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**Sto Guide Specification 9000VR  
StoVentec Render**

**Section 07 42 00**

*This guide specification is intended for use by the design/construction professional and any user of Sto products to assist in developing project specifications and to provide guidance on the application of StoVentec Render to vertical above grade exterior wall construction. StoVentec Render is a back-ventilated rainscreen wall system that incorporates a continuous air and moisture barrier, continuous mineral wool insulation, and sub-structure for an architectural finish system (render) applied to a carrier board that is manufactured from recycled glass.*

## **PART 1 GENERAL**

### **1.1 SUMMARY**

- A. Provide air and moisture barrier, continuous mineral wool insulation, sub-structure, recycled glass carrier board, and architectural finish system components
- B. Related Sections *(add/delete, depending on specific project requirements)*
  - 1. Section 05 40 00: Cold-Formed Metal Framing
  - 2. Section 06 16 00: Sheathing
  - 3. Section 07 21 00: Thermal Insulation
  - 4. Section 07 26 00: Vapor Retarders
  - 5. Section 07 27 00: Air Barriers
  - 6. Section 07 50 00: Membrane Roofing
  - 7. Section 07 62 00: Sheet Metal Flashing and Trim
  - 8. Section 07 80 00: Fire and Smoke Protection
  - 9. Section 07 90 00: Joint Protection
  - 10. Section 08 10 00: Doors and Frames
  - 11. Section 08 40 00: Entrances, Storefronts, and Curtain Walls
  - 12. Section 08 50 00: Windows
  - 13. Section 09 25 13: Acrylic Plastering

### **1.2 SUBMITTALS**

- A. Manufacturer's specifications, details, installation instructions and product data
- B. Manufacturer's standard warranty
- C. Applicator's industry training credentials
- D. Samples for approval as directed by architect or owner
- E. Prepare and submit project-specific shop drawings

### **1.3 REFERENCES**

- A. AAMA Standards
  - AAMA 509 Voluntary Test and Classification Method for Drained and Back Ventilated Rain Screen Wall Cladding Systems
- B. ASTM Standards
  - C612 Standard Specification for Mineral Fiber Block and Board Thermal insulation
  - C1177 Specification for Glass Mat Gypsum for Use as Sheathing
  - E84 Test Method for Surface Burning Characteristics of Building Materials
  - E119 Method for Fire Tests of Building Construction and Materials

- E283 Standard Test Method of Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences across the Specimen
  - E330 Test Method for Structural Performance of Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
  - E331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
  - E2178 Standard Test Method for Air Permeance of Building Materials
  - E2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
  - E2568 Standard Specification for PB Exterior Insulation and Finish Systems
  - E2570 Standard Test Method for Evaluating Water-Resistive Barrier (WRB) Coatings Used Under Exterior Insulation and Finish Systems (EIFS) or EIFS with Drainage
- C. EN Standards
- EN 10088-2 Stainless Steels – Technical Delivery Conditions for Sheet/Plate and Strip of Corrosion Resisting Steels for General Purpose
- D. NFPA Standards
- NFPA 220 Standard on Types of Building Construction
  - NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

## 1.4 DESIGN REQUIREMENTS

*NOTE: Coordinate this section with other material specification sections and detail drawings as applicable.*

- A. Allowable deflection normal to the plane of the wall for back-up wall construction:  $L/360$
- B. Conform with applicable design wind pressure requirements of [insert design wind pressure]
- C. Conform with fire-resistive design requirements of [insert hourly fire-resistance rating]

## 1.5 PERFORMANCE REQUIREMENTS

*NOTE: For detailed performance, test results and criteria, refer to StoVentec Render Testing Summary*

- A. Air and Moisture Barrier
  - 1. Vapor permeable air and moisture barrier in compliance with ASTM E2178 and allowable air leakage of  $0.004 \text{ cfm/ft}^2$  ( $0.02 \text{ L/s/m}^2$ ) when tested in accordance with ASTM E2178 and  $0.04 \text{ cfm/ft}^2$  ( $0.2 \text{ L/s/m}^2$ ) when tested in accordance with ASTM E2357
  - 2. Water-resistive barrier in conformance with physical requirements of ASTM E2570
- B. Insulation

1. Non-combustible mineral wool insulation per NFPA 220 in compliance with ASTM C612 Type IVA requirements with 0 flame spread and 0 smoke development when measured in accordance with ASTM E84
- C. Intumescent Tape
  1. Nominal 75 lb/ft<sup>3</sup> (1200 kg/m<sup>3</sup>) flexible intumescent material of exfoliated graphite that foams up under influence of pressure and temperature
- D. Metal Fire Break
  1. Minimum 0.38mm corrosion resistant metal of sufficient dimension to overlap inner face of carrier board by minimum 10mm
- E. Sub-Structure
  1. 2.0mm and 2.5 mm, fixed plate and gliding point, Grade 1.4301 stainless steel wall brackets conforming to strength class S230 per EN 10088-2
  2. Minimum 2.0mm aluminum alloy T-profiles per EN 755-2 with minimum tensile strength of 35534 psi (245 N/mm<sup>2</sup>)
- F. Carrier Board
  1. Nominal ½ inch (12mm) carrier board made of expanded glass granulate with nominal density of 31.2 lb/ft<sup>3</sup> (500 kg/m<sup>3</sup>) and thermal conductivity of 0.052 BTU/h-ft-°F (0.09 W/m-K) consisting of 96% post consumer recycled content
- G. Architectural Finish System
  1. ASTM E2568, Table 1, compliant finish system, consisting of ready mixed acrylic-based plaster base coat, treated glass fiber reinforcing mesh, nominal 4.5 oz/yd<sup>2</sup> (153 g/m<sup>2</sup>), and acrylic-based plaster textured finish.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Requirements
  1. Air and moisture barrier, insulated wall cladding, and architectural finish system manufacturer for a minimum of thirty-five (35) years
  2. Manufacturing facilities: ISO 9001:2015 Certified Quality System and certified Environmental Management System
- B. Contractor Requirements
  1. Engaged in application of similar systems for a minimum of three (3) years
  2. Knowledgeable in the proper use and handling of Sto materials
  3. Employ skilled mechanics who are experienced and knowledgeable in air and moisture barrier, curtain wall and rainscreen wall application, and familiar with the requirements of the specified work
  4. Successful completion of minimum of three (3) projects of similar size and complexity to the specified project
  5. Provide the proper equipment, manpower and supervision on the job site to install the system in compliance with Sto's published specifications and details and the project plans and specifications
- C. Insulation Board Manufacturer Requirements

1. Mineral wool board manufacturer for a minimum of 30 years

D. Mock-up Testing

1. Construct full-scale mock-up of typical air/moisture barrier and exterior cladding /window wall assembly with specified tools and materials and test air and water infiltration and structural performance in accordance with ASTM E283, ASTM E331 and ASTM E330, respectively, through independent laboratory. Mock-up shall comply with requirements of project specifications. Where mock-up is tested at job site maintain approved mock-up at site as reference standard. If tested off-site accurately record construction detailing and sequencing of approved mock-up for replication during construction.

E. Inspections

1. Provide independent third-party inspection where required by code or contract documents
2. Conduct inspections in accordance with code requirements and contract documents

## 1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product and store inside until ready for use
- B. Store mineral wool in a dry location with adequate ventilation, off the ground and out of direct sunlight
- C. Store sub-structure, carrier board, and accessory products – fasteners and PVC accessories – in a dry location off the ground out of direct sunlight
- D. Store portland cement based products in a dry area off the ground out of direct sunlight
- E. Store wet products (pail products) in a dry area and protect from extreme heat, 90 degrees F (32 degrees C), freezing, and direct sunlight
- F. Store sealant (cartridge and sausage products) in a cool (less than 80 degrees F [26.7 degrees C]) dry area. Protect from heat, freezing, moisture, and direct sunlight. Store away from sources of ignition.
- G. Store accessories (mesh, tapes, fabrics, and pvc components in cartons) flat, off the ground in a dry location. Protect from direct sunlight. Store mesh roll cartons flat (not upright).

## 1.8 PROJECT/SITE CONDITIONS

- A. Provide a secure staging area for storage of sub-structure components and carrier board to protect from damage from construction activities
- B. Provide supplementary heat for installation of portland cement based (bagged products) and coating (pail products) and sealant (cartridge and sausage products) in temperatures less than 40°F (4°C)
- C. Provide supplementary heat for installation of sub-construction in temperatures less than 25°F (-3.8°C)
- D. Provide protection of surrounding areas and adjacent surfaces from application of products

## 1.9 COORDINATION/SCHEDULING

*(The work in this section requires close coordination with related sections and trades. Sequence work to provide protection of construction materials from weather deterioration)*

- A. Provide site grading such that the wall cladding assembly terminates above grade a minimum of 6 inches (150 mm)
- B. Coordinate installation of foundation waterproofing, roofing membrane, windows, doors and other wall penetrations to provide a continuously connected air and moisture barrier
- C. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall
- D. Install window and door head flashing immediately after windows and doors are installed
- E. Install diverter flashings wherever water can enter the wall assembly to direct water to the exterior
- F. Install splices or tie-ins from air and moisture barrier over back leg of flashings, and similar details to form a shingle lap that directs incidental water to the exterior
- G. Install sheet metal flashing and trim closures at terminations with windows, doors, and similar through wall penetrations
- H. Install copings and sealant immediately after installation of the wall cladding finish coatings when they are dry.
- I. Schedule work such that the air and moisture barrier is exposed to weather no longer than 180 days
- J. Attach penetrations through the wall cladding to structural support and provide water tight seal at penetrations

## 1.10 WARRANTY

- A. Provide manufacturer's standard warranty

# PART 2 PRODUCTS

## 2.1 MANUFACTURERS

- A. Provide air and moisture barrier, sub-structure, carrier board, finish system components, and accessories from single source manufacturer or approved supplier
- B. The following are acceptable manufacturers:
  - 1. Sto Corp. – air and moisture barrier, sub-structure, carrier board, finish system components, and accessories
  - 2. Owens-Corning – mineral wool insulation, mineral wool floor line fire barrier
  - 3. Rolf Kuhn – flexible intumescent tape

## 2.2 AIR AND MOISTURE BARRIER

*Note: Select any of the listed joint treatment/rough opening protection/detail component options and top coat with the listed air and moisture barrier coating*

### A. StoGuard®

1. Joint Treatment, Rough Opening Protection, and Static Transition Detail Components:
  - a. Sto Gold Fill® – ready mixed coating applied by trowel or knife for rough opening protection of frame walls and joint treatment of sheathing when used with StoGuard Mesh. Also used as a detail component with StoGuard Mesh to splice over back flange of starter track, flashing, and similar ship lap details
  - b. Sto AirSeal™ RSC with StoGuard Fabric and RediCorners - ready mixed coating applied by brush, roller or spray for joint treatment of sheathing when used with StoGuard Fabric, and rough opening protection of frame walls when used with StoGuard Fabric and RediCorners. Also used as a detail component with StoGuard Fabric to splice over back flange of starter track, flashing, and similar ship lap details
  - c. StoRapidGuard™ - one component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other static transitions in above grade wall construction
2. Air and Moisture Barrier Coating
  - a. Sto AirSeal™ RSC – ready mixed vapor permeable air and moisture barrier coating for concrete, concrete masonry, wood-based sheathing, and glass mat gypsum sheathing
3. Static or Dynamic Transition Detail Component
  - a. StoGuard Transition Membrane – flexible air barrier material for continuity at static transitions such as sheathing to foundation, dissimilar materials (CMU to frame wall), wall to balcony floor slab or ceiling, and shingle lap transitions to flashing. Also used for dynamic joints: floor line deflection joints, masonry control joints, and through wall joints in masonry or frame construction

## 2.3 INSULATION BOARD

- ### A.
- Owens Corning Thermafiber® RainBarrier 45 mineral wool insulation board in conformance with ASTM C612, Type IVA requirements, nominal 4.5 lb/ft<sup>3</sup> density (0.28 kg/m<sup>3</sup>), and R-4.3 per inch (RSI - 0.76)

## 2.4 FLOOR LINE FIRE STOP

*Note: A and B are acceptable alternatives.*

### A. Mineral wool insulation with surface mount intumescent tape

1. Owens Corning Thermafiber® RainBarrier HD mineral wool insulation board in conformance with ASTM C612, Type IVA requirements, nominal 6.0 lb/ft<sup>3</sup> density (96.1 kg/m<sup>3</sup>), and R-4.3 per inch (RSI - 0.76)
2. Rolf Kuhn 2mm ROKU® intumescent strip with adhesive backing (field applied over insulation – refer to Sto Details)

### B. Metal Fire Break:

1. Minimum 0.38mm corrosion resistant metal of sufficient dimension to overlap inner face of carrier board by minimum 10mm

## **2.5 SUB-CONSTRUCTION**

- A. Sto 2.0mm or 2.5mm stainless steel wall brackets, Sto aluminum T-Profiles

## **2.6 CARRIER BOARD**

- A. Sto 12mm Veroboard

## **2.7 ACCESSORIES**

- A. Sto PVC edge profile (G, GT, GF) with integral glass fiber reinforcing mesh for 12mm carrier board
- B. Sto PVC corner bead with integral glass fiber reinforcing mesh
- C. Sto PVC drip edge profile with integral glass fiber reinforcing mesh
- D. Sto 5.5x19mm S8 hex head fasteners for T-Profile to wall bracket connection
- E. Sto 5.5x24mm flat head fasteners for carrier board to T-profile connection
- F. Sto PVC edge profile (G-Roof Vent, G-Rain Guard)
- G. Sto Ventilation Profile
- H. Sto Drip Edge Profile exterior corner
- I. Sto Expansion Joint Profile-E
- J. Sto Aluminum Starter Track Profile
- K. Sto Expansion Joint Profile
- L. Sto Thermal Separation Tape
- M. Stainless steel flashing, trim and corners (by others)
- N. Aluminum Trims and accessories (by others)
- O. Stainless steel fasteners for mounting brackets to steel stud, wood stud, concrete, or concrete masonry back-up wall construction (by others)
- P. Fasteners, impaling pins, or other attachment devices for mounting insulation, floor line fire break materials (by others)

## **2.8 BASE COAT**

- A. Sto RFP ready mixed acrylic-based fiber reinforced plaster

## **2.9 REINFORCING MESH**

- A. Sto Mesh – nominal 4.5 oz/yd<sup>2</sup> (153 g/m<sup>2</sup>) glass fiber reinforcing mesh treated for compatibility with Sto materials



## **2.10 FINISH COAT**

- A. Stolit ready mixed acrylic-based integrally colored textured finish

## **PART 3 EXECUTION**

### **3.1 ENGINEERING AND SHOP DRAWINGS**

- A; CFS, Cladding Facade Solutions, Contact: Alex Register  
[aregister@claddingfacadesolutions.com](mailto:aregister@claddingfacadesolutions.com). Ph 703-542-3091

### **3.2 ACCEPTABLE INSTALLERS**

- A. Prequalify under Quality Assurance requirements of this specification (section 1.6 B)

### **3.3 EXAMINATION**

- A. Inspect all surfaces to receive the wall system. Surfaces must be fully cured, structurally sound, clean, dry and free of frost, damage, and all bond inhibiting materials, including dirt, dust, efflorescence, form oil and other foreign matter.
- B. Inspect sheathing surfaces for compliance with this specification, the applicable building code, and manufacturer requirements.
- C. Inspect surface plane for compliance with tolerance of not greater than ¼ inch in 10 feet [6mm in 3.0m] deviation in plane.
- D. Report deviations from the requirements of project specifications or other conditions that might adversely affect the air and moisture barrier, sub-structure, insulation board, carrier board, coatings, or finish system installation to the General Contractor. Do not start work until deviations are corrected.

### **3.4 SURFACE PREPARATION**

- A. Remove surface contaminants, repair cracks, spalls or damage in concrete and concrete masonry surfaces and level concrete and masonry surfaces to comply with required tolerances. Repair holes, gaps, over-driven fasteners in sheathing surfaces, and replace damaged sheathing

### **3.5 INSTALLATION**

- A. Install air and moisture barrier, continuous insulation, sub-structure, carrier board, and a finish system in conformance with manufacturer's written instructions. Refer to StoGuard Installation Instructions and StoVentec Application Guide

### **3.6 PROTECTION**

- A. Provide protection of installed materials from water infiltration during and after construction
- B. Provide protection of installed materials from dust, dirt, precipitation, freezing and continuous high humidity until they are fully dry

### 3.7 CLEANING, REPAIR AND MAINTENANCE

- A. Clean and maintain the finished wall surface for a fresh appearance and to prevent water entry into and behind the system. Repair cracks, impact damage, spalls or delamination promptly
- B. Maintain adjacent components of construction such as sealants, windows, doors, and flashing, to prevent water entry into or behind the wall cladding assembly
- C. Refer to Sto reStore Repair and Maintenance Guide ([reStore Program](#)) for detailed information on restoration – cleaning, recoating, resurfacing and refinishing, or re-cladding
- D. Attic Stock: as part of the contract documents, purchase and leave with the owner (X # of pails of specific texture and color) which will be used later in case finish has to be repaired or touched up after the installation is complete

#### ATTENTION

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