



## Senergy Adhered Veneer Surfacing for Concrete and Masonry Units Section – 04 43 13.16 or 04 70 00

Weather resistant surfacing system incorporating a Senergy air/water-resistive barrier and adhered veneer finish.

### INTRODUCTION

This specification refers to application of the Senergy Adhered Veneer Surfacing over concrete and concrete masonry units (CMU) walls.

### DESIGN RESPONSIBILITY

It is the responsibility of both the specifier and the purchaser to determine if a product is suitable for its intended use. The designer selected by the purchaser shall be responsible for all decisions pertaining to design, detail, structural capability, attachment details, shop drawings and the like. The Senergy® brand of Sika Corporation US (herein referred to as “Sika”) has prepared guidelines in the form of specifications, typical application details, and product bulletins to facilitate the design process only. Sika is not liable for any errors or omissions in design, detail, structural capability, attachment details, shop drawings or the like, whether based upon the information provided by Sika or otherwise, or for any changes which the purchasers, specifiers, designers or their appointed representatives may make to Sika published comments.

The International Building Code and TMS 402/602 *Building Code Requirements and Specification for Masonry Structures* do not place a specific height limit on this application. However local building code may impose certain restrictions that would limit the height that the system can be placed. Consult the authority having jurisdiction (AHJ) for the project to ensure local requirements are satisfied.

### Design and Detailing a Senergy Adhered Masonry Venerer Surfacing System

General: The system shall be installed in strict accordance with current recommended published details and product specifications from the system’s manufacturer.

#### A. Substrate Systems:

1. Acceptable substrates are Concrete Masonry Units (excluding fluted block; split faced block should be assessed on project by project basis) brick and concrete walls.
2. Painted and otherwise coated surfaces should be inspected and prepared as approved by Sika before application. The applicator shall verify that the proposed substrate is acceptable prior to the Senergy Adhered Veneer Surfacing System installation. Perform field adhesion tests as required.

#### B. System Joints:

1. It is the sole responsibility of the project design team, including the architect, engineer, etc., to ultimately determine specific expansion joint placement, width and design. Detail specific locations in construction drawings.
2. Sealant joints are required at all penetrations through the Senergy System.
3. For a list of acceptable sealants refer to *Acceptable Sealants for use with Senergy Wall Systems* technical bulletin.

**C. Grade Condition:** The Senergy Surfacing System is not intended for use below grade or on surfaces subject to continuous or intermittent immersion in water or hydrostatic pressure. Per NCMS/MSV guide for installation of adhered manufactured stone veneer - maintain a 2” (51 mm) clearance from grade or ½” (13 mm) from a paved surface provided that frost heave of adjacent surfaces is taken into consideration.

### TECHNICAL INFORMATION

Consult Sika Facades’ Technical Services Department for specific recommendations concerning all other applications. Consult the Senergy website, [usa.sika.com/senergy](http://usa.sika.com/senergy), for additional information about products, systems, and updated literature.

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## PART 1 GENERAL

**NOTE TO SPECIFIER:** Items in blue/underlined indicate a system option or choice of options. Throughout the specification, delete those which are not required or utilized.

### 1.01 SECTION INCLUDES

- A. Senergy products are listed in this specification to establish a standard of quality. Any substitutions to this specification shall be submitted to and receive approval from the Architect at least 10 days before bidding. Proof of equality shall be borne by the submitter.
- B. Senergy Adhered Veneer Surfacing System: consisting of Senergy air/water-resistive barrier and SIKAWALL MAXGRIP Veneer Adhesive.

### 1.02 RELATED SECTIONS

- A. Products installed, but not supplied under this section: substrate, flashing and sealant.

### 1.03 SUBMITTALS

- A. Submit under provisions of Section [01 33 00] [x].
- B. Product Data: Provide data on Senergy Adhered Veneer Surfacing System materials, product characteristics, performance criteria, limitations and durability.
- C. Certificate: System manufacturer's approval of applicator.
- D. Sealant: Sealant manufacturer's certificate of compliance with ASTM C1382.
- E. System manufacturer's current specifications, typical details, system overview and related product literature which indicate preparation required, storage, installation techniques and jointing requirements.

### 1.04 QUALITY ASSURANCE

- A. Manufacturer: More than 10 years in the industry, with more than 1000 completed projects.
- B. Applicator: Approved by Sika in performing work of this section.
- C. Regulatory Requirements: Conform to applicable code requirements resurfacing system.
- D. Field Samples:
  1. Provide under provisions of Section [01 43 36] [01 43 39].
  2. Prepare each sample panel using the same tools and techniques to be used for the actual application.
  3. Locate sample panel where directed.
  4. Accepted sample panel [may] [may not] remain as part of the work.
- E. Testing:
  1. General Air/Water-Resistive Barrier Minimum Performance:

TEST	METHOD	CRITERIA	RESULTS
Water-resistive barrier coatings used under EIFS	ASTM E2570		Meets all performance requirements
Air Leakage of Air Barrier Assemblies	ASTM E2357	0.2 l/(s.m <sup>2</sup> ) @75 Pa (0.04 cfm/ft <sup>2</sup> @ 1.57 psf)	0.0007 l/s.m <sup>2</sup> (0.0001 cfm/ft <sup>2</sup> ) @ 75 Pa (1.57 psf) positive / post conditioning 0.0014 l/s.m <sup>2</sup> (0.0003 cfm/ft <sup>2</sup> ) @ 75 Pa (1.57 psf) negative / post conditioning
Air Permeance of Building Materials	ASTM E2178	0.02 l/(s.m <sup>2</sup> ) @75 Pa (0.004 cfm/ft <sup>2</sup> @ 1.57 psf)	0.0049 l/s.m <sup>2</sup> @ 75 Pa (0.00098 cfm/ft <sup>2</sup> @ 1.57 psf)
Rate of Air Leakage	ASTM E283		0.0185 l/s.m <sup>2</sup> @ 75 Pa (0.0037 cfm/ft <sup>2</sup> @ 1.57 psf)
Water Vapor Transmission	ASTM E96	Report value	Senershield-R - 18 Perms (grains/Hr. in Hg. ft <sup>2</sup> ) @ 10 mils wet film thickness Senershield-RS 18 Perms (grains/Hr. in Hg. ft <sup>2</sup> ) @ 12 mils wet film thickness Senershield-R/RS - 14 Perms (grains/Hr. in Hg. ft <sup>2</sup> ) @ 20 mils wet film thickness Senershield-VB - 0.09 Perms (grains/Hr. in Hg. ft <sup>2</sup> ) @ 26 mils wet film thickness
Pull-Off Strength of Coatings	ASTM D4541	Min. 110 kPa (15.9 psi) or substrate failure	Pass - Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood; PVC and galvanized flashing

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Nail Sealability (without Sheathing Fabric)	ASTM D1970	No water penetration at galvanized roofing nail penetration under 127 mm (5") head of water after 3 days at 4° C (40° F)	Pass
Surface Burning	ASTM E84	Flame Spread < 25 Smoke Development < 450	Meets Class A: Flame spread =15 Smoke developed = 95

### 2. Air/Water-Resistive Barrier ICC-ES AC-212:

TEST	METHOD	CRITERIA	RESULTS
Sequential Testing: 1. Structural 2. Racking 3. Restrained Environmental Conditioning 4. Water Penetration	1. ASTM E 1233 Procedure A 2. ASTM E 72 3. ICC-ES AC-212 4. ASTM E 331	No cracking at joints or interface of flashing No water penetration after 15 min @ 137 Pa (2.86 psf)	Pass - Tested over OSB and gypsum sheathing No water penetration after 90 min @ 299 Pa (6.24 psf)
Sequential Testing: 1. UV Light Exposure 2. Accelerated Aging 3. Hydrostatic Pressure Test	1. ICC-ES AC-212 2. ICC-ES AC-212 3. AATCC 127-1985	No cracking or bond failure to substrate No water penetration after 21.7 in (550 mm) water for 5 hours	Pass
Freeze-Thaw	ASTM E 2485 (Method B)	No sign of deleterious effects after 10 cycles	Pass - Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood
Water Resistance	ASTM D2247	No deleterious effects after 14 day exposure	Pass - Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood
Tensile Bond	ASTM C 297	Minimum 103 kPa (15 psi)	Pass - Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood, CMU; PVC and galvanized flashing
Tensile Bond (after freeze-thaw)	ASTM C 297	Minimum 103 kPa (15 psi) avg; no failure after 10 cycles freeze-thaw	Pass

### 3. Air/Water-Resistive Barrier ICC-ES AC 148:

TEST	METHOD	CRITERIA	RESULTS
Sequential Testing: A. UV Light Exposure B. Accelerated Aging C. Hydrostatic Pressure Test	1. ICC-ES AC 148 2. ICC-ES AC 148 3. AATCC 127-1985	No cracking or bond failure to substrate No water penetration after 21.7 in (550 mm) water for 5 hours	Pass
Peel Adhesion	ASTM D 3330 Method F	After UV Exposure After Accelerated Aging After Elevated Temperature Exposure After Water Immersion	Pass - tested over ASTM C1177 glass-mat sheathing, OSB, plywood, PVC and uncoated aluminum
Nail Sealability after Thermal Cycling	ASTM D 1970 (Modified), AAMA 711	No water penetration at galvanized roofing nail penetration under 31 mm (1.2") head of water after 24 hours at 4° C (40° F)	Pass
Tensile Strength after UV Exposure	ASTM D 5034, AAMA 711	Minimum 0.5 N/mm (2.9 lbs/in)	Pass
Cold Temperature Pliability	ASTM D 1970, AAMA 711	No cracking after bending around a 25 mm (1") mandrel after 2 hour exposure to -18° C (0° F)	Pass
Resistance to Peeling	AAMA 711	No signs of distress or failure after 24 hours of exposure at room temperature, 50° C (122° F), 65° C (149° F), 80° C (176° F)	Pass

### 4. MAXGRIP VENEER ADHESIVE:

TEST	METHOD	CRITERIA	RESULTS
Compressive Strength	ASTM C 109	N/A	4000 psi
Freeze-Thaw	ASTM C 666	Procedure A- cycles rapid freezing and thawing in water. 40°F - 0°F - 40°F in not less than 2 hours and not more than 5 hours;	> 100 cycles, no failure of MaxGrip

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		modified using full IVS composite in place of concrete beam	
Shear Strength	ANSI 118.4	28 days $\geq$ 200 psi After 7 day water immersion $\geq$ 150 psi	565 psi at 28 days 306 psi after 7 day water immersion
Shear Strength	ANSI A118.15	7 days $\geq$ 300 psi 28 days $\geq$ 400 psi After 7 days water immersion $\geq$ 200 psi	487 psi at 7 days 565 psi at 28 days 306 psi after 7 day water immersion
Shear Bond	ASTM C482	Minimum 50 psi	130 psi - Directly to molded cement mortar bed specified in ASTM  151 psi and 141 psi respectively - to Senergy Alpha Base Coat and Alpha Dry Base Coat over molded cement mortar bed specified in ASTM C482.

### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle products under provisions of Section [01 65 00] [01 66 00] [ ].
- B. Deliver Sika materials in original unopened packages with manufacturer's labels intact.
- C. Protect Sika materials during transportation and installation to avoid physical damage.
- D. Store Sika materials in a cool, dry place protected from freezing. Store at no less than 40°F/4°C.
- E. Store SIKAWALL MAXFLASH at a minimum of 40°F. In cold weather, keep containers at room temperature for at least 24 hours before using.
- F. Store SIKAWALL SHEATHING FABRIC and SIKAWALL FLASH SEAL NP flexible flashing in a cool, dry place protected from exposure to moisture.

### 1.06 PROJECT/SITE CONDITIONS

- A. Do not apply SIKAWALL MAXGRIP in ambient temperatures below 40°F/4°. Provide properly vented, supplementary heat during installation and drying period when temperatures less than 40°F/4°C prevail. Do not apply in ambient temperature above 100°F (38°C) or surface temperature above 120°F (49°C).
- B. Do not apply materials to frozen surfaces.
- C. Maintain ambient temperature at or above 40°F/4°C during and at least 24 hours after material installation and until dry.

### 1.07 SEQUENCING AND SCHEDULING

- A. Coordinate and schedule installation of Senergy Adhered Veneer Surfacing System with related work of other sections.
- B. Coordinate and schedule installation of trim, flashing, and joint sealers to prevent water infiltration behind the existing system.
- C. Coordinate and schedule installation of windows, doors, A/C units, air seals etc. if being removed and replaced.

### 1.08 WARRANTY

- A. Provide Sika standard warranty for the Senergy Adhered Veneer Surfacing System installations under provisions of Section [01 07 00].
- B. Comply with Senergy application instructions and notification procedures to assure qualification for warranty.

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS

- A. Senergy Adhered Veneer Surfacing System manufactured by Sika Corporation US.

### 2.02 MATERIALS

(NOTE TO SPECIFIER: Items in blue/underlined indicate a system option or choice of options. Throughout the specification, delete those which are not required or utilized. Contact Sika

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## Facades' Technical Service Department for further assistance.)

### **A. Air/Water-Resistive Barrier Components:**

1. Air/Water-Resistive Barrier: **(Required, Select a, b or c)**
  - a. [SENERSHIELD-R: A one-component fluid-applied vapor permeable air/water-resistive barrier.](#)
  - b. [SENERSHIELD-RS: A one-component fluid-applied vapor permeable air/water-resistive barrier for use with airless spray equipment.](#)
  - c. [SENERSHIELD-VB: A one-component fluid-applied vapor impermeable air/water-resistive barrier.](#)
2. Rough Opening and Joint Treatment: **(Required for rough openings if wood blocking is present)**
  - a. [SIKAWALL SHEATHING FABRIC: A spun-bonded non-woven reinforced polyester web for use with Senergy fluid applied air/weather-resistive barriers.](#)

**B. SIKAWALL MAXGRIP VENEER ADHESIVE:** A high-strength specially formulated adhesive used to fasten manufactured stone, ceramic tile and thin brick.

### **C. Adhered Veneer (By Other):**

1. Manufactured Stone Veneer Units: shall comply with ICC-ES AC51 Acceptance Criteria Adhered Manufactured Stone Masonry Veneer or ASTM C1670 Standard Specification for Adhered Manufactured Stone Masonry Veneer Units.
2. Thin Brick Veneer Units: shall comply with ASTM C1088 Standard Specification for Thin Veneer Brick Units Made from Clay or Shale.
3. Tile: shall comply with requirements of the Tile Council of North America/ANSI A137.1 Standard for Ceramic Tile and other applicable TCNA standards.
4. Pointing mortar (as applicable): per the adhered veneer manufacturers recommendations for the specific veneer installed.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A.** Examine surfaces to receive Senergy Adhered Veneer Surfacing System and verify that substrate and adjacent materials are dry, clean, cured, sound and free of releasing agents, paint, or other residue or coatings. Verify substrate surface is flat, free of fins or planar irregularities greater than 1/4" in 10' (6.4 mm in 3 m).
- B.** Ensure adhesion tests meet the requirements listed in the *Basics of Conducting Adhesion Testing Senergy* technical bulletin.
- C.** Fill large voids and irregularities with appropriate parging or cement mortar materials.
- D.** Control/expansion joint type and placement shall be the responsibility of the architect/engineer and substrate manufacturer.
- E.** Unsatisfactory conditions shall be reported to the general contractor and corrected before application of the Senergy Adhered Veneer Surfacing System.

### **3.02 PREPARATION**

- A.** All surfaces to receive Senergy Adhered Veneer Surfacing System components must be clean, dry and free of airborne contaminants.
- B.** Protect all surrounding areas and surfaces from damage and staining during application of Senergy Adhered Veneer Surfacing System.
- C.** Protect finished work at end of each day to prevent water penetration.

### **3.03 MIXING**

General: No additives are permitted unless specified in product mixing instructions. Close containers when not in use. Prepare in a container that is clean and free of foreign substances. Do not use a container which has contained or been cleaned with a petroleum-based product. Clean tools with soap and water immediately after use.

**NOTE TO SPECIFIER: Keep only the products in this section which were selected in Section 2.02. Delete those not to be utilized.**

### **A. Air/Water-Resistive Barriers:**

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1. SENERSHIELD-R/RS/VB: Mix with a clean, rust-free paddle and drill until thoroughly blended. Do not add water.

### B. SIKAWALL MAXGRIP VENEER ADHESIVE:

1. Skim Coat: Prepare to mix one bag in a 5-gallon (19-liter) pail that is clean and free of foreign substances. 1.0 - 1.25 gallons (3.8 - 4.7 liters) of clean, potable water to a pail. Add a full bag of MAXGRIP VENEER ADHESIVE to the pail in small increments, mixing after each addition. Mix with a low speed drill with a 4-sided mortar paddle until thoroughly blended. Let stand for 5 to 10 minutes, then remix/retemper for 1 minute before use.
2. Light Weight Adhered Veneer such as Thick Brick: Prepare to mix one bag in a 5-gallon (19-liter) pail that is clean and free of foreign substances. Add 1.0 - 1.25 gallons (3.8 - 4.7 liters) of clean, potable water to a pail. Add a full bag of MAXGRIP VENEER ADHESIVE to the pail in small increments, mixing after each addition. Mix with a low speed drill with a 4-sided mortar paddle until thoroughly blended. Additional water may be added to adjust workability, do not exceed 1.25 gallons. Let stand for 5 to 10 minutes, then remix / retemper for 1 minute before use. The mixed material should have a thick putty consistency and not slide off the trowel when held vertically.
3. Heavy Stone and Tile: Prepare to mix one bag in a 5-gallon (19-liter) pail that is clean and free of foreign substances. Add 0.75 - 1.0 gallons (2.8 - 3.8 liters) of clean, potable water to a pail. Add a full bag of MAXGRIP VENEER ADHESIVE to the pail in small increments, mixing after each addition. Mix with a low speed drill with a 4-sided mortar paddle until thoroughly blended. Additional water may be added to adjust workability, do not exceed 1 gallon. Let stand for 5 to 10 minutes, then remix / retemper for 1 minute before use. The mixed material should have a thick putty consistency and not slide off the trowel when held vertically.

### 3.04 APPLICATION

**NOTE TO SPECIFIER: Keep only the products in this section which were selected in Section 2.02. Delete those not to be utilized.**

#### A. Air/Water-Resistive Barriers:

1. Windows/openings must be protected, and the air/water-resistive barrier applied in accordance with published SENERSHIELD product data guide and details.
2. Substrate shall be dry, clean, sound, and free of releasing agents, paint, or other residue or coatings. Verify substrate is flat, free of fins or planar irregularities greater than ¼" in 10' (6.4 mm in 3 m).
3. Unsatisfactory conditions shall be corrected before application of the Senergy air/water-resistive barriers.
4. Apply the SIKAWALL SHEATHING FABRIC and Senergy air/water-resistive barrier in accordance with the Senergy air/water-resistive barrier technical data guide and details.
5. Installed materials shall be checked before continuing system application.

#### B. SIKAWALL MAXGRIP VENEER ADHESIVE:

**Note: MAXGRIP shall be applied and veneer installed such that the MAXGRIP is free of voids. Allow MAXGRIP to cure for 24-hours before applying pointing mortar.**

Prior to installing the adhered veneer, apply MAXGRIP VENEER ADHESIVE as a skim coat over the Senersshield coated substrate at approximately 1/6" (1.6mm) thick. Apply to an area that can be covered with adhered veneer before the skim coat dries. Allow skim coat layer to set for 3-5 minutes, then proceed with adhering the selected veneer.

1. Thin brick veneer: Spread MAXGRIP VENEER ADHESIVE onto the back of bricks in a continuous layer nominally 3/16" to ¼" (5 - 6mm) thick and press bricks firmly into place on the substrate.
2. Stone veneer: Apply MAXGRIP VENEER ADHESIVE to the back of clean stone veneer in a continuous layer nominally ¼" to 3/8" (6 - 9mm) thick. Press firmly in place with a twisting movement until excess material exudes from the sides of the unit. Remove excess SIKAWALL MAXGRIP VENEER ADHESIVE between units.
3. Tile: Installation should proceed in accordance with ANSI A 108.5 (the type and size of the tile will dictate adhesive application.)

### 3.05 CLEANING

- A. Clean work under provisions of Section [\[01 74 00\] \[x\]](#).

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**B.** Clean adjacent surfaces and remove excess material, droppings, and debris.

### **3.06 PROTECTION**

**A.** Protect Sika materials from rain and temperatures below 40°F (4°C) for 24 hours or until dry.

**B.** Protect installed construction under provisions of Section [01 76 00] [ ].

**END OF SECTION**

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## WARRANTY

Prior to each use of any product of Sika Corporation, its subsidiaries or affiliates ("SIKA"), the user must always read and follow the warnings and instructions on the product's most current product label, Product Data Sheet and Safety Data Sheet which are available at [usa.sika.com/senergy](https://usa.sika.com/senergy) or by calling SIKAFACADES' Technical Service Department at 1-800-589-1336. Nothing contained in any SIKALITERATURE or materials relieves the user of the obligation to read and follow the warnings and instructions for each SIKAPRODUCT as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKAPRODUCT.

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within the product's shelf life. User determines suitability of product for intended use and assumes all risks. User's and/or buyer's sole remedy shall be limited to the purchase price or replacement of this product exclusive of any labor costs. NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS. Sale of SIKAPRODUCTS are subject to the Terms and Conditions of Sale which are available at <https://usa.sika.com/>.

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