Building with conscience.

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Sto Guide Specification 10H17
Sto High Velocity Hurricane Zone (HVHZ) System

StoTherm® ci GMG-SM

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 a Sto High Velocity Hurricane Zone (HVHZ) System, StoTherm ci GMG-SM, to vertical above grade exterior wall construction. StoTherm ci GMG-SM (Glass Mat Gypsum substrate – Small Missile impact resistance) is a water-drainage exterior insulation and finish system (EIFS) that complies with Florida Building Code (FBC) and Miami-Dade County, Florida requirements for use in High Velocity Hurricane Zones, and is compliant with requirements for Small Missile Impact Resistance with a Design Pressure of ± 150 psf (7.18 kPa). Refer to Miami-Dade County, Florida NOA No. 26-0305.07.



No.	Components
1	6-in (152mm), 18 Ga Steel Studs at 16-in (406mm) oc
2	5/8-in (16mm) Glass Mat Faced Gypsum Sheathing • DensGlass® by Georgia Pacific: DP ± 150 ps • Securock® by United States Gypsum: DP ± 140 psf
3	StoGuard® with Sto Gold Coat®
4	Sto Primer/Adhesive
5	Min. 2-in (51mm) Sto Insulation Board (Miami-Dade County, Florida Listed)
6	Sto Mesh Embedded in Sto Primer/Adhesive
7	Sto Textured Finish or StoCast Finish
8	No. 8 x 1-1/4-in (32mm) Corrosion Resistant Wafer Head Screws at 6-in (152mm) oc Along Studs

Note: components not identified as Sto are furnished by other manufacturers and are not necessarily installed by trades who install the Sto products. Refer to project specific contract documents.

Table of Contents

PART 1 GENERAL 3

1.1 SUMMARY 3

1.2 SUBMITTALS 3

1.3 REFERENCES 3

1.4 DESIGN REQUIREMENTS 5

1.5 PERFORMANCE REQUIREMENTS 5

1.6 COMPLIANCE 6

1.7 QUALITY ASSURANCE 6

1.8 DELIVERY, STORAGE AND HANDLING 7

1.9 PROJECT/SITE CONDITIONS 7

1.10 COORDINATION/SCHEDULING 8

1.11 WARRANTY 8

PART 2 PRODUCTS 8

2.1 MANUFACTURERS 8

2.2 AIR AND WATER-RESISTIVE BARRIER 9

2.3 INSULATION ADHESIVE 9

2.4 INSULATION BOARD 9

2.5 BASE COAT 9

2.6 REINFORCING MESH 9

2.7 PRIMER 10

2.8 FINISH 10

2.9 JOB MIXED INGREDIENTS 10

2.10 ACCESSORIES 10

2.11 MIXING 10

PART 3 EXECUTION 10

3.1 ACCEPTABLE INSTALLERS 10

3.2 EXAMINATION 10

3.3 SURFACE PREPARATION 11

3.4 INSTALLATION 11

3.5 PROTECTION 11

3.6 CLEANING, REPAIR AND MAINTENANCE 11

PART 1 GENERAL

1.1 SUMMARY

A. Provide High Velocity Hurricane Zone (HVHZ), Small Missile (SM) Impact Resistant Exterior Insulation and Finish System (EIFS) that complies with requirements of the Florida Building Code (FBC) and Miami-Dade County, Florida.

Add/delete Sections, depending on specific project requirements

B. Related Sections

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 Florida Building Code (FBC) Product Approval Number or Miami-Dade County NOA (Notice of Acceptance)

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 compatibility

F. Prepare and submit project-specific details (when required by contract documents)

1.3 REFERENCES

A. ASTM Standards

1. C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation

2. C920, Standard Specification for Elastomeric Joint Sealants
3. C1177, Specification for Glass Mat Gypsum for Use as Sheathing
4. C1382, Standard Test Method for Determining Tensile Adhesion Properties of Sealants When Used in Exterior Insulation and Finish Systems ("EIFS")
5. C2430, Standard Specification for Expanded Polystyrene ("EPS") Thermal Insulation Boards for Use in Exterior Insulation and Finish Systems (EIFS) Joints
6. E96, Standard Test Methods for Water Vapor Transmission of Materials
7. E119, Method for Fire Tests of Building Construction and Materials
8. 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
9. E330, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
10. E331, Standard Test Method for Water Penetration of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
11. E2178, Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials
12. E2273, Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish System (EIFS) Clad Wall Assemblies
13. E2357, Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies
14. E2568, Standard Specification for PB Exterior Insulation and Finish Systems
15. E2570, Standard Test Methods for Evaluating Water-Resistive Barrier (WRB) Coatings Used Under Exterior Insulation and Finish Systems (EIFS) or EIFS with Drainage

B. Florida Product Approval

1. FBC Product Approval: 21034, StoTherm ci 1177 18 Ga-LM 21-0722.07

C. International Organization for Standardization (ISO)

1. ISO 9001, Quality Management Systems – Requirements
2. ISO 14001, Environmental Management Systems – Requirements with Guidance for Use

D. Miami-Dade County Notices of Acceptance

1. NOA 26-0305.07, Sto Corp., StoTherm ci GMG LM EIFS System over GP 5/8" DensGlass and USG 5/8" Securock - LMI
2. NOA 23-0911.08, Carpenter Company, Preformed Block Type EPS Insulation
3. NOA 24-1220.04, Atlas Molded Products, ThermalStar GPS EPS Wall Insulation

E. Florida Building Code Test Standards

1. TAS 201, Testing Application Standard (TAS) 201-94, Impact Test Procedures
2. TAS 202, Testing Application Standard (TAS) 202-94, Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure

3. TAS 203, Testing Application Standard (TAS) 203-94, Criteria for Testing Products Subject to Cyclic Wind Pressure Loading

F. 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

G. South Coast AQMD (Air Quality Management District) Standards

1. Rule 1113, Architectural Coatings

H. Sto Publications

1. StoTherm EIFS Installation Guide

2. StoTherm ci Design Guide and Detail Booklet

3. Sto reStore Repair and Maintenance Guide

1.4 DESIGN REQUIREMENTS

Add/delete or modify depending on specific project requirements

A. Wall Assembly Design Pressure Rating: plus or minus 140 psf (6.70 kPa) and capable of achieving plus or minus 150 psf (7.18 kPA) depending on glass mat gypsum wall sheathing selection

B. Structural Wall: 6-in (152mm) 18 gage steel track and studs spaced at maximum 16-in (406mm) on center

C. Drainable EIFS Wall Assembly: fully compliant with Florida Building Code (FBC) and Miami-Dade County criteria for Large and Small Missile impact resistance, drainage efficiency, air leakage and water penetration resistance, and for use on noncombustible construction for buildings of any height

1.5 PERFORMANCE REQUIREMENTS

A. Air and Water-Resistive Barrier (AWRB)

1. Air leakage less than 0.004 cfm/ft^2 (0.02 L/s·m^2) at 1.57 psf (75 Pa) when measured in accordance with ASTM E2178

2. Assembly air leakage less than 0.04 cfm/ft^2 (0.2 L/s·m^2) after conditioning protocol when measured in accordance with ASTM E2357

3. Meets requirements for use as a Water-Resistive Barrier (WRB) Coating for use under EIFS wall covering when tested in accordance with ASTM E2570

4. Vapor Permeable, water vapor permeance greater than 10 perms when measured in accordance with ASTM E96, Method B

B. EIFS

1. Meets or exceeds durability requirements of ASTM E2568

2. Meets or exceeds drainage efficiency of 90% 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

C. EIFS Clad and AWRB Wall Assembly

1. Meets Large Missile Impact resistance and wind load criteria of TAS 201, 202, and 203 with a design pressure rating of plus or minus 150 psf (7.18 kPa) with Georgia Pacific DensGlass® sheathing, and plus or minus 140 psf (6.70 kPa) with USG Securock® sheathing
2. Meets acceptance criteria of NFPA 285 for use on non-combustible construction
3. No ignition when exposed to radiant heat in accordance with NFPA 268
4. Maintains hourly fire resistance rating of known, hourly rated base wall assembly when tested in accordance with ASTM E119

1.6 COMPLIANCE

A. EIFS Wall Cladding Assembly

1. Complies with FBC and Miami-Dade County requirements for use in High Velocity Hurricane Zones, and for use on buildings required to have Small Missile Impact resistance
2. Complies with FBC and Miami-Dade County requirements for use on noncombustible construction

B. Air and Water-Resistive Barrier

1. Complies with FBC and Miami-Dade County requirements for allowable material and assembly air leakage

C. EIFS

1. Complies with FBC and Miami-Dade County requirements for EIFS wall covering with drainage

D. Joint Sealant for Use with EIFS

1. Conforms with ASTM C920: Type S, Grade NS, Use NT, A, M, Class 100/50

1.7 QUALITY ASSURANCE

A. Manufacturer Requirements

1. Manufacturer facilities subject to audit by a quality assurance entity approved by the Florida Building Commission
2. 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. Manufacturer shall be named in the EIFS manufacturer's Miami-Dade County NOA and shall hold a current NOA listing or current FBC product approval.

D. Substrate Requirements

1. All substrates shall be in compliance with the applicable building code for strength, durability, resistance to weather, fire resistance, and other safety requirements
2. Glass mat gypsum sheathing shall be in conformance with ASTM C1177. Surface shall be clean, dry, and free of frost, damage, dust, dirt, oil or other contaminants that could interfere with adhesion of the AWRB or EIFS components.

E. 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.

F. 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°F and 80°F (4°C 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, freezing, and continuous high humidity (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 (152mm) or as required by code

B. Provide roofing and protection at roof and floor levels to prevent water entry to the interior or into and behind the exterior wall system 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 the period allowed by the manufacturer

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 minimum 5/8-in (16mm) glass mat gypsum sheathing in compliance with ASTM C1177 as manufactured by one of the following manufacturers and in conformance with required design wind pressure requirements

1. Georgia Pacific DensGlass®, Design Pressure Rating: plus or minus 150 psf (7.18 kPa)
2. USG Securock®, Design Pressure Rating: plus or minus 140 psf (6.70 kPa)

B. Provide air and water-resistive barrier and EIFS cladding components from single source manufacturer or approved supplier

C. The following are acceptable manufacturers:

1. 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. Sto GPS Board or Sto EPS Insulation Board – ASTM C578 and E2430 compliant Graphite Polystyrene or Expanded Polystyrene insulation board as molded by Atlas Corporation, and listed in Miami-Dade County, FLorida NOA No. 24-1220.04
   a. Atlas Molded Products, Division of Atlas Roofing Corporation, 2100 RiverEdge Parkway, Suite 600, Atlanta, GA 30328, www.atlasmoldedproducts.com
3. Sto EPS Insulation Board – ASTM C578 and E2430 compliant EPS insulation board as molded by Carpenter Company and listed in Miami-Dade County, Florida NOA No. 23-0911.08
   a. Carpenter Company, 5100 Frontage Road South, Lakeland, FL 33815, www.carpenter.com

2.2 AIR AND WATER-RESISTIVE BARRIER

A. StoGuard Detail Components for sheathing joint treatment, rough opening protection, counterflashing, and static joints and seams:

Choose one or more components as needed for the work

1. Sto Gold Coat used with StoGuard Fabric reinforcement
2. Sto RapidGuard: single component rapid drying gun-applied STPE detail component
3. StoGuard Conformable Membrane: self-adhered membrane flashing

B. Static and Dynamic Joints

1. StoGuard Conformable Membrane: self-adhered membrane

C. Air and Water-resistive Barrier Coating

1. Sto Gold Coat: ready mixed vapor permeable air and water-resistive barrier coating applied by brush, roller, or airless spray

2.3 INSULATION ADHESIVE

A. Sto Primer/Adhesive: acrylic latex additive combined 1:1 by volume with Type I or Type IL portland cement at the job site

2.4 INSULATION BOARD

Choose one

A. Sto GPS Board: graphite polystyrene insulation board, minimum 2-in (51mm) thick

B. Sto EPS Insulation Board: expanded polystyrene insulation board, minimum 2-in (51mm) thick

2.5 BASE COAT

A. Sto Primer/Adhesive: acrylic latex additive combined 1:1 by volume with Type I or Type IL portland cement at the job site

2.6 REINFORCING MESH

A. Sto Mesh: nominal 4.5 oz/yd^2 (153 g/m^2) glass fiber mesh reinforcement treated for compatibility with Sto coatings

2.7 PRIMER

Primer is an optional component, except for some specialty finishes – refer to finish product bulletins for primer product selection

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

2.8 FINISH

Choose one or more as dictated by architectural drawings and refer to applicable product bulletin(s)

A. Sto Textured Finish: low VOC trowel applied decorative and protective textured finish in compliance with South Coast AQMD Rule 1113

B. StoCast Finish: pre-formed, factory cast decorative and protective finish, adhesive, and topcoat where applicable,

2.9 JOB MIXED INGREDIENTS

A. Water – clean and potable

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

C. 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

2.11 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 1.7)

3.2 EXAMINATION

A. Inspect sheathing application for compliance with applicable requirement and in conformance with manufacturer's requirements

1. Glass Mat Faced gypsum sheathing: compliant with ASTM C1177 with fasteners and fastening schedule in conformance with Miami-Dade County, Florida NOA No. 26-0305.07
2. Fasteners: #8 x 1-$^{1}/_{4}$-in (32mm) wafer head corrosion resistant self-drilling screws seated flush with sheathing surface, spaced 6-in (152mm) on center along studs in field and perimeter.
3. Surface condition: clean, dry, and free of frost, damage, and all bond-inhibiting materials, including dirt, dust, efflorescence, oils, grease, chalkiness, and other foreign matter.

B. Report deviations from the requirements of project specifications or other conditions that might adversely affect the sheathing installation, air and water-resistive barrier and EIFS installation to the General Contractor. Do not start work until deviations are corrected.

3.3 SURFACE PREPARATION

A. Remove surface contaminants from gypsum sheathing surfaces

B. 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)

C. Replace weather-damaged sheathing and repair or replace damaged or cracked sheathing

3.4 INSTALLATION

Refer to applicable Sto product bulletins, StoTherm EIFS Installation Guide, and StoTherm ci Design Guide and Detail Booklet for general information on installation and details.

Where Sto Armor Mat or Sto Armor Mat XX is used over the insulation (for additional incidental impact resistance in high traffic areas), apply Sto Mesh (4.5 oz/yd^2) over Sto Armor Mat or Sto Armor Mat XX in accordance with published installation instructions.

A. Install manufacturer's air and water-resistive barrier in conformance with manufacturer's written instructions

B. Install manufacturer's EIFS cladding in conformance with manufacturer's written instructions

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

ATTENTION

Sto products are intended for use by qualified professional contractors, not consumers, as a component of a larger construction assembly as specified by a qualified design professional, general contractor or builder. They should be installed in accordance with those specifications and Sto's instructions. Sto Corp. disclaims all, and assumes no, liability for on-site inspections, for its products applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Sto's control. Improper use of Sto products or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to Sto products, and to the structure of the building or its components. **STO CORP. DISCLAIMS ALL WARRANTIES EXPRESS OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME TO TIME.** For the fullest, most current information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the Sto Corp. website, www.stocorp.com.