



Building with conscience.

Sto Corp.

3800 Camp Creek Parkway

Building 1400, Suite 120

Atlanta, GA 30331

Tel: 404-346-3666

Toll Free: 1-800-221-2397

Fax: 404-346-3119

www.stocorp.com

Sto Guide Specification 5000

StoLite® Panel with StoGuard® Air and Water-Resistive Barrier

Section 07 24 00

This specification is intended for use by the design/construction professional and any user of Sto products to assist in developing project specifications. The StoLite Panel is a lightweight pre-fabricated insulated wall panel for application over new or existing code compliant concrete, concrete masonry, or frame wall construction. The StoLite Panel, when combined with StoGuard Air and Moisture Barrier, is a wall system that consists of eight components: air/moisture barrier, reinforcing channel, adhesive, continuous insulation, reinforcing mesh, base coat, primer, and finish coat. Wind pressure, fire protection, and other appropriate analyses should be performed by the design professional to verify conformance of the proposed assembly and its attachment to the supporting wall construction with local code requirements.

StoGuard® is an air and water-resistive barrier that is applied to new or existing wall construction prior to the attachment of StoLite Panel to the supporting construction. It is typically installed over wood-based sheathing, glass mat gypsum sheathing, cementitious sheathing, concrete, or concrete masonry substrates. StoGuard provides protection against moisture damage during the construction process and in the event of a breach in the StoLite Panel 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 with all six sides of the building envelope to perform as an effective air barrier system. The design/construction professional must take material compatibility and construction sequencing into account when designing an "air tight" assembly to ensure continuity and long term durability. The effects of air tightness on mechanical ventilation should also be included in the overall project evaluation.

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 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 warm, humid climates. A dew point analysis and/or dynamic hygrothermal modeling should be performed to determine whether a vapor retarder is appropriate.

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.

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PART 1 GENERAL

1.1 SUMMARY

- A. Provide pre-fabricated continuous insulation panel with integral reinforcement, textured finish, and compatible air and moisture barrier.
- B. Related Sections
 - 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, 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 shop drawings and project-specific details

REFERENCES

ASTM Standards:

A1003	Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members
B117	Test Method for Salt Spray (Fog) Testing
C297	Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions
C920	Standard Specification for Elastomeric Joints Sealants
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
D968	Test Method for Abrasion Resistance of Organic Coatings by Falling Abrasive

D1784	Specification for Rigid Poly (Vinyl Chloride) (PVC) and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
D2247	Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
D3273	Test for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
E84	Test Method for Surface Burning Characteristics of Building Materials
E96	Test Methods for Water Vapor Transmission of Materials
E119	Method for Fire Tests of Building Construction and Materials
E330	Test Method for Structural Performance of Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
E331	Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
E1233	Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Difference
E2098	Test Method for Determining Tensile Breaking Strength of Glass Fiber Reinforcing Mesh for Use in Class PB Exterior Insulation and Finish System after Exposure to a Sodium Hydroxide Solution
E2134	Test Method for Evaluating the Tensile-Adhesion Performance of an Exterior Insulation and Finish System (EIFS)
E2178	Test Method for Air Permeance of Building Materials
E2273	Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish System (EIFS) Clad Wall Assemblies
E2357	Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
E2430	Standard Specification for Expanded Polystyrene ("EPS") thermal Insulation Boards for Use in Exterior Insulation and Finish Systems ("EIFS")
E2485	Standard Test Method for Freeze/Thaw Resistance of Exterior Insulation and Finish Systems (EIFS) and Water Resistive Barrier Coatings
E2486	Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS)
E2568	Standard Specification for Exterior Insulation and Finish Systems
E2570	Test Method for Water-Resistive (WRB) Coatings used Under Exterior Insulation and Finish Systems (EIFS) or EIFS with Drainage
G153	Recommended Practice for Operating Light-and Water-Exposure Apparatus (Carbon-Arc Type) for Exposure of Nonmetallic Materials
G154	Recommended Practice for Operating Light-and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials

Building Code Standards

AC 235 Acceptance Criteria for EIFS Clad Drainage Wall Assemblies (January, 2015)

National Fire Protection Association (NFPA) Standards

NFPA 268 Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source

NFPA 285 Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Non-Load-Bearing Wall Assemblies containing Combustible Components Using the Intermediate-Scale, Multistory Test Apparatus

D. Other Referenced Documents

1. American Association of Textile Chemists and Colorists AATCC-127 Water Resistance: Hydrostatic Pressure Test
2. AISI S-100 with 2010 Supplement, American Iron and Steel Institute North American Specification for the Design of Cold-Formed Steel Structural Members
3. APA Engineered Wood Association E 30, Engineered Wood Construction Guide
4. ICC-ES ESR-1233, StoGuard with Gold Coat, StoGuard with EmeraldCoat, and StoGuard VaporSeal Water-Resistive Barriers and StoEnergy Guard
5. ICC-ES ESR-1748, StoTherm® ci

1.4 DESIGN REQUIREMENTS

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

A. Wind Load

1. Design for maximum allowable wall deflection, normal to the plane of the wall, of L/240.
2. Design for wind load in conformance with code requirements.
3. Verify cladding assembly and attachment to structure conform with required design wind pressures through testing or analysis
4. Ultimate wind load resistance
 - a. Assembly 1, Adhesive and Back-fastening: $\pm 125 \text{ lb/ft}^2$ ($\pm 5.98 \text{ kPa}$), Maximum 24 in (610mm) oc C-channels perpendicular to maximum 16 in (406mm) oc studs. Attachment into C-channels at maximum 16 in oc (406mm) horizontally, maximum 24 in (610mm) oc vertically. Centerline of C-channels maximum 8 in oc (203mm) from panel edges.
 - b. Assembly 2, Adhesive and Clip fastening: $+125 \text{ lb/ft}^2$, -24 lb/ft^2 ($+5.98 \text{ kPa}$, -0.95 kPa), Maximum 24 in (610mm) oc C-channels perpendicular to maximum 16 in (406mm) oc studs. Minimum 2 rows of clips spaced maximum 16 in (406mm) oc horizontally, maximum 24 in (610mm) oc vertically. Centerline of C-channels maximum 12 in (305mm) oc from panel edges.

B. Moisture Control

1. Prevent the accumulation of water behind the cladding or into the wall assembly, either by condensation or leakage through the wall construction, in the design and detailing of the wall assembly:
 - a. 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.
 - b. Air Leakage Prevention – provide continuity of the air barrier system at foundation, roof, windows, doors, and other penetrations through the wall with connecting and compatible air barrier components to minimize condensation and leakage caused by air movement.
 - c. Vapor Diffusion and Condensation – 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 diffusion. Adjust insulation thickness and/or other wall assembly components accordingly to minimize risk. Avoid the use of vapor retarders on the interior side of the wall in warm, humid climates.

C. Impact Resistance

1. Provide ultra-high impact resistance of the cladding to a minimum height of 6'-0" (1.8 m) above finished grade at all areas accessible to pedestrian traffic and other areas exposed to abnormal stress or impact. Indicate the areas with impact resistance other than "Standard" on contract drawings.

D. Color Selection

1. Select finish coat with a light reflectance value of 20 or greater. (The use of dark colors is not recommended over expanded polystyrene [EPS]. EPS has a service temperature limitation of approximately 165° F [74°C]).

E. Joints

1. Provide minimum 5/8 inch (16 mm) wide joints in the cladding 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 cladding with joint edges of through wall expansion joints and similar joints in construction.
2. Provide minimum 1/2 inch (13 mm) wide perimeter sealant joints at all penetrations through the cladding (windows, doors, mechanical, electrical, and plumbing penetrations, etc.).
3. Specify compatible backer rod and sealant that has been evaluated in accordance with ASTM C 1382, and that meets minimum 50% elongation after conditioning.
4. 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.

F. Grade Condition

1. Do not specify the cladding for below grade use or for use on surfaces subject to continuous or intermittent water immersion or hydrostatic pressure. Provide minimum 6 inch (152 mm) clearance above grade or as required by code.

G. Trim, Projecting Architectural Features and Reveals

1. All trim and projecting architectural features must have a minimum 1:2 [27°] slope along their top surface. All reveals must have minimum 3/4 inch (19 mm) insulation thickness at the bottom of the reveal. 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 surface. Where trim/feature or bottom surface of reveal projects more than 2 inches (51 mm) from the face of the cladding wall plane, protect the top surface with waterproof base coat. Periodic inspections and increased maintenance may be required to maintain surface integrity of the cladding finish on weather exposed sloped surfaces. Limit projecting features to easily accessible areas and limit total area to facilitate and minimize maintenance.
2. Do not use the cladding 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.

H. Insulation Thickness

1. Minimum EPS insulation thickness is 2 inches (51 mm).

2. Maximum practical thickness of EPS insulation for fabrication and erection is 6 inches (152 mm)
 3. Maximum total EPS insulation thickness at build-outs or other projections is 12 inches (305 mm), except as noted below for fire-resistance rated wall assemblies.
- I. Fire Protection
1. Where a fire-resistance rating is required by code use the cladding over a rated concrete, concrete masonry assembly, or non-load bearing steel frame assembly. The panel is considered not to add or detract from the fire-resistance of the rated assembly. Maximum allowable EPS thickness to maintain rating: 4 inches (102 mm).
 2. Refer to manufacturer’s testing or applicable code compliance report for other limitations that may apply.
- J. Substrates
1. Gypsum sheathing substrates shall comply with ASTM C1177
 2. Wood-based sheathing substrates shall comply with APA Engineered Wood Association Guide E30
 3. Concrete and masonry substrates shall comply with the standards set forth in the applicable building code

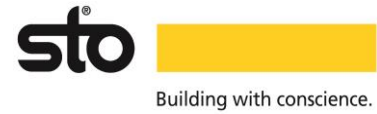
1.5 PERFORMANCE REQUIREMENTS

Comply with ASTM E 2570 (Air/Moisture Barrier) and ASTM E 2568 (EIFS):

Table 1 Air and Water-Resistive Barrier Performance

TEST	METHOD	CRITERIA	RESULT
1. Weathering	AATCC 127 (Water Column)	No cracking, bond failure or water penetration after 210 hours UV exposure, 25 wet/dry cycles, and 21.6 in (55 cm) water column	Pass
2. Durability	ASTM E 1233 / ASTM E72/ ASTM E 331	No cracking or water penetration at sheathing joints after 10 cycles transverse loading, 1 cycle racking, 5 cycles environmental conditioning, and 15 minute water spray at 2.86 psf (137 kPa) pressure differential	No cracking or water penetration
3. Water Resistance	ASTM D 2247	Absence of deleterious effects after 14 day exposure	No deleterious effects
4. Water Vapor Transmission	ASTM E 96 Method B (Water Method)	Measure	Sto Gold Coat: > 10 perms [574 ng/(Pa·s·m ²)] Sto AirSeal: > 12 perms [689 ng/(Pa·s·m ²)]
5. Air Leakage (material)	ASTM E 2178	≤ 0.004 cfm/ft ² at 1.57 psf (0.02 L/s•m ² at 75 Pa)	Pass
6. Air Leakage (assembly)	ASTM E 2357	≤ 0.04 cfm/ft ² (0.2 L/s•m ²)	Pass
7. Freeze-Thaw	ASTM E 2485	No delamination or surface changes after 10 cycles when viewed under 5X magnification	No delamination or surface changes
8. Surface Burning	ASTM E 84	Flame Spread less than or equal to 25 Smoke developed less than or equal to 450	Flame Spread: < 25 Smoke Density: < 450

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9. Tensile Bond	ASTM C 297	Greater than 15 psi (103 kPa)	Pass over Plywood, OSB, Glass Mat Faced Gypsum sheathings, CMU
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1. Based on testing of air barrier joint treatment material at sheathing joints and no top coat

Table 2 StoLite Weather Resistance and Durability Performance*

TEST	METHOD	CRITERIA	RESULTS
1. Accelerated Weathering	ASTM G 153 ASTM G 155	No deleterious effects* at 2000 hours	Pass (Stolit) Pass (Stolit X)
2. Freeze/Thaw Resistance	ASTM E 2485	No deleterious effects* at 10 cycles when viewed under 5x magnification	Pass
3. Water Penetration	ASTM E 331 (modified per ICC-ES AC 235)	No water penetration beyond the plane of the base coat/insulation board interface after 15 minutes at 6.24 psf (299 Pa)	Pass
4. Drainage Efficiency	ASTM E 2273	90% minimum	> 90%
5. Tensile Adhesion	ASTM E 2134	Minimum 15 psi (103kPa) tensile strength	Pass
6. Water Resistance	ASTM D 2247	No deleterious effects* at 14 day exposure	Pass @ 28 days
7. Salt Spray	ASTM B 117	No deleterious effects* at 300 hours	Pass @ 300 hrs
8. Abrasion Resistance	ASTM D 968	No cracking or loss of film integrity at 528 quarts (500 L) of sand	Pass @ 528 quarts (1000 L) (Stolit)
9. Mildew Resistance	ASTM D 3273	No growth supported during 28 day exposure period	Pass @ 28 days (Stolit)
10. Impact Resistance	ASTM E 2486	<ul style="list-style-type: none"> Standard: 25-49 in-lbs (2.83-5.54J) Medium2: 50-89 in-lbs (5.65-10.1J) High: 90-150 in-lbs (10.2-17J) Ultra-High: >150 in-lbs (>17J) 	<ul style="list-style-type: none"> Pass with one layer Sto Mesh Pass with two layers Sto Mesh Pass with one layer Sto Intermediate Mesh Pass with one layer Sto Armor Mat and one layer Sto Mesh

* No deleterious effects: no cracking, checking, crazing, erosion, rusting, blistering, peeling or delamination

Table 3 Air and Water-Resistive Barrier and StoLite Panel Fire Performance

TEST	METHOD	CRITERIA	RESULT
1. Fire Endurance	ASTM E 119	Maintain fire resistance of existing rated assembly	Pass (4 inch [102 mm] maximum allowable insulation thickness)
2. Intermediate Scale Multi-Story Fire Test	NFPA 285 (formerly UBC Standard 26-9)	<ol style="list-style-type: none"> Resistance to vertical spread of flame within the core of the panel from one story to the next Resistance to flame propagation over the exterior surface Resistance to vertical spread of flame over the interior surface from one story to the next Resistance to significant lateral spread of flame from the compartment of fire origin to adjacent spaces 	Complies with 12 in (305mm) insulation
3. Radiant Heat Ignition	NFPA 268	No ignition @ 20 minutes	Complies ¹ with 1 and 12 inches (25 and 305 mm) insulation

TEST	METHOD	CRITERIA	RESULT
4. Surface Burning (individual components)	ASTM E 84	Individual components shall each have a flame spread of 25 or less, and smoke developed of 450 or less	Flame Spread: < 25 Smoke Developed: < 450

Table 4 StoLite Panel Component Performance

TEST	METHOD	CRITERIA	RESULT
1. Alkali Resistance of Reinforcing Mesh	ASTM E 2098	Greater than 120 pli (21 dN/cm) retained tensile strength	Pass
2. Requirements for Rigid PVC Accessories	ASTM D 1784	Meets cell classification 13244C	Pass

1.6 QUALITY ASSURANCE

A. Manufacturer Requirements

1. Member in good standing of the EIFS Industry Members Association (EIMA)
2. Air/moisture barrier and EIFS manufacturer for a minimum of thirty (30) years
3. Manufacturing facilities ISO 9001:2015 Certified Quality System and ISO 14001:2015 Certified Environmental Management System
4. Manufacturer shall maintain a current ICC Evaluation Report demonstrating compliance ai and moisture barrier materials with the IBC, IRC, and IECC ([Refer to ICC ESR 1233](#))
5. Manufacturer shall maintain a current ICC Evaluation Report demonstrating compliance of the panel components with the IBC and IRC ([Refer to ICC ESR 1748](#))

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/moisture barrier and cladding 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 fabricate and install the cladding in compliance with Sto's published specifications and details and the project plans and specifications

C. Insulation Board Manufacturer Requirements

1. EPS listed by an approved agency
2. EPS manufactured by molders under Sto licensing agreement and recognized by Sto as being capable of producing EPS insulation board to meet specification requirements
3. EPS labeled with information required by Sto, the approved listing agency, and the applicable building code.

- D. Mock-up Testing
 - 1. Construct full-scale mock-up of typical air/moisture barrier and 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

1.8 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

- A. Maintain ambient and surface temperatures above 40°F (4°C) during application and drying period, minimum 24 hours after application of StoLite Panel component materials
- 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 StoLite Panel terminates above grade a minimum of 6 inches (150 mm) or as required by code
- 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/moisture barrier over back leg of flashings, 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 panel when coatings are dry, and such that, where sealant is applied against the panel surface, it is applied against the base coat or primed base coat surface
- H. Schedule work such that air/moisture barrier is exposed to weather no longer than 180 days
- I. Attach penetrations through the panel 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/Moisture Barrier and StoLite Panel components from single source manufacturer or approved supplier
- B. The following are acceptable manufacturers:
 - 1. Sto Corp. – Air and Water-Resistive, Barrier, StoLite Panel Components, Joint Sealant

2.2 AIR AND WATER-RESISTIVE BARRIER

(Select any of the listed joint treatment/rough opening protection/detail component options and top coat with the listed air barrier coatings)

- A. StoGuard® Detail Components
 - 1. Sheathing Joint Treatment, Rough Opening Protection, Counterflashing, and Penetratinos:
 - 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 flashing, and similar ship lap details
 - b. Sto Gold Coat® – ready mixed coating applied by brush, roller or spray for rough opening protection of frame walls and joint treatment of sheathing when used with StoGuard Fabric and StoGuard RediCorners. Also used as a detail component with StoGuard Fabric to splice over back flange of flashing, and similar ship lap details
 - c. Sto RapidGuard® - one component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other transitions in above grade wall construction
 - d. StoGuard Conformable Membrane – self-adhered membrane flashing for use over prepared vertical above-grade concrete, concrete masonry, brick masonry, wood sheathing, glass mat gypsum sheathing, and cementitious sheathing
 - 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 Conformable Membrane: self-adhered membrane flashing for use over prepared vertical above-grade concrete, concrete masonry, brick masonry, wood sheathing, glass mat gypsum sheathing, and cementitious sheathing used to:
 - Seal joints and seams in wall sheathing
 - Seal static joints between dissimilar materials
 - Flash exterior wall openings and protect rough openings
 - Seal between window flange and wall sheathing
 - Connect to above grade foundation waterproofing
 - Connect to roof membrane
 - Seal around wall penetrations such as pipes, scuppers, vents
 - Back masonry wall ties
 - Seal dynamic joints in wall construction
4. Air and Water-Resistive Barrier Coating: Sto Gold Coat® – ready mixed waterproof coating for concrete, concrete masonry, wood-based sheathing, and glass mat gypsum sheathing

2.3 PANEL ADHESIVE

- A. Sto TurboStick® – one component polyurethane spray foam adhesive

2.4 CLADDING FASTENERS *(by others)*

- A. Non-corroding fasteners as appropriate for the substrate: Tapcon for concrete or concrete masonry, Type S-12 for metal framing, and Hi-Lo for wood framing.

NOTE: pull-out or withdrawal capacity of the selected fastener must be verified with respect to anticipated wind load and required safety factor.

2.5 INSULATION BOARD

- A. Sto EPS Insulation: nominal 1.0 lb/ft³ (16 kg/m³) Expanded Polystyrene (EPS) insulation board in compliance with ASTM E 2430 requirements (except size), and listed, labeled, and furnished in accordance with Section 1.6C.

2.6 CHANNEL REINFORCEMENT FOR PANELS *(by others, choose one)*

- A. 18 gage cold-rolled galvanized steel C-channel with 2-1/2 inch web and 1/2 or 3/4 inch flanges (64 x 13 or 19 mm) in compliance with AISI S-100 – 2007 with 2010 Supplement and ASTM A 1003.

2.7 PANEL CLIPS

- A. Minimum 18 galvanized steel Z-clips for positioning and attachment of panels to supporting substrate

2.8 CHANNEL ADHESIVE *(select one)*

- A. Sto RapidGuard® Adhesive/Sealant

- B. Loctite® PL 200 Construction Adhesive *(by others)*
- C. MasterWeld® 948 Polyurethane Adhesive/Sealant *(by others)*

2.9 BASE COAT *(choose one)*

- A. Cementitious Base Coat
 - 1. 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. Sto BTS Xtra – lightweight factory blended one component polymer modified portland cement based extra high build base coat. Also used as a leveler for concrete and masonry surfaces.
 - 3. Sto Primer/Adhesive-B – factory blended one component polymer modified portland cement based high build base coat.
- B. Non-cementitious Base Coat
 - 1. Sto RFP – ready mixed acrylic based fiber reinforced base coat material

Designate areas that require waterproofing, such as foundations, splash areas and projecting architectural features, on architectural drawings

- C. Waterproof Base Coat *(choose one)*
 - 1. Sto Flexyl – fiber reinforced acrylic based waterproof base coat mixed with portland cement (used with Sto Mesh as a waterproof base coat over mesh reinforced Sto BTS Plus or BTS Xtra)
 - 2. Sto Watertight Coat – pre-packaged two component fiber reinforced acrylic based waterproof base coat (used with Sto Mesh as a waterproof base coat over mesh reinforced Sto BTS Plus or BTS Xtra)

2.10 REINFORCING MESHES

Designate areas with impact resistance other than "Standard", such as ground floors, on architectural drawings

- A. Standard Mesh
 - 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 *(achieves Standard Impact Classification)*
- B. High Impact Mesh
 - 1. Sto Intermediate Mesh – nominal 11.2 oz./yd² (380 g/m²), high impact, interwoven, open weave glass fiber fabric with alkaline resistant coating for compatibility with Sto materials *(achieves High Impact Classification)*
- C. Ultra-High Impact Mesh
 - 1. Sto Armor Mat – nominal 15 oz/yd² (509 g/m²), ultra-high impact, double strand, 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. Achieves Ultra-High Impact Classification when applied beneath Sto Mesh)*
- 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 and aesthetic detailing of cladding, and for reinforcement of sheathing joints and protection of rough openings with trowel applied air/moisture barrier)*

2.11 PRIMER *(choose one)*

- A. StoPrime Sand – acrylic based tintable primer with sand for roller application
- B. StoPrime Smooth – acrylic based tintable primer for spray application

NOTE: The primer is an optional component [except for some specialty finishes] which reduces surface water absorption of the base coat, and enhances finish color, texture, and coverage)

2.12 FINISH COAT *(refer to individual Product Bulletins for guidance of 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

2.13 ACCESSORIES

- A. StoSeal STPE Sealant - high-movement, low modulus, non-sag one-component silyl-terminated polyether joint sealant in compliance with ASTM C920 and tested in accordance with ASTM C1382

2.14 JOB MIXED INGREDIENTS

- A. Water – clean and potable

2.15 MIXING

- A. Sto Gold Fill – mix with a clean, rust-free high speed mixer to a uniform consistency
- B. Sto Gold Coat – mix with a clean, rust-free high speed mixer to a uniform consistency

Sto BTS Plus – mix ratio with water: 5-6.5 quarts (4.7-6.2 L) of water per 47 pound (21.3 kg) bag of Sto BTS Plus. Pour water into a clean mixing pail. Add Sto BTS Plus, mix to a uniform consistency and allow to set for approximately 5 minutes. Adjust mix if necessary with additional Sto BTS Plus or water and remix to a uniform trowel consistency. Avoid retempering. Keep mix ratio consistent. Do not exceed maximum water amount in mix ratio.

- C. Sto BTS Xtra – mix ratio with water: 4.75 - 5 quarts (4.5-4.7 L) of clean potable water per 38 pound (17.2 kg) bag of Sto BTS Xtra. Pour water into a clean mixing pail. Add Sto BTS Xtra, mix to a uniform consistency and allow to set for approximately 5 minutes. Adjust mix if necessary with additional Sto BTS Xtra or water and remix to a uniform trowel consistency. Avoid retempering. Keep mix ratio consistent. Do not exceed maximum amount of water in mix ratio.
- D. Sto Primer/Adhesive-B – mix ratio with water: 5 – 6.5 quarts (4.7-6.2 L) of clean potable water per 50 pound (23kg) bag of Sto Primer/Adhesive-B. Pour water into a clean mixing pail. Add Sto Primer/Adhesive-B, mix to a uniform consistency and allow to set for approximately 5 minutes. Adjust mix if necessary with additional Sto

Primer/Adhesive-B or water and remix to a uniform trowel consistency. Avoid retempering. Keep mix ratio consistent. Do not exceed maximum amount of water in mix ratio.

- E. Sto Flexyl – mix ratio with portland cement: 1:1 ratio by weight. Pour Sto Flexyl into a clean mixing pail. Add portland cement, mix to a uniform consistency and allow to set for approximately five minutes. Adjust mix if necessary with additional Sto Flexyl and remix to a uniform trowel consistency. Avoid retempering. Keep mix ratio consistent.
- F. Sto Watertight Coat – pour liquid component into a clean mixing pail. Add dry component, mix to a uniform consistency and allow to set for approximately five minutes. Adjust mix if necessary and remix to a uniform trowel consistency. Avoid retempering. Keep mix ratio consistent.
- G. Sto primer – mix with a clean, rust-free high speed mixer to a uniform consistency
- H. Stolit – mix with a clean, rust-free high speed mixer to a uniform consistency. A small amount of water may be added to adjust workability. Limit addition of water to amount needed to achieve the finish texture.
- I. Stolit Lotusan – mix with a clean, rust-free high speed mixer to a uniform consistency. A small amount of water may be added to adjust workability. Limit addition of water to amount needed to achieve the finish texture.
- J. Do not use anti-freeze compounds or other additives

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 10 feet [6mm in 3m] 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 water-resistive barrier and StoLite Panel in conformance with manufacturer’s written instructions. Refer to StoGuard installation materials, StoLite Panel Fabrication and Installation Guide, and applicable product bulletins at www.stocorp.com

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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