direct rain and frost.

Edge Protection: Protect decorative edges from impact damage until the grouting process is complete.

8.2 Quality Acceptance Criteria

Adhesive Contact: Greater than or equal to 95% effective bonding area.

Surface Levelness: Less than or equal to 2mm deviation over a 2m straight edge.

Joint Consistency: +/- 1mm variance in grout line width.

LEGAL DISCLAIMER: All technical parameters and SGS performance data are based on independent laboratory testing. Actual on-site results may vary depending on substrate conditions, adhesive selection, and installer proficiency. All installations must comply with local building codes and HSE guidelines.

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