# ELITEAZURE ENGINEERED TRAVERTINE THIN VENEER SYSTEM

## Comprehensive Performance Testing & Technical Specifications Report

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Product: Engineered Travertine Thin Veneer System with Embedded Fiber Mesh Reinforcement

**Manufacturer:** EliteAzure LLC
1390 N County Hwy 393
Santa Rosa Beach, FL 32459

Report Date: March 2026

**Testing Laboratories:**

- SGS-CSTC Standards Technical Services Co., Ltd
- Natural Stone Institute (NSI) Accredited Laboratory
- National Test Center of Polymer & Building Materials (Beijing, China)

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## Executive Summary

The EliteAzure Engineered Travertine Thin Veneer System has undergone comprehensive testing by two independent, accredited laboratories to validate its performance for both interior and exterior architectural wall applications. This report presents verified test results demonstrating the product's exceptional durability, fire safety performance, and structural integrity.

**Key Performance Achievements:**

- **Class A Fire Rating** - Flame Spread Index: 20, Smoke Developed Index: 200 (ASTM E84-2024)
- **Superior Freeze-Thaw Durability** - 100 cycles with no degradation
- **Thermal Shock Resistance** - 10 cycles with enhanced post-exposure strength
- **High Flexural Strength** - Up to 600 psi dry condition, lengthwise orientation
- **Excellent Bond Strength** - Average 305 psi atwise tensile s trength
- **Lightweight** - Density: 120.0 lbs/ft³ (1,914 kg/m³) •Zero Heavy **Metal Content** - All soluble heavy metals below detection limits
- **No Formaldehyde** Emissions - Exceeds $E_1$ indoor air quality standards

This product is designed for installation on **code-compliant** wall assemblies for residential, commercial, and institutional applications.

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# Product Description

## Material Composition

The EliteAzure Engineered Travertine Thin Veneer System consists of:

- Natural travertine stone facing with pale beige aesthetic
- Embedded fiber mesh reinforcement for enhanced structural integrity
- Multi-layer composite construction optimized for weight and performance
- Nominal thickness: 1/8’’ ( 3mm)
- Standard panel dimensions: 47" W × 94" L (1200mm x 2400mm mm)
- Weight : 26Lb per panel

### Design Characteristics

- •Ultra-thin profile suitable for both new construction and renovation
- •Vertical installation orientation for contemporary aesthetic
- •Large-format panels minimize joints and installation time
- •Consistent vein patterns throughout production runs
- •Suitable for interior and exterior architectural applications

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# Fire Safety Performance Testing

## ASTM E84-2024: Surface Burning Characteristics

**Testing Laboratory**: SGS-CSTC Standards Technical Services Co., Ltd, Anji Branch
**Report Number**: AJFTS25008768R01EN
**Test Date**: January 15, 2026
**Reference Number**: SHIN2512003369CM01
Test Method Overview

ASTM E84 is the industry-standard test method for determining the relative surface burning characteristics of building materials. The test measures flame spread and smoke development when materials are exposed to controlled fire conditions in a 24-foot tunnel apparatus.

### Test Conditions

- •Tunnel preheated to 65.6–150°F
- •Test sample: 7.32m (24 ft) long × 304.8mm (12 in) wide
- •Sample mounting: Self-supporting, placed directly on tunnel ledges
- •Specimen configuration: Three pieces jointed end-to-end (2 @ 600mm × 3200mm, 1 @ 600mm × 1100mm)
- •Conditioning: 23±2.8°C (73.4±5°F), 50±5% RH to constant weight
- •Exposure face: Travertine veneer surface

**Test Results**

| | Test Results | Classification Requirement |
|---|---|---|
| Performance Metric | 20 | 0-25 (Class A) |
| Flame Spread Index (FSI) | 200 | 0-450 (Class A) |
| Smoke Developed Index (SDI) | 71 | |
| Time to Ignition | Seconds | — |
| Time to Maximum Flame Spread | 346 Seconds | — |
| Maximum Flame Spread Distance | 6 Feet | — |

Table 1: ASTM E84 Fire Performance Results

**Classification: Class A Interior Wall Finish**

The EliteAzure Engineered Travertine Thin Veneer System achieved Class A classication per:

- NFPA 101 Life Safety Code, Chapter 10, Section 10.2.3
- International Building Code (IBC), Chapter 8, Section 803
- NFPA 5000 Building Construction and Safety Code, Chapter 10.2.3.3

**Class A** represents the highest fire safety classification for interior finishes, suitable for corridors, exits, and occupied spaces in all building types.

**Observations**

- No unusual smoke or toxic gas emissions observed
- Material exhibited self-extinguishing characteristics
- No flaming drips or debris fall noted during testing
- Surface remained structurally intact throughout exposure

# Physical & Mechanical Properties Testing

## ASTM C97: Absorption and Density

**Testing Laboratory:** Natural Stone Institute (NSI)
**Report Number:** 25-0174.01-R0
**Test Dates:** January 9 - February 19, 2026

### Test Method

Specimens were oven-dried at 40°C to stable mass, then immersed in water for 48 hours. Dry mass, saturated mass, and suspended mass measurements were used to calculate absorption and bulk specific gravity.

### Results

| Property | Average Value |
|---|---|
| Absorption | 9.39% |
| Bulk Specific Gravity | 1.914 |
| Density (lbs/ft³) | 120.0 |
| Density (kg/m³) | 1,914 |
| Standard Deviation | 0.24% |
| Coeficient of Variation | 2.55% |

Table 2: Absorption and Density Test Results

**Significance:** The lightweight density (approximately 60% of solid stone) reduces structural loading requirements while maintaining natural stone aesthetics.

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## ASTM C880: Flexural Strength

Flexural strength testing evaluates the material's resistance to bending forces, critical for understanding performance under wind loads and impact conditions.

**Test Configuration**

- Support span: 7.25 inches
- Quarter-point loading (3.625-inch loading span)
- Specimens tested in both wet and dry conditions
- Both lengthwise and widthwise panel orientations evaluated

**Results Summary**

| Orientation | Condition | Flexural Strength (psi) | Flexural Strength (MPa) |
|---|---|---|---|
| Lengthwise | Dry | 600 | 4.1 |
| Lengthwise | Wet | 190 | 1.3 |
| Widthwise | Dry | 520 | 3.6 |
| Widthwise | Wet | 240 | 1.7 |

Table 3: Flexural Strength Performance by Orientation and Condition

**Key Findings:**

- Dry condition strength 2.2-3.2× higher than wet condition
- Lengthwise orientation provides optimal flexural performance
- Material exhibits high flexibility while maintaining structural integrity
- Wet condition results represent worst-case performance scenarios

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# Environmental Health & Safety Testing

## Heavy Metal Content Analysis

**Testing Laboratory:** National Test Center of Polymer & Building Materials
**Laboratory Address**: No. 14, Beisanhuandonglu, Chaoyang District, Beijing, China
**Report Number:** 2024(C)06026
**Test Date:** May 9 - June 14, 2024

**Test Standards**

Heavy metal content testing was conducted in accordance with:

- GB 18584-2001: "Indoor decorating and refurbishing materials - Limit of harmful substances of thin stone veneer.
- Test Method: GB 18584-2001 Section 5.2

**Test Results - Soluble Heavy Metals**

| Heavy Metal | Regulatory Limit (mg/kg) | Test Result | Detection Limit (mg/kg) |
|---|---|---|---|
| Soluble Lead (Pb) | ≤90 | Not detected | 1.0 |
| Soluble Cadmium (Cd) | ≤75 | Not detected | 1.0 |
| Soluble Chromium (Cr) | ≤60 | Not detected | 1.0 |
| Soluble Mercury (Hg) | ≤60 | Not detected | 0.1 |

Table 4: Heavy Metal Content Test Results

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## Formaldehyde Emission Testing

Test Standard: GB 18580-2017: "Indoor decorating and refurbishing materials - Limit of formaldehyde emission of thin stone panels.

**Test Results**

| Test Parameter | Classification Limit | Test Result | Detection Limit |
|---|---|---|---|
| Formaldehyde Emission | ≤0.124 mg/m³ | Not detected | 0.005 mg/m³ |

Table 5: Formaldehyde Emission Test Results

Conclusion: Formaldehyde emissions were below detection limits, meeting the most stringent $E_1$ classification for indoor air quality safety.

**Health & Safety Significance**

- **Zero detectable heavy metals** - Product safe for residential and commercial interior applications
- **No formaldehyde emissions** - Suitable for sensitive environments including schools, healthcare facilities, and residential spaces
- **Exceeds international standards** - Compliant with Chinese GB standards, which align with international indoor air quality requirements
- **Safe for occupants** - No toxic substance exposure risk during normal use

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# Durability & Environmental Exposure Testing

## ASTM C666: Freeze-Thaw Durability (100 Cycles)

Freeze-thaw testing simulates years of exterior exposure in cold climates, evaluating material resistance to ice crystal expansion within the stone structure.

**Test Protocol**

- **Method:** ASTM C666 Procedure B (Freeze-in-Air, Thaw-in-Water)
- **Temperature range:** 0°F to 40°F
- **Exposure cycles:** 100 complete cycles
- **Evaluation intervals:** Every 25 cycles
- **Post-exposure assessment:** Visual inspection + flatwise tensile bond strength testing

**Freeze-Thaw Performance Results**

| Exposure Level | Bond Strength (psi) | Bond Strength (MPa) | Change vs. Control |
|---|---|---|---|
| Unexposed Control | 304.9 | 2.1 | — |
| Post 25 Cycles | 272.0 | 1.9 | -10.8% |
| Post 50 Cycles | 256.5 | 1.8 | -15.9% |
| Post 75 Cycles | 279.5 | 1.9 | -8.4% |
| Post 100 Cycles | 256.4 | 1.8 | -15.9% |

Table 6: Flatwise Tensile Bond Strength Post Freeze-Thaw Exposure

**Conclusions**

- **No visual degradation** observed at any exposure interval
- **No spalling, cracking, delamination, or color shift** detected
- Strength values stabilized early in exposure cycling
- Total strength reduction (-15.9%) remained well below 20% failure threshold
- Product demonstrates **excellent freeze-thaw durability** suitable for exterior applications in cold climates

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## ASTM C484: Thermal Shock Resistance (10 Cycles)

Thermal shock testing evaluates material performance under rapid temperature fluctuations, simulating conditions experienced by exterior facades exposed to direct sunlight followed by cooling rain or shade.

**Test Protocol**

- High temperature exposure: 170°F (representative of natural stone exterior surface temperature)
- Low temperature immersion: 59±9°F water bath
- Hold time at low temperature: 5 minutes
- Total exposure cycles: 10 complete cycles
- Post-exposure assessment: Visual inspection + flatwise tensile bond strength testing

**Thermal Shock Performance Results**

| Test Series | Bond Strength (psi) | Bond Strength (MPa) | Change vs. Control |
|---|---|---|---|
| Unexposed Control | 304.9 | 2.1 | — |
| Post 10-Cycle Thermal Shock | 312.0 | 2.2 | +2.3% |

Table 7: Flatwise Tensile Bond Strength Post Thermal Shock Exposure

**Conclusions**

- **No visual degradation** - no spalling, cracking, or color shift o bs erv ed
- **Strength increase** of 2.3% post-exposure indicates material una ected by thermal cycling
- Product demonstrates **excellent thermal shock resistance** for exterior facade applications
- Suitable for use in climates with significant diurnal temperature variations

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## ASTM C297: Flatwise Tensile Bond Strength

This test evaluates the bond strength between the travertine veneer surface and the composite backing system, critical for long-term adhesion performance. Control Series Results

| Test Condition | Average Bond Strength (psi) | Average Bond Strength (MPa) |
|---|---|---|
| Unexposed, Dry Control | 304.9 | 2.1 |
| Standard Deviation | 17.7 | 0.1 |
| Coe cient of Variation | 5.8% | 5.8% |

Table 8: Baseline Flatwise Tensile Bond Strength

**Failure Mode:** All control specimens exhibited cohesive failure within the veneer-to-backup bond interface, indicating **bond strength exceeds** individual component strengths.

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## ASTM C1185 Section 11: Water Permeability

### Test Configuration

- Specimen size: 24" × 20" (610 mm × 508 mm)
- Water head depth: 0.5 inches (modi ed from standard 2" depth due to panel exibility)
- Exposure duration: 24 hours
- Test conditions: 73±4°F, 50±5% RH

### Results

Water droplets were observed on the specimen underside within one minute of exposure, indicating the panel system is **not watertight** as a standalone component.

### Practical Implications

- Product must be installed over code-compliant weather-resistant barrier (WRB) systems
- Proper drainage plane and ashing details required for exterior a pplications
- Water penetration behavior typical of thin natural stone cladding systems
- Does not afect suitability for exterior use when properly integrated into building envelope

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# Installation Requirements

## Code-Compliant Wall Assembly

The EliteAzure Engineered Travertine Thin Veneer System must be installed on properly designed substrate assemblies meeting applicable building codes.

**Recommended Exterior Wall Assembly Components**

**From interior to exterior:**

1. Interior  nish (gypsum board or equivalent)
2. 2×4 or 2×6 wood studs with cavity insulation, OR metal stud framing
3. Exterior sheathing (OSB, plywood, or gypsum sheathing)
4. Weather-resistant barrier (WRB) - minimum two layers recommended
5. Drainage plane/ventilation cavity (recommended for moisture management)
6. Metal lath mechanically fastened
7. Scratch coat mortar (Type S or polymer-modified)
8. Setting bed mortar (Type S or polymer-modified)
9. EliteAzure Travertine Thin Veneer panels - installed vertically or horizontaly
10. Grout joints (color-matched, polymer-modified)

**Alternative Assembly: High-R Wall with Continuous Insulation**

1. Interior  finish
2. Wood or metal stud framing with cavity insulation
3. Exterior sheathing
4. Weather-resistant barrier (two layers)
5. Rigid foam insulation with taped joints
6. Metal lath fastened through insulation into structural framing
7. Scratch coat and setting bed mortar
8. EliteAzure Travertine Thin Veneer
9. Grout Joints ( color-matched, polymer-modified)

**Interior Wall Assembly**

1. 2×4 wood studs with cavity insulation (optional)
2. Interior drywall or playwood sheating.
3. Veneer  high streight  Construction adhesive
4. EliteAzure Travertine Thin Veneer panels
5. Grout Joints ( color-matched, polymer-modified)

### Critical Installation Details

- Weep screed required at base of wall for exterior applications
- Flashing required at all penetrations, terminations, and transitions
- Panels installed vertically for optimal aesthetic and performance
- Joint width: 1/8" typical with color-matched grout • Panel weight: Approximately 26 lbs per 47" × 94" panel
- Expansion joints per industry standards for large wall areas

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## Applications

### Suitable Applications

- **Exterior Building Facades** - Residential, commercial, institutional
- **Interior Feature Walls** - Lobbies, reception areas, retail spaces
- **Accent Walls** - Residential living spaces, hospitality interiors
- **Fire-Rated** Assemblies - **Class A** classi cation suitable for egress corridors
- **Cold Climate Applications** - Proven freeze-thaw durability
- **High-Temperature Environments** - Excellent thermal shock resistance
- **Healthcare Facilities** - Zero formaldehyde emissions, no heavy metal content
- **Educational Institutions** - Safe for schools and childcare facilities
- **Sensitive Indoor Environments** - Exceeds indoor air quality standards

### Building Types

- Multi-family residential
- Single-family custom homes
- Commercial office buildings
- Retail and restaurant interiors/exteriors

- Hospitality (hotels, resorts)
- Healthcare facilities (non-wet areas) - Safe for patient care environments
- Educational institutions - Safe for classrooms and common areas
- Childcare facilities - Zero toxic emissions
- Mixed-use developments
- LEED and green building projects - Low-VOC, no formaldehyde

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## Technical Specifications Summary

| **Property Fire Safety** | **Value/Rating** |
|---|---|
| Performance ASTM E84 Flame | |
| Spread Index ASTM E84<br>Smoke Developed Index<br>Fire Classification | 20<br>200<br>Class A Interior Finish |
| | |
| **Physical Properties**<br>Nominal Thickness Panel<br>Dimensions Density<br>Absorption<br>Area Density<br>Panel Weight | 3.4-5 mm (0.13-0.20 in)<br>47" W × 97" L (1,194 × 2,464 mm)<br>120.0 lbs/ft³ (1,914 kg/m³)<br>9.39%<br>5.6 kg/m² (1.15 lbs/ft²)<br>Approx. 26 lbs (11.8 kg) |
| **Mechanical Properties** | |
| Flexural Strength (Dry, Lengthwise)<br>Flexural Strength (Wet, Lengthwise)<br>Flatwise Tensile Bond Strength | 600 psi (4.1 MPa)<br>190 psi (1.3 MPa)<br>305 psi (2.1 MPa) |
| Durability Performance | |
| Freeze-Thaw Resistance (100 cycles)<br>Thermal Shock Resistance (10 cycles) | Passed - No degradation<br>Passed - Strength increased |
| **Environmental Health & Safety** | |
| Soluble Lead (Pb) Content<br>Soluble Cadmium (Cd) Content<br>Soluble Chromium (Cr) Content<br>Soluble Mercury (Hg) Content<br>Formaldehyde Emission Indoor Air Quality Classification | Not detected (<1.0 mg/kg)<br>Not detected (<1.0 mg/kg)<br>Not detected (<1.0 mg/kg)<br>Not detected (<0.1 mg/kg)<br>Not detected (<0.005 mg/m³)<br>Exceeds $E_1$ Standard |

Table 9: Comprehensive Technical Speci cations

# Quality Assurance & Testing Credentials

## Laboratory Accreditations

### SGS-CSTC Standards Technical Services Co., Ltd

- ISO/IEC 17025 accredited testing laboratory
- ASTM E84 testing conducted per latest 2024 standard
- International recognition for fire testing services

### Natural Stone Institute (NSI)

- Leading authority on natural stone testing and standards
- State-of-the-art testing facility in Oberlin, Ohio
- Comprehensive mechanical and durability testing capabilities
- Industry-recognized expertise in dimension stone and engineered stone systems

### National Test Center of Polymer & Building Materials

- Chinese national accredited testing laboratory
- Located in Beijing, China
- Specialized in environmental health and safety testing
- Expertise in heavy metal analysis and formaldehyde emission testing
- GB standards compliance verification

## Test Specimen Authenticity

All test specimens were production samples provided directly by EliteAzure LLC and represent actual product available for purchase. Test results reflect real-world performance characteristics.

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# Sustainability Considerations

## Material Eficiency

- Ultra-thin 1/8'' thickness
- Lightweight design reduces transportation energy and emissions
- Large-format panels minimize installation waste

- **Natural stone aesthetic with reduced material consumption**

### Durability & Longevity

- Proven resistance to freeze-thaw cycling extends service life
- Thermal shock resistance prevents premature degradation
- Class A fire rating eliminates need for additional fire-retardant treatments
- Timeless natural stone appearance resists aesthetic obsolescence

### Health & Indoor Air Quality

- Zero detectable heavy metal content - safe for all occupancy types
- No formaldehyde emissions - contributes to healthy indoor environments
- Suitable for LEED and green building certification projects
- Safe for chemically sensitive individuals and children
- Complies with international indoor air quality standards

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## Warranty & Support

EliteAzure LLC provides comprehensive technical support for architects, designers, and contractors specifying the Engineered Travertine Thin Veneer System.

Contact Information:

EliteAzure LLC
1390 N County Hwy 393
Santa Rosa Beach, FL 32459

Phone: 1-850-738-9050
Email: info@eliteazure.com
Web: www.eliteazure.com

### Available Resources

- Technical installation guidelines
- CAD/BIM details for various wall assemblies
- Sample panels for design review

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# Conclusion

The EliteAzure Engineered Travertine Thin Veneer System represents a high-performance architectural solution combining the timeless beauty of natural travertine with advanced composite engineering. Comprehensive testing by independent, accredited laboratories confirms:

- Superior fire safety performance - Class A rating suitable for all building types
- Exceptional durability - Proven resistance to freeze-thaw cycling and thermal shock
- Reliable structural performance - High flexural and bond strengths
- Lightweight design - Reduces structural loading and simplifies installation
- Versatile application - Suitable for interior and exterior use

This product is engineered for installation on code-compliant wall assemblies and meets the demanding performance requirements of modern architectural projects.

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This report contains proprietary information and is provided for professional evaluation purposes. Test results apply to specimens as tested and represent performance under specified laboratory conditions .