



Building with conscience.

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Sto Guide Specification 5600M - EPD StoTherm® ci Mineral

Section 07 24 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 StoTherm ci Mineral to vertical above grade exterior wall construction. The StoTherm ci Mineral System is a water-drainage system that incorporates a continuous air and moisture barrier, adhesive, continuous mineral wool insulation, thermal dowel and fasteners, fiberglass mesh reinforced base coat, and a decorative and protective finish coat. For further design guidance refer to the Sto Design Guide and Sto Guide Details.

PART 1 GENERAL

1.1 SUMMARY

- A. Provide air and moisture barrier with continuous mineral wool insulation and finish system for vertical above grade exterior walls
- B. Related Sections *(add/delete, depending on specific project requirements)*
 - 1. Section 06 16 00: Sheathing
 - 2. Section 07 26 00: Vapor Retarders
 - 3. Section 07 27 00: Air Barriers
 - 4. Section 07 50 00: Membrane Roofing
 - 5. Section 07 62 00: Sheet Metal Flashing and Trim
 - 6. Section 07 90 00: Joint Protection
 - 7. Section 08 10 00: Doors and Frames
 - 8. Section 08 40 00: Entrances, Storefronts, and Curtain Walls
 - 9. Section 08 50 00: Windows

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. Sealant manufacturer's certificate of compliance with ASTM C1382
- F. Prepare and submit project-specific details (when required by contract documents)

1.3 REFERENCES

- A. ASTM Standards:
 - C612 Standard Specification for Mineral Fiber Block and Board Thermal insulation
 - C1177 Specification for Glass Mat Gypsum for Use as Sheathing
 - C1382 Test Method for Determining Tensile Adhesion Properties of Sealants When Used in Exterior Insulation and Finish Systems (EIFS) Joints
 - 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

E2178	Standard Test Method for Air Permeance of Building Materials
E2273	Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad wall Assemblies
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

1.4 DESIGN REQUIREMENTS

NOTE: Coordinate this section with other material specification sections and detail drawings as applicable. Refer to Sto Design Guide.

- A. Allowable deflection normal to the plane of the wall: L/240
- 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 StoTherm ci Mineral Regulatory Compliance and Testing Summary

- A. Air and Moisture Barrier: vapor permeable air and moisture barrier in compliance with ASTM E2178 and allowable air leakage of 0.004 cfm/ft² (0.02 L/s/m²) when tested in accordance with ASTM E2178 and 0.04 cfm/ft² (0.2 L/s/m²) when tested in accordance with ASTM E2357
- B. Non-combustible Insulation: comply with ASTM C612 Type IV requirements and Sto Proprietary Specification for Non-combustible Mineral Wool Insulation for use in StoTherm ci Systems
- C. Insulation Finish System: comply with ASTM E2568 (except tensile bond strength)

1.6 QUALITY ASSURANCE

- A. Manufacturer Requirements
 - 1. Air/moisture barrier and insulated wall cladding manufacturer for a minimum of thirty-five (35) years
 - 2. Manufacturing facilities ISO 9001:2015 Certified Quality System and certified Environmental Management System
 - 3. Member in good standing with EIMA (EIFS Industry Members Association)
- 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 and plaster 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
 2. Recognized by Sto as being capable of producing mineral wool insulation board to meet Sto Specification requirements
- 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 E 283, ASTM E 331 and ASTM E 330, 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
- B. Protect coatings (pail products) from freezing and temperatures in excess of 90°F (32° C). Store away from direct sunlight.
- C. Protect Portland cement based materials (bag products) from moisture and humidity. Store under cover off the ground in a dry location.
- D. Store mineral wool in a dry location off the ground out of direct sunlight.

1.8 PROJECT/SITE CONDITIONS

(Weather conditions affect application and drying time of most products. Hot or dry conditions limit working time and accelerate drying and may require adjustments in the scheduling of work to achieve desired results; cool or damp conditions extend working time and retard drying and may require added measures of protection against wind, dust, dirt, rain and freezing)

- A. Maintain ambient and surface temperatures above 40°F (4°C) during application and drying period, minimum 24 hours after application of air and moisture barrier and insulation finish system products
- B. Provide supplementary heat for installation in temperatures less than 40°F (4°C)

- C. 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, starter tracks, and similar details to form a shingle lap that directs incidental water to the exterior
- G. Install copings and sealant immediately after installation of the wall cladding finish coatings when they are dry, and such that, where sealant is applied against the wall cladding surface, it is applied against the base coat or primed base coat surface
- H. Schedule work such that the air and moisture barrier is exposed to weather no longer than 30 days
- I. 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, insulation, coatings and accessories from single source manufacturer or approved supplier
- B. The following are acceptable manufacturers:
 - 1. Sto Corp. – air and moisture barrier, adhesive, reinforced base coat, finish coat, plaster accessories
 - 2. Owens-Corning - specially designed mineral wool insulation board for compatibility with Sto materials

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 Coat® with StoGuard Fabric - 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 Sto RapidGuard® - 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 Gold Coat® – ready mixed 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 ADHESIVE

- A. Sto BTS Plus – factory blended one-component polymer-modified portland cement based high build adhesive

2.4 INSULATION BOARD

- A. Owens Corning Thermafiber® Mineral Wool CI-C SC18 insulation board in conformance with ASTM C612, Type IV requirements, nominal 7.0 lb/ft³ density (112 kg/m³), 2ft x 4ft width x length (0.6 x 1.2 m), 2 inches (51 mm), 3 inches (76 mm) or 4 inches (102 mm) thick, and R-4.0 per inch (RSI - 0.705)

2.5 THERMAL DOWEL AND FASTENERS

- A. Sto Thermo Dowel: 2-3/8 inch diameter (60 mm) Thermal Dowel with ¼ inch (6 mm) corrosion resistant star head type screw fastener for wood frame, steel frame, or masonry wall construction.

2.6 BASE COAT

- A. Sto BTS Plus – factory blended one component polymer modified portland cement based high build base coat. Also used as a leveler for concrete and masonry surfaces

2.7 REINFORCING MESHES

- A. Medium Impact Resistance (impact resistance requirement: 25-49 in-lb [2.83-5.54J])
 - 1. Sto Mesh – nominal 4.5 oz/yd² (153 g/m²), symmetrical, interlaced open-weave glass fiber fabric made with alkaline resistant coating for compatibility with Sto materials
- B. High Impact Resistance (impact resistance requirement: 90-150 in-lbs [(10.2-17J)])
 - 1. Sto Mesh 6 oz – nominal 6.0 oz/yd² (203 g/m²), symmetrical, interlaced open-weave glass fiber fabric made with alkaline resistant coating for compatibility with Sto materials
- C. Ultra-High Impact Resistance (impact resistance requirement: greater than 150 in-lbs [17 J])
 - 1. Sto Intermediate Mesh – nominal 11.0oz./yd² (373 g/m²), ultra-high impact, interwoven, open weave glass fiber fabric with alkaline resistant coating for compatibility with Sto materials *(recommended to a minimum height of 6'-0" [1.8m] above finished grade at all areas accessible to pedestrian traffic and other areas exposed to abnormal stress or impact).*
- D. Specialty Meshes
 - 1. Sto Detail Mesh – nominal 4.2 oz/yd² (143 g/m²), flexible, symmetrical, interlaced glass fiber fabric, with alkaline resistant coating for compatibility with Sto materials *(used for standard back wrapping, pre-wrapping, and aesthetic detailing such as reveals, chamfers, and trim)*

2.8 FINISH COATS *(select one)*

- A. Stolit® Textured Finishes acrylic based, integrally colored textured finishes
 - Stolit 1.0, Stolit 1.0 Dark Colors, Stolit 1.5, Stolit 1.5 Dark Colors, Stolit Freeform, Stolit Freeform Dark Colors, Stolit R1.5, Stolit R1.5 Dark Colors,
- Stolit® Lotusan® – acrylic based textured wall finish with graded marble aggregate and self-cleaning properties
 - Stolit Lotusan 1.0, Stolit Lotusan 1.0 Dark Colors, Stolit Lotusan 1.5, Stolit Lotusan 1.5 Dark Colors, Stolit Lotusan Freeform, Stolit Lotusan Freeform Dark Colors

2.9 JOB MIXED INGREDIENTS

- A. Water – clean and potable

2.10 MIXING

- A. Mix all products in conformance with manufacturer's written instructions.

PART 3 EXECUTION

3.1 ACCEPTABLE INSTALLERS

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

3.2 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 8 feet [6mm in 2438 mm] deviation in plane.
- D. Report deviations from the requirements of project specifications or other conditions that might adversely affect the air and moisture barrier, insulation board, or insulation finish system installation to the General Contractor. Do not start work until deviations are corrected.

3.3 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

3.4 INSTALLATION

- A. Install air and moisture barrier, continuous insulation, and insulation finish system in conformance with manufacturer's written instructions. Refer to StoTherm ci Mineral Installation Guide.

Note: Only Sto products listed in this EPD specification should be used for LEED Version IV projects.

3.5 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

3.6 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

ATTENTION

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