



Building with conscience.

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**Sto Guide Specification E100X
StoTherm® ci XPS Essence**

Section 07 24 19

This 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 to vertical above grade exterior wall construction. StoTherm ci is a water-drainage exterior insulation and finish system (EIFS) that includes StoGuard® air and water-resistive barrier beneath it. The full system consists of six components: air and water-resistive barrier, adhesive, continuous insulation, reinforcing mesh, base coat, and finish. Notes in italics, such as this one, are explanatory and intended to guide the design/construction professional and user in the proper selection and use of materials. This specification should be modified where necessary to accommodate individual project conditions.

Design Guidance

GENERAL NOTE: Refer to the appendix at the end of this specification and Sto Corp. ICC-ESR-1748 for specific Sto products and limitations that apply to Sto Therm ci wall assemblies.

Air and Water-resistive Barrier

StoGuard® is the air and water-resistive barrier component in StoTherm ci. It is installed over wood-based sheathing, glass mat gypsum sheathing, cementitious sheathing, concrete, and concrete masonry substrates. StoGuard provides protection against moisture damage during the construction process and in the event of a breach in StoTherm ci while in service. It is not intended to correct faulty workmanship such as the absence or improper integration of flashing in the wall assembly, nor is it intended to correct other defective components of construction such as windows that leak into the wall assembly. Flashing should always be integrated in the wall assembly to direct water to the exterior, not into the wall assembly, particularly at potential leak sources such as windows.

As a component of an air barrier system StoGuard minimizes the risk of condensation within the building envelope by resisting mass transfer of moisture in the air to a cold surface in the wall assembly. A complete air barrier system consists of individual air barrier materials and the connections between them. The air barrier materials must be continuously connected such that walls, roof, and foundation perform as an effective air barrier assembly. The design/construction professional must take material compatibility and construction sequencing into account when designing an "airtight" assembly to ensure continuity and long-term durability. The effects of air tightness on mechanical ventilation should also be included in the overall project design.

An air barrier should not be confused with a vapor retarder, which may also be used in the wall assembly to retard water vapor diffusion and reduce the risk of condensation. Generally, a vapor retarder is placed on the warm side of the insulation. Specifically, it is placed on the interior side of the insulation in cold climates. A vapor retarder may not be necessary, or appropriate, depending on the wall components and the range of temperature/humidity conditions inside and outside. A vapor retarder should not be used on the inside of walls in hot, humid climates. A dew point analysis and/or dynamic hygrothermal modeling should be performed to determine whether a vapor retarder is appropriate.

Structural Loads and Wind Load Resistance

StoTherm ci is a non-structural exterior wall cladding. It is not load bearing and does not provide racking resistance, nor is it used as a base for mechanical anchoring of attachments such as signage or light fixtures. The structural backup frame/sheathing, concrete, or masonry wall construction must function to resist racking loads without transfer of stress to StoTherm ci.

StoTherm ci transfers positive wind loads to the supporting wall construction and resists negative wind loads via adhesive attachment to a substrate. Design for maximum allowable deflection, normal to the plane of the wall of L/240, and in conformance with applicable building code design requirements for wind loads. Generally, StoTherm ci is not the determinant of ultimate wind load capacity for frame walls. The supporting frame wall construction, or sheathing attachment, typically dictates ultimate load capacity of the assembly. Consult ICC ESR-1748 for allowable wind pressures (published values have a safety factor of 3 applied to ultimate loads). Additional wind load data is available from Sto Corp. with ultimate load capacity of up to plus or minus 188 psf (9.00 kPa). In some cases, such as painted wall substrates, where adhesion may not be possible, mechanical attachment is necessary. Refer to ICC ESR-1030 for allowable wind pressures of mechanically attached StoTherm ci.

Moisture Control and Problem Prevention

Do not use Sto Therm ci on surfaces subject to continuous or intermittent water immersion or hydrostatic pressure. Prevent the accumulation of water behind StoTherm ci, either by condensation or water leakage into the wall construction, in the design and detailing of the wall assembly, and with proper sequencing and protective measures during construction.

Flashing: provide flashing to direct water to the exterior where it is likely to penetrate components in the wall assembly, including, above window and door heads, beneath window and door sills, at roof/wall intersections, decks, abutments of lower walls with higher walls, above projecting features, at floor lines, and at the base of the wall.

Air Leakage Prevention: provide continuity of the air barrier assembly at foundation, roof, windows, doors, and other penetrations through the wall with connecting and compatible air barrier components to minimize condensation caused by air movement.

Water Vapor Diffusion: perform a dew point analysis and/or dynamic hygrothermal modeling of the wall assembly to determine the potential for accumulation of moisture in the wall assembly by water vapor diffusion. Adjust insulation thickness and/or other wall assembly components accordingly to eliminate or minimize the risk of a dew point in the wall assembly. Avoid the use of vapor retarders on the interior side of the wall in hot, humid climates.

For further information see Sto Tech Hotline No. 0403-BSc, *Critical Detail Checklist for Wall Assemblies*, Sto Tech Hotline No. 0603-BSc, *Moisture Control Principles for Design and Construction of Wall Assemblies*, and Sto Tech Hotline No. 1001-BSc, *Effects of Temporary Heating on Construction Materials in Cold Weather* at www.stocorp.com.

Impact Resistance

Provide ultra-high impact resistance of StoTherm ci to a minimum height of 6 ft (1.8 m) above finished grade at all areas accessible to pedestrian traffic and other areas exposed to abnormal stress or impact. Indicate areas with impact resistance other than “Standard” on contract drawings.

Color Selection

Select finish with a light reflectance value of 20 or greater. (The use of dark colors is not recommended over extruded polystyrene [XPS]. It has a service temperature limit of approximately 165° F [73.8°C]). See Sto Tech Hotline No. 1294-E, *Restrictions on the Use of Dark Colors with Exterior Insulation and Finish Systems (EIFS)*. Also see Sto Tech Hotline No. 0893-EC, *Fading in EIFS and Architectural Coatings*, at www.stocorp.com.

Joints

Provide uniform joints, minimum 3/4 inch (19 mm) wide in StoTherm ci, where they exist in the substrate or supporting construction, where the cladding adjoins dissimilar construction or materials, at changes in building height, at expansion, control, and cold joints in construction, and at floor lines in multi-level wood frame construction. Size joints to correspond with anticipated movement. Align terminating edges of StoTherm ci with joint edges of through wall expansion joints and similar joints in construction. Refer to Sto Details.

Provide minimum 1/2 inch (13 mm) wide perimeter sealant joints at all penetrations through StoTherm ci (windows, doors, scuppers, mechanical, electrical, and plumbing penetrations, etc.).

Specify sealant and backer rod that is compatible with StoTherm ci, supported by the sealant manufacturer’s certificate of compatibility. Typically, sealant is adhered to the StoTherm ci reinforced base coat or primed base coat. Arrange for field adhesion testing to verify adhesion compatibility and obtain sealant manufacturer’s sealant adhesion data to the StoTherm ci substrate.

Provide joints so that air barrier continuity is maintained across the joint, and drain joints to the exterior, or provide other means to prevent or control water infiltration at joints.

Grade Condition

Provide minimum 6-inch (152mm) clearance above grade or as required by code. Do not specify StoTherm ci below grade (unless designed for use below grade and permitted by the applicable building code).

Trim, Projecting Architectural Features and Reveals

All trim and projecting architectural features must have a minimum 1:2 [27°] slope along their top surface. Minimum 3/4 inch (19 mm) insulation thickness must remain beneath all finished reveals. All horizontal reveals must have a minimum 1:2 [27°] slope along their bottom surface. Increase slope for northern climates to prevent accumulation of ice/snow and water on the sloped surface. Where trim/features or the bottom surface of reveals project more than 2 inches (51 mm) from the face of the StoTherm ci wall plane, protect the top surface with waterproof base coat. Periodic inspections and increased maintenance may be required to maintain surface integrity of StoTherm ci finish on weather exposed sloped surfaces. Limit projecting features to easily accessible areas and limit total area to facilitate and minimize maintenance. Refer to Sto Details.

Do not use the StoTherm ci on roofs or roof-like conditions. Do not use StoTherm ci on weather exposed projecting ledges, sills, or other projecting features unless supported by framing or other structural support and protected with metal coping or flashing. Refer to Sto Details.



Insulation Thickness

Minimum XPS insulation thickness is 1 inch (25mm) except at as noted above for reveals. Maximum XPS insulation thickness is 6 inches (152mm), except as noted below for fire-resistance rated wall assemblies and for StoCast Finishes.

Fire Protection

Based on testing of StoTherm ci in accordance with NFPA 285 and NFPA 268, XPS insulation is limited to 6 inches (152mm) thick on Types I-IV construction when Sto Textured Finishes are used. XPS insulation is limited to 3 inches (76mm) on Types I-IV construction when StoCast finishes are used.

Where a fire-resistance rating is required, in general, StoTherm ci does not add to nor detract from the rating of an hourly rated concrete, concrete masonry, or non-load bearing frame wall assembly, based on testing in accordance with ASTM E119. Maximum allowable XPS thickness is 2-3/4 inches (70mm) where walls are required to have a fire-resistance rating.

Certain assemblies may be extended beyond the listed products and/or limitations through engineering judgments on file at Sto Corp. or by way of modeling or rational analysis applied to the particular product or assembly in question.



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PART 1 GENERAL

1.1 SUMMARY

- A. Provide air and water-resistive barrier, and compatible EIFS for vertical above grade exterior walls
- B. Related Sections *(add/delete, depending on specific project requirements)*
 - 1. Section 03 00 00: Concrete
 - 2. Section 04 00 00: Unit Masonry
 - 3. Section 05 10 00: Structural Metal Framing
 - 4. Section 06 10 00: Rough Carpentry
 - 5. Section 06 16 00: Sheathing
 - 6. Section 07 26 00: Vapor Retarders
 - 7. Section 07 27 00: Air Barriers
 - 8. Section 07 50 00: Membrane Roofing
 - 9. Section 07 62 00: Sheet Metal Flashing and Trim
 - 10. Section 07 90 00: Joint Protection
 - 11. Section 08 10 00: Doors and Frames
 - 12. Section 08 40 00: Entrances, Storefronts, and Curtain Walls
 - 13. Section 08 50 00: Windows

1.2 SUBMITTALS

- A. Manufacturer's specifications, design guide and details, installation instructions, and product data
- B. Manufacturer's code compliance report
- C. Manufacturer's standard warranty
- D. Applicator's industry training credentials
- E. Samples for approval as directed by architect or owner
- F. Sealant manufacturer's certificate of compatibility
- G. Prepare and submit project-specific details (when required by contract documents)

1.3 REFERENCES

- A. ASTM Standards
 - 1. C150, Standard Specification for Portland Cement
 - 2. C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
 - 3. C1177, Specification for Glass Mat Gypsum for Use as Sheathing

4. D1970, Standard Specification for Self-Adhered Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
 5. D3273, Test for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
 6. E84, Test Method for Surface Burning Characteristics of Building Materials
 7. E96, Standard Test Methods for Water Vapor Transmission of Materials
 8. E119, Method for Fire Tests of Building Construction and Materials
 9. E283, Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under specified Pressure Differences Across the Specimen
 10. E330, Test Method for Structural Performance of Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
 11. E331, Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
 12. E2178, Test Method for Air Permeance of Building Materials
 13. E2273, Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish System (EIFS) Clad Wall Assemblies
 14. E2357, Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
 15. E2430, Standard Specification for Expanded Polystyrene ("EPS") Thermal Insulation Boards for Use in Exterior Insulation and Finish Systems ("EIFS")
 16. E2486, Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS)
 17. E2568, Standard Specification for PB Exterior Insulation and Finish Systems
- B. ICC-ES Acceptance Criteria, Building Codes
1. AC 235, Acceptance Criteria for EIFS Clad Drainage Wall Assemblies (July 2020)
 2. AC 212, Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing
 3. IBC-2018, International Building Code
 4. IRC-2018, International Residential Code
 5. IECC-2018, International Energy Conservation Code
- C. National Fire Protection Association (NFPA) Standards
1. NFPA 268, Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source
 2. NFPA 285, Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components
- D. South Coast AQMD (Air Quality Management District) Standards
1. Rule 1113, Architectural Coatings
- E. Other Referenced Documents
1. APA Engineered Wood Association E30, Engineered Wood Construction Guide

2. ICC ESR-1233, StoGuard Air Barrier and Water-Resistive Barrier System, StoEnergy Guard (StoGuard with Continuous Insulation), and StoPanel Backup
3. ICC-ESR-1748, StoTherm ci, StoPanel Classic ci, StoPanel Impact ci, StoPanel XPS, and StoPanel Classic NExT ci
4. StoTherm EIFS: Installation Guide
5. StoTherm ci Design Guide and Detail Booklet

1.4 DESIGN REQUIREMENTS

Consult StoTherm ci Design Guide and Detail Booklet, and the Design Guidance section in the front of this specification, for limits of system and guidance on design and design details. Coordinate this section with other material specification sections and detail drawings as applicable.

1.5 PERFORMANCE REQUIREMENTS

- A. Air and Water-resistive Barrier
 1. Air leakage less than 0.004 cfm/ft² (0.02 L/s-m²) at 1.57 psf (75 Pa) when measured in accordance with ASTM E2178
 2. Assembly air leakage less than 0.04 cfm/ft² (0.2 L/s-m²) after conditioning protocol when measured in accordance with ASTM E2357
 3. Water vapor permeance greater than 10 perms when measured in accordance with ASTM E96, Method B
 4. No water penetration when subjected to sequential water spray of 2.86 psf (137 Pa), then 6.24 psf (299 Pa) for 15 minutes at each pressure interval, when measured in accordance with ASTM E331
 5. No water penetration at nail puncture after 72 hours at 40°F (4°C) when measured in accordance with ASTM D1970
 6. No mold growth at 70 days when measured in accordance with ASTM D3273
- B. EIFS Cladding
 1. Meets or exceeds durability requirements of ASTM E2568
 2. Drainage efficiency greater than 95% when measured in accordance with ASTM E2273
 3. No water penetration when subjected to 75 minutes of water spray at 6.24 psf (299 Pa) and measured in accordance with ASTM E331
 4. No mold growth at 60 days when measured in accordance with ASTM D3273
 5. Flame spread and smoke development of lamina (base coat, reinforcing mesh, and finish) less than 25 and 450, respectively, when tested in accordance with ASTM E84
 6. Meets acceptance criteria of NFPA 285 for use on non-combustible construction
 7. No ignition when exposed to radiant heat in accordance with NFPA 268
 8. Maintains hourly fire resistance rating of known, rated wall assembly when tested in accordance with ASTM E119
 9. Meets standard impact resistance with Sto Mesh, meets Ultra-High impact resistance with Sto Mesh and Sto Armor Mat, when measured in accordance with ASTM E2486
 10. Ultimate wind load capacity of plus or minus 188 psf (9.00 kPa) when measured in accordance with ASTM E330, and support wall construction achieves equal or greater ultimate load capacity

1.6 COMPLIANCE

- A. Air and Water-resistive Barrier
 - 1. Meets or exceeds maximum allowable material air leakage requirements of the 2018 IECC based on independent laboratory testing in accordance with ASTM E2178
 - 2. Meets or exceeds maximum allowable assembly air leakage requirements of the 2028 IECC based on independent laboratory testing in accordance with ASTM E2357
 - 3. Meets requirements of ICC AC 212 for coatings used as WRBs over sheathing
 - 4. Listed as compliant with 2018 IBC, IRC, and IECC in a current ICC-ES Evaluation Report ([consult ICC ESR-1233](#))
 - 5. Meets VOC emission standard of South Coast AQMD Rule 1113 for Building Envelope Coatings
- B. EIFS Cladding
 - 1. Meets performance and weather resistance requirements of 2018 IBC Sections 1407.2 and 1407.4, and complies with requirements of Chapter 26 for use on noncombustible construction (Types I, II, and IV) and in fire-resistance rated wall assemblies. Complies with requirements for use on combustible (Type V) construction.
 - 2. Meets performance requirements of 2018 IRC Sections R703.9.1 and R703.9.2
 - 3. Meets requirements of ICC AC 235 for EIFS clad drainage wall assembly
 - 4. Listed as compliant with 2018 IBC and IRC in a current ICC-ES Evaluation Report ([consult ICC ESR-1748](#))
 - 5. Textured finishes meet VOC emission standard of South Coast AQMD Rule 1113 for Architectural Coatings

1.7 QUALITY ASSURANCE

- A. Manufacturer Requirements
 - 1. Member in good standing of the EIFS Industry Members Association (EIMA) for over thirty (30) years
 - 2. Air and water-resistive barrier and EIFS manufacturer for a minimum thirty (30) years
 - 3. Manufacturing facilities in compliance with ISO 9001 Certified Quality System and ISO 14001 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 water-resistive barrier and EIFS application, and familiar with the requirements of the specified work
 - 4. Successful completion of minimum of three (3) projects of similar size and complexity compared 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. XPS board listed by an approved agency and in compliance with the applicable building code

2. XPS board manufactured under agreement with Sto and recognized by Sto as being capable of producing XPS insulation board to meet EIFS requirements.
- D. Mock-up Testing
1. Construct full-scale mock-up of typical air and water-resistive barrier and EIFS/window wall assembly with specified tools and materials and test air leakage, 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

1.8 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 gun-grade air barrier component at temperatures between 40 and 80°F (4 and 26°C), and protect from freezing, moisture, direct sunlight, and keep away from sources of ignition
- E. Insulation material is flammable. Keep away from flame or ignition sources, direct sun exposure, high heat, and temperatures in excess of 165°F (73.8°C)

1.9 PROJECT/SITE CONDITIONS

Weather conditions affect application and drying time of 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 (Exception: gun-grade air barrier component dries faster in damp or high humidity conditions)

- A. Maintain ambient and surface temperatures above 40°F (4°C) during application and drying period, minimum 24 hours after application of air and water-resistive barrier and EIFS 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

1.10 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 EIFS terminates above grade a minimum of 6 inches (150 mm) or as required by code

- B. Provide roofing and protection at roof and floor levels to prevent excess water entry to the interior or into and behind the exterior wall during construction.
- C. Coordinate installation of foundation waterproofing, roofing membrane, windows, doors and other wall penetrations to provide a continuously connected air and water-resistive barrier
- D. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall
- E. Install window and door head flashing immediately after windows and doors are installed
- F. Install diverter flashings wherever water can enter the wall assembly to direct water to the exterior
- G. Install splices or tie-ins from air and water-resistive barrier over back leg of flashings, and similar details, to form a shingle lap that directs water to the exterior
- H. Install copings and sealant immediately after installation of the EIFS when coatings are dry, and such that, where sealant is applied against the EIFS surface, it is applied against the base coat or primed base coat surface
- I. Schedule work such that the air and water-resistive barrier is exposed to weather no longer than 180 days
- J. Attach penetrations through the EIFS to structural support and provide watertight seal at penetrations

1.11 WARRANTY

- A. Provide manufacturer's standard warranty

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide air and water-resistive barrier and EIFS cladding components from single source manufacturer or approved supplier
- B. The following are acceptable manufacturers:
 - 1. Sto Corp. – Air and water-resistive barrier, EIFS Cladding, EIFS Accessories
 - a. Sto Corp., 3800 Camp Creek Parkway, Building 1400, Suite 120, Atlanta, GA 30331
Tel: 800 221 2397, www.stocorp.com
 - 2. Extruded Polystyrene (XPS) Insulation Board
 - a. Owens Corning, One Owens Corning Parkway, Toledo, OH 43659,
Tel: 800 561 9330, www.owenscorning.com
 - b. Dupont, 974 Centre Road, Wilmington, DE 19805, Tel: 302 774 1000, www.dupont.com

2.2 AIR AND WATER-RESISTIVE BARRIER

Choose one component

- A. StoGuard Detail Components
 - 1. Sheathing Joint Treatment, Rough Opening (RO) Protection, Counterflashing, and Penetrations:
 - a. Sto Gold Coat or Sto AirSeal: brush, spray or roller applied air and water-resistive barrier coating used with StoGuard Fabric reinforcement

- b. Sto RapidGuard: single component rapid drying gun-applied STPE detail component
 - c. Sto Gold Fill: trowel applied detail component used with StoGuard Mesh, glass fiber self-stick reinforcing mesh
2. Static Joints and Seams
- a. Sto RapidGuard: single component rapid drying gun-applied treatment for static joint transitions to dissimilar construction (i.e., masonry to frame wall), balcony floor slab-to-ceiling, and wall sheathing to foundation
3. Static and Dynamic Joints
- a. StoGuard Transition Membrane: flexible membrane for static joint transitions such as sheathing to dissimilar construction (i.e., masonry to frame wall), balcony floor slab-to-ceiling, and wall sheathing to foundation. Also used for dynamic joints such as floor line deflection joints, masonry control joints, and expansion joints in masonry or frame wall construction.

Choose one coating

- B. Air and Water-resistive Barrier Coating
 - a. Sto ready mixed air and water-resistive barrier coating for concrete, concrete masonry, wood-based sheathing, cement board, and glass mat gypsum sheathing
 - i. Sto Gold Coat coating applied uniformly at 5-7 DFT
 - ii. Sto AirSeal coating applied uniformly at minimum 25 DFT, maximum 40 DFT

Refer to Tables in Appendix for product names and combinations of products based on compliance with the 2018 IBC and 2018 IRC and select one in each category: Insulation Adhesive, Insulation Board, Base Coat, Reinforcing Meshes, Primer, and Finish. Consult Sto for any additional guidance on product selection.

2.3 INSULATION ADHESIVE *(refer to Tables in Appendix for guidance on product selection)*

- A. Sto one component polyurethane spray foam adhesive

2.4 INSULATION BOARD

- A. Extruded Polystyrene (XPS) Insulation Board
 - 1. Foamular® CI-C Insulation: nominal 1.3 lb/ft³ (21 kg/m³) extruded polystyrene (XPS) rigid foam plastic insulation board in compliance with ASTM C578, Type X requirements, R-5 per inch (RSI – 0.88 per 25mm), listed, labeled, and furnished in accordance with Section 1.7C
 - 2. Dupont™ Styrofoam™ Brand Panel Core 20 Insulation: nominal 1.8 lb/ft³ (28.8 kg/m³) extruded polystyrene (XPS) rigid foam plastic insulation board in compliance with ASTM C578, Type X requirements, R-5 per inch (RSI – 0.88 per 25mm), listed, labeled, and furnished in accordance with Section 1.7C

2.5 BASE COAT *(refer to Tables in Appendix for guidance on product selection)*

- A. Cementitious Base Coat
 - 1. Sto factory blended one-component polymer modified portland cement base coat

Use waterproof base coat with standard reinforcing mesh over standard base coats (A or B above) at splash zones or sloped surfaces that exceed 2 inches (51 mm) from the face plane of the wall

- B. Waterproof Base Coat *(product selection generally made based on applicator preference)*

1. Sto Flexyl: factory blended latex additive for use with Type 1 portland cement to form a waterproof base coat material
2. Sto Watertight Coat: two component kit consisting of factory blended latex additive and dry component that forms a waterproof base coat material (equivalent to Sto Flexyl)

2.6 REINFORCING MESHES

Designate areas with impact resistance other than "Standard" on architectural drawings

- A. Open weave glass fiber reinforcing meshes treated for compatibility with Sto materials
 1. Sto Mesh – nominal 4.5 oz/yd² (153 g/m²) for areas requiring standard impact resistance
 2. Sto Mesh 6oz – nominal 6 oz/yd² (203 g/m²) for areas requiring standard impact resistance and high build base coat
 3. Sto Intermediate Mesh – nominal 11.2 oz/yd² (380 g/m²) for areas requiring high impact resistance
 4. Sto Armor Mat – nominal 15 oz/yd² (509 g/m²) for areas requiring ultra-high impact resistance
(recommended to a minimum height of 6 ft (1.8m) at ground floors and areas exposed to heavy pedestrian traffic)
 5. Sto Armor Mat XX – nominal 20 oz/yd² (678 g/m²) for areas requiring ultra-high impact resistance
 6. Sto Detail Mesh – nominal 4.2 oz/yd² (143 g/m²) for back wrapping, diagonal reinforcement at corners of openings, reveals, complex architectural features, and other areas of detail work

2.7 PRIMER *(optional component, except for some specialty finishes – refer to finish product bulletin)*

- A. Sto brush, roller, or spray-applied primer as dictated by substrate condition or finish selection

2.8 FINISH *(refer to Tables in Appendix for guidance on product selection)*

- A. Sto trowel applied decorative and protective textured finish
- B. StoCast pre-formed decorative and protective finish with adhesive (and topcoat if applicable)
- C. Sto Signature and Sto specialty finishes

2.9 JOB MIXED INGREDIENTS

- A. Water – clean and potable
- B. Type I portland cement in compliance with ASTM C150

2.10 ACCESSORIES

- A. Sto-Mesh Corner Bead Standard – one component PVC (polyvinyl chloride) accessory with integral reinforcing mesh for outside corner reinforcement
- B. Sto Drip Edge Profile - one component PVC (polyvinyl chloride) accessory with integral reinforcing mesh that creates a drip edge and plaster return

2.11 MIXING

- A. Refer to manufacturer's applicable product bulletins for mixing of materials

PART 3 EXECUTION

3.1 ACCEPTABLE INSTALLERS

- A. Prequalify under Quality Assurance requirements of this specification (Section 1.7B)

3.2 EXAMINATION

- A. Inspect concrete and masonry substrates prior to start of application for:
 1. Contamination—algae, chalkiness, dirt, dust, efflorescence, form oil, fungus, grease, laitance, mildew, or other foreign substances
 2. Surface absorption
 3. Cracks—measure crack width and record location of cracks
 4. Damage and deterioration such as voids, honeycombs and spalls
 5. Moisture content and moisture damage—use a moisture meter to determine if the surface is dry enough to receive the products and record any areas of moisture damage
 6. Compliance with specification tolerances—record areas that are out of tolerance (greater than ¼ inch in 10 feet [6mm in 3 m] deviation in plane)
- B. Inspect sheathing application for compliance with applicable requirement and installation in conformance with specification and manufacturer requirements:
 1. Glass Mat Faced gypsum sheathing compliant with ASTM C 1177 – consult manufacturer
 2. Exterior Grade and Exposure I wood based sheathing – APA Engineered Wood Association E 30
 3. Cementitious sheathing – consult manufacturer
 4. Attachment into structural supports with adjoining sheets abutted (gapped if wood-based sheathing) and fasteners at required spacing to resist design wind pressures as determined by design professional
 5. Fasteners seated flush with sheathing surface and not over-driven
- C. Report deviations from the requirements of project specifications or other conditions that might adversely affect the air and water-resistive barrier or the EIFS installation to the General Contractor. Do not start work until deviations are corrected.

3.3 SURFACE PREPARATION

- A. Remove surface contaminants on concrete, concrete masonry, gypsum sheathing, or coated gypsum sheathing surfaces
- B. Repair cracks, spalls or damage in concrete and concrete masonry surfaces, and level concrete and masonry surfaces to comply with required tolerances
- C. Apply conditioner (consult Sto) by spray or roller to chalking or excessively absorptive surfaces or pressure wash to remove surface chalkiness
- D. Remove fasteners that are not anchored into supporting construction and seal holes with air and water-resistive barrier detail material

- E. Seal over-driven fasteners with Sto air and water-resistive barrier detail material and install additional fasteners as needed to comply with fastener spacing requirement
- F. Fill large gaps between sheathing or voids around pipe, conduit, scupper, and similar penetrations with spray foam and shave flush with surface (refer to Sto Details)
- G. Replace weather-damaged sheathing and repair or replace damaged or cracked sheathing

3.4 INSTALLATION

- A. Install manufacturer's air and water-resistive barrier in conformance with manufacturer's written instructions (*refer to applicable Sto product bulletins and StoTherm ci Design Guide and Detail Booklets*)
- B. Install manufacturer's EIFS cladding in conformance with manufacturer's written instructions (*refer to product bulletins, to StoTherm EIFS: Installation Guide, and StoTherm ci Design Guide and Detail Booklets*)

3.5 PROTECTION

- A. Provide protection of installed materials from water infiltration into or behind them
- 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 EIFS 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 EIFS and anywhere into the wall assembly
- C. Refer to Sto reStore Repair and Maintenance Guide (reStore Program) for detailed information on restoration – cleaning, repairs, recoating, resurfacing and refinishing, or re-cladding



Appendix: StoTherm ci Cladding Component Options

IMPORTANT: Listing of Sto Essence Finishes with XPS Insulation in ICC ESR-1748 is pending

Table 1. StoTherm ci Cladding Components with Sto Textured Finishes

Adhesive	Continuous Insulation ¹	Base Coats	Reinforcing Meshes	Textured Finishes
Sto TurboStick Sto TurboStick Mini	Foamular CI-C XPS Dow Panel Core 20 XPS	Sto BTS Xtra	All	Sto Essence Finishes

1. XPS insulation board thickness: maximum 6 inches (152mm) for noncombustible construction (Types I-IV), and maximum 2.75 inches (70mm) for fire-resistance-rated assemblies

NOTE: Certain assemblies may be extended beyond the listed products and/or limitations, including Sto Signature and Sto Specialty finishes, through engineering judgments on file at Sto Corp., or by way of modeling or rational analysis applied to the particular assembly in question

IMPORTANT: Listing of StoCast Finishes with XPS Insulation in ICC ESR-1748 is pending

Table 2. StoTherm ci Cladding Components with StoCast Finishes

Adhesives	Continuous Insulation ¹	Base Coat	Reinforcing Meshes	StoCast Finishes ²
Sto TurboStick Sto TurboStick Mini	Foamular CI-C XPS Dow Panel Core 20 XPS	Sto BTS Plus	All	StoCast Wood with StoCast Wood Adhesive and Topcoat ³ StoCast Brick with Sto-Bonding and Pointing Mortar

1. XPS insulation board thickness: maximum 6 inches (152mm) for noncombustible construction (Types I-IV), and maximum 2.75 inches (70mm) for fire-resistance-rated assemblies

2. StoCast Wood are in compliance with 2018 IBC Sections 1407.2 and 1407.4 and 2018 IRC Sections R703.9.1 and R703.9.2. StoCast Wood and StoCast Brick are in compliance with Chapter 26 requirements for use on noncombustible construction and fire-resistance rated wall assemblies, subject to thickness limitations of continuous insulation – note 1. StoCast Brick requires Sto BTS Plus with Sto Detail Mesh at gypsum sheathing joints in StoGuard air and water-resistive barrier when used over fire-resistance-rated wall assemblies.

3. Topcoat is typically StoColor Wood Stain applied in two coats; or, any of the StoColor exterior topcoats may be used. Refer to StoColor and StoTique Product Bulletins.

NOTE: Certain assemblies may be extended beyond the listed products and/or limitations, including Sto Signature and Sto Specialty finishes, through engineering judgments on file at Sto Corp., or by way of modeling or rational analysis applied to the particular assembly in question.

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