

# Installation Instructions

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# Installation Instructions

## A. Packaging

Sto Gold Fill:	56 lb. (25 kg) pail
Sto Gold Coat:	4.7 gal. (18 L) pail
Sto EmeraldCoat:	4.7 gal. (18 L) pail
StoGuard Mesh:	4.25 inch x 150 lineal feet (108 mm x 45.7 m) wide rolls; 36 rolls per carton 9.5 inch x 150 lineal feet (241 mm x 45.7 m) wide rolls; 16 rolls per carton
StoGuard Fabric:	4 inch, 18 rolls per box; 6 inch, 12 rolls per box
StoGuard RediCorner:	60 per box
StoGuard Tape:	6 inch, 6 rolls per box

## B. Mixing and Storage of Materials

**Sto Gold Fill®:** Mix with a clean, rust-free electric drill and paddle to a uniform consistency. Do not thin, or dilute with water. Protect from extreme heat (90°F [21°C]), freezing and direct sunlight. After use, keep containers covered to protect from skinning. If material skins, remove skinned material from container.

**Sto Gold Coat® and Sto EmeraldCoat®:** Mix with a clean, rust-free electric drill and paddle to a uniform consistency. Do not thin, or dilute with water. Protect from extreme heat (90°F [21°C]), freezing and direct sunlight. Keep containers covered to protect from skinning. If material skins, remove skinned material from container.

**StoGuard™ Mesh, StoGuard™ Fabric, StoGuard™ RediCorner™, and StoGuard™ Tape:** Protect from direct sunlight. Store in a dry area. Store cartons on side.

## C. General Material Handling Instructions

Sto Gold Fill, Sto Gold Coat, and Sto EmeraldCoat are water based products. Apply only when surface and ambient temperatures are 40°F (4°C) and rising. Maintain temperatures above 40°F (4°C) during drying period for at least 24 hours. Provide adequate ventilation during application and drying period. Ventilate temporary heaters to the exterior to prevent water vapor from accumulating on or within the wall assembly materials. Sto Gold Fill, Sto Gold Coat, and Sto EmeraldCoat dry and can be over coated within 4 hours under normal (70°F [21°C]) drying conditions. Cool, damp conditions retard drying and may require extended periods of protection against rain or freezing, or delay before over coating. Sto Gold Coat can be left exposed to weather for up to six months, Sto EmeraldCoat for up to 60 days. Install cladding over StoGuard within the allowable exposure period. When attaching insulation with adhesive, some surface preparation may be required to remove surface contamination if StoGuard is left exposed for extended periods. Verify that surface is clean, sound and free of all bond-inhibiting materials before installing insulation with adhesive. Suitable adhesives for use over Sto Gold Coat are Sto BTS-Plus, Sto Primer/Adhesive-B or Sto BTS-Silo. Do not use solvent based or petroleum-based adhesives. Adhesive application of insulation or any other material is NOT RECOMMENDED over Sto EmeraldCoat, as it is formulated with a bond breaker that interferes with adhesion.

## D. Material Coverage\*

**Sto Gold Fill®:** 175–250 lineal feet (53–76 m) of sheathing joints and rough openings

### **Sto Gold Coat® and Sto EmeraldCoat®:**

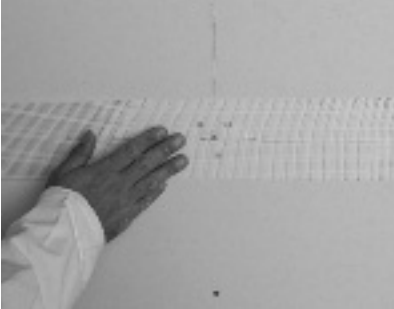
- Dens-Glass® Gold: 425–525 ft<sup>2</sup> (39–49 m<sup>2</sup>) per pail
- Exterior Gypsum: 550–650 ft<sup>2</sup> (51–60 m<sup>2</sup>) per pail
- Plywood: 425–525 ft<sup>2</sup> (39–49 m<sup>2</sup>) per pail
- OSB (2 coats): 300–400 ft<sup>2</sup> (28–37 m<sup>2</sup>) per pail (2 coats)
- Concrete Masonry: 100–300 ft<sup>2</sup> (9.3–28 m<sup>2</sup>) per pail (2 liberal coats)
- Concrete: 425–525 ft<sup>2</sup> (39–49 m<sup>2</sup>) per pail

\* Coverage will vary, especially on concrete or concrete masonry surfaces, depending on surface porosity, CMU joint profile, surface irregularities and other variables that may exist. Check coverage in a trial area for best approximation of coverage rates.

## E. Installation over Sheathed Wall Construction

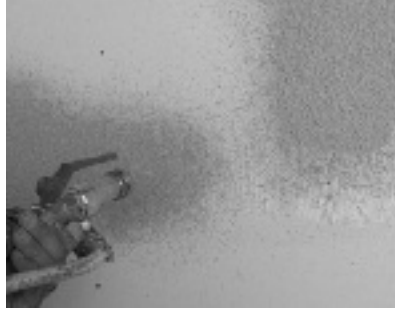
*Important Note: the waterproofing/air barrier installation described below is just one component of the air barrier system for the building envelope and the waterproofing protection of the wall construction. Installation of the waterproofing/air barrier must be integrated with other air and waterproofing barrier components in the construction. This requires coordination with other trades to ensure proper sequencing of work, to achieve air barrier continuity, and to direct rain water to the exterior, not into the wall assembly. Always protect rough openings in wall construction BEFORE installing windows, doors, louvers, etc. Where water is likely to penetrate the wall assembly, such as windows, flashing must be installed to direct water to the exterior at the leak source (see Critical Detail Checklist for Wall Assemblies in appendix).*

### Step 1



**Figure 10a: Apply 4.5" (114 mm) StoGuard™ Mesh to all vertical & horizontal sheathing joints.**

### Step 2



**Figure 10b: Spray Sto Gold Fill® over StoGuard™ Mesh and spot fasteners**

### Step 3



**Figure 10c: Spray Sto Gold Coat® or Sto EmeraldCoat® onto the entire wall surface.**

The following instructions are applicable to:

- Exterior or Exposure I Plywood in compliance with PS-1
- Gypsum Sheathing in compliance with ASTM C 79
- Glass Mat Faced Gypsum Sheathing in compliance with ASTM C 1177
- Fiber Reinforced Gypsum Sheathing in compliance with ASTM C 1278

1. All sheathing must be handled and installed in compliance with applicable code and/or manufacturer requirements. Installed sheathing must be clean, dry and free from damage, frost, and all bond-inhibiting materials. Gap sheathing (if required) maximum 1/8 inch (3 mm) at joints. Should gaps exceed 1/8 inch (3 mm) up to 1/4 inch (25 mm) wide, apply low expanding urethane foam into joints and rasp or shave flush with sheathing surface.

Follow 2A or 2B below depending on which reinforcing mesh is being used, StoGuard Mesh (2A) or Sto Detail Mesh (2B):

2A. StoGuard Mesh: StoGuard Mesh is a "self-stick" glass fiber reinforcing mesh with adhesive on one side to facilitate placement of the mesh and installation of Sto Gold Fill over the mesh. Place minimum 4 inch (101 mm) wide mesh at sheathing joints and minimum 9 inch (152 mm) wide mesh at rough openings and inside and outside corners (refer to Sto detail 20.24G or 20.24E). Immediately apply Sto Gold Fill by spray or trowel over the mesh and trowel smooth. Protect from rain and freezing until dry.



**Figure 11: Protection of rough opening with StoGuard™ self-stick mesh and Sto Gold Fill® joint treatment. After placing the self-stick mesh into the rough opening and onto the face of the sheathing, apply Sto Gold Fill® over the mesh by spray or trowel, then trowel smooth.**



**Figure 12: Application of waterproof coating. After treating rough openings, joints in sheathing, and inside and outside corners with Sto Gold Fill® joint treatment, apply Sto Gold Coat® or Sto EmeraldCoat™, as appropriate, to the entire wall surface. Apply by spray or roller.**

2B. Alternative with Sto Detail Mesh: Sto Detail Mesh is a glass fiber reinforcing mesh that requires embedment in Sto Gold Fill. Apply Sto Gold Fill by spray or trowel over sheathing joints, rough openings and inside and outside corners. Immediately embed reinforcing mesh in the wet joint treatment and trowel smooth. Embed minimum 4 inch (101 mm) wide mesh at sheathing joints and minimum 9 inch (152 mm) wide mesh at rough openings and inside and outside corners. Protect from rain and freezing until dry.

3. Spot fasteners with Sto Gold Fill and protect from rain and freezing until dry. Spot surface defects such as knots and checks in plywood sheathing and protect from rain and freezing until dry. If using StoGuard Fabric, pre-spot all fasteners with Sto Gold Coat or Sto EmeraldCoat. Spot surface defects such as over driven fasteners, knots or other voids in sheathing surface with Sto Gold Fill.
4. Apply Sto Gold Coat or Sto EmeraldCoat, as appropriate, by spray or roller over sheathing surface, including the dry joint treatment, to a uniform wet mil thickness of 10 mils in one coat. Use 1/2 inch (13 mm) nap roller for plywood, gypsum sheathing, and fiber reinforced gypsum sheathing. Use 3/4 inch (19 mm) nap roller for glass mat faced gypsum sheathing. Protect from rain and freezing until dry.
5. Coordinate installation of connecting air barrier components with other trades to provide a continuous air tight membrane (see appendix for a list of compatible air barrier materials).
6. Coordinate installation of flashing and other moisture protection components with other trades to achieve complete moisture protection such that water is directed to the exterior, not into the wall assembly, and drained to the exterior at sources of leaks (windows, doors and similar penetrations through the wall assembly).
7. Note that some flashing components such as window or door head flashing, roof sidewall step flashing, and starter tracks at the base of the wall, require a splice strip of reinforcing mesh. This creates a "shingle lap" and proper shedding of water onto the face of the flashing, not behind the flashing (refer to Figure 13 and Sto detail 20.23bG or 20.23bE).



**Figure 13: Head Flashing Detail**—details like head flashing above windows and doors, roof sidewall step flashing, and starter tracks or flashing at the base of the wall, require a splice strip of reinforcing mesh and Sto Gold Fill® joint treatment, followed by the application of waterproof coating.

The following instructions are applicable to:

- Exposure I OSB (Oriented Strand Board) sheathing in compliance with PS-1 or PS-2:

1. Two coats of Sto Gold Coat or Sto EmeraldCoat are required over OSB sheathing surfaces. First, apply by spray or roller with a 3/4 inch (19 mm) nap roller to the sheathing surface to a uniform wet mil thickness of 10 mils. Protect from rain and freezing until dry. Then follow steps 1-7 on pages 4.2 & 4.3.

### Alternatives to StoGuard Mesh

**StoGuard Fabric and Sto RediCorner are alternatives to StoGuard Mesh** and are used at the same locations—sheathing joints, rough openings, inside and outside corners—except they do not require the use of Sto Gold Fill. Instead, they are embedded in Sto Gold Coat or Sto EmeraldCoat. Similarly, StoGuard Tape is another alternative that does not require the use of Sto Gold Fill nor does it require any embedment. Instead, it is applied directly to the sheathing surface. Sometimes a primer is needed with StoGuard Tape to enhance adhesion and prevent edge peeling on surfaces such as Dens-Glass Gold and OSB sheathing. Suitable primers are 3M Super 77, 3M Hi-Tack 76, and Camie 343 Construction Adhesive. Consult product bulletins on StoGuard Fabric, Sto RediCorner, and StoGuard Tape for more information.

## F. Installation over Concrete Wall Construction

1. Concrete wall construction must comply with applicable code requirements.
2. Concrete must be clean, dry and free from damage, frost, and all bond-inhibiting material, including dust, dirt, mold, algae, efflorescence, laitance, curing compounds and form release agents. Chalking, loose or damaged material must be removed. Clean/remove by waterblasting, sandblasting, wire brushing or other means to provide a clean, sound surface. Refer to ASTM D-4258 and ASTM D-4261 for complete details on methods of preparing cementitious substrates for coatings.
3. Repair shrinkage cracks up to 1/8 inch (3 mm) wide by filling with Sto Gold Fill®. Rake the crack with a sharp tool to remove

loose or friable material, and blow clean with oil free compressed air. Apply Sto Gold Fill® by spray, trowel, or putty knife over the crack and smooth with the knife or trowel. For cracks wider than 1/8 inch (3 mm) and up to 1/4 inch (25 mm) wide use StoGuard Tape to cover the cracks or use a paintable acrylic latex caulk to fill the crack and tool flush with the surface. For moving cracks, consult a structural engineer. Do not use StoGuard materials to repair moving cracks or cracks wider than 1/4 inch (6 mm). Protect crack repair materials from rain and freezing until dry.

4. Apply Sto Gold Coat or Sto EmeraldCoat by spray or roller over the surface, including the dry crack treatment, to a uniform wet mil thickness of 8-10 mils in one coat. Use a 1/2 inch (51 mm) nap roller for smooth formed concrete surfaces and a 3/4 inch (19 mm) nap roller for rough concrete surfaces. Protect from rain and freezing until dry.

## **G. Installation as a Waterproofing/Air Barrier over Concrete Masonry Wall Construction**

*Important Note: StoGuard functions as a waterproofing/air barrier on normal weight concrete masonry wall construction when applied in minimum two liberal coats. Additional coats may be necessary depending on the condition of the CMU surface, CMU porosity, joint profile, and other variables that may exist. See alternate method below for "rough" CMU wall surfaces.*

1. Concrete masonry wall construction must comply with applicable code requirements.
2. Concrete masonry must be clean, dry and free from damage, frost, and all bond-inhibiting material, including dust, dirt, mold, algae and efflorescence. Chalking, loose or damaged material must be removed. Clean/remove by waterblasting, sandblasting, wire brushing or other means to provide a clean, sound surface. Refer to ASTM D-4258 and ASTM D-4261 for complete details on methods of preparing cementitious substrates for coatings.
3. Repair shrinkage cracks in mortar up to 1/8 inch (3 mm) wide by filling with Sto Gold Fill. Rake the crack with a sharp tool to remove loose or friable material, and blow clean with oil free compressed air. Apply Sto Gold Fill by spray, trowel, or putty knife over the crack and smooth with knife or trowel. For cracks wider than 1/8 inch (3 mm) and up to 1/4 inch (25 mm) wide use a paintable acrylic latex caulk to fill the crack and tool flush with the surface. For moving cracks, consult a structural engineer. Do not use StoGuard materials to repair moving cracks or cracks wider than 1/8 inch (3 mm). Protect crack repair materials from rain and freezing until dry.
4. Apply Sto Gold Coat or Sto EmeraldCoat, as appropriate, by spray or roller over the surface, including the dry crack treatment, to a uniform wet mil thickness of 10-30 mils. Back roll spray applications. Use a 3/4 inch (19 mm) nap roller. Protect from rain and freezing until dry.
5. Apply a second coat of Sto Gold Coat or Sto EmeraldCoat by spray or roller over the first coat to a uniform wet mil thickness of 10-30 mils. Back roll spray applications. Protect from rain and freezing until dry.
6. Apply subsequent coats if needed to achieve a VOID AND PINHOLE FREE surface.

## **H. Alternate Installation Method as a Waterproofing/Air Barrier over Concrete Masonry Wall Construction**

*Important Note: This method is intended for "rough" CMU wall construction, for example, if joints are struck, and/or the surface is not straight and uniform.*

1. Concrete masonry wall construction must comply with applicable code requirements.
2. Concrete masonry must be clean, dry and free from damage, frost, and all bond-inhibiting material, including dust, dirt, mold, algae and efflorescence. Chalking, loose or damaged material must be removed. Clean/remove by waterblasting, sandblasting, wire brushing or other means to provide a clean, sound surface. Refer to ASTM D-4258 and ASTM D-4261 for complete details on methods of preparing cementitious substrates for coatings.
3. Fill the masonry wall surface with minimum one coat of Sto BTS-Plus, Sto Primer/Adhesive-B, Sto BTS-Silo, or Sto Leveler applied by spray or trowel. Protect from rain and freezing until dry. Additional coats may be necessary depending on the condition of the CMU surface.
4. Repair cracks in mortar up to 1/8 inch (3 mm) wide by filling with Sto Gold Fill. Rake the crack with a sharp tool to remove loose or friable material, and blow clean with oil free compressed air. Apply Sto Gold Fill by spray, trowel, or putty knife over the crack and smooth with the knife or trowel. For cracks wider than 1/8 inch (3 mm) and up to 1/4 inch (25 mm) wide use StoGuard Tape to cover the cracks or use a paintable acrylic latex caulk to fill the crack and tool flush with the surface. For moving cracks, consult a structural engineer. Do not use StoGuard materials to repair moving cracks or cracks wider than 1/4 inch (6 mm). Protect crack repair materials from rain and freezing until dry.

5. Apply Sto Gold Coat or Sto EmeraldCoat, as appropriate, by spray or roller over the surface to a uniform wet mil thickness of 10-30 mils in one coat to achieve a VOID AND PINHOLE FREE SURFACE. Back roll spray applications. Use a 1/2 inch (51 mm) nap roller. Protect from rain and freezing until dry.

## I. Spray Application

### Airless Spray Pump: Graco 595 with a 0.025 tip or Graco 695 with a 0.027 tip.

**Sto M-8 Pump:** Sto Gold Fill and Sto Gold Coat are formulated for compatibility with StoMachine Technology spray equipment, specifically the Sto M-8 Pump. The Sto M-8 pump is a peristaltic pump that uses a diaphragm and rotating chamber to deliver material. The following general guidelines should be followed when spraying Sto Gold Fill and Sto Gold Coat:

- Set up scaffold far enough from the wall to allow for proper spraying
- Remove any obstructions that would prevent uniform movement of the applicator
- Do not spray in windy conditions
- Mask and cover adjacent construction, building components, and landscaping, and move cars to avoid over spray onto these and other surfaces not intended to receive StoGuard materials
- Stage the job with enough people (generally at least 2) to assist with the spraying, to keep material ready and hoses clear, to check for uniformity, and to remove masking promptly
- Spray a test area first to be sure of desired results
- Hold the spray nozzle perpendicular to the wall, and spray consistently in a small circular motion
- Spraying followed by back rolling is not required on sheathing provided a uniform coat of Sto Gold Coat or Sto EmeraldCoat is achieved with the spray application
- Back rolling is required for spray applications over CMU surfaces

Table 3. Sto M-8 Pump Guideline Adjustments for Spraying StoGuard™ Materials

Pump Adjustments	Sto Gold Fill®	Sto Gold Coat® or Sto EmeraldCoat®
Pump Setting	2--4	2--4
Air Pressure	15 psi (103 kPa)	20 psi (138 kPa)
Spray Pistol Orifice Size	6 or 8	4, 6 or 8

*Note: adjust pump settings, air pressure and orifice size, depending on speed of application, weather conditions, and work site conditions.*

Other spray devices such as a Hopper or Bottom-Feed Pistol type sprayers are generally suitable for spraying Sto Gold Coat and Sto EmeraldCoat, but not necessarily Sto Gold Fill. Consult with the spray device manufacturer in these cases and always attempt a small trial application to be sure of desired results.

## J. Compatible Air Barrier Connection Materials

### Rubberized Asphalt Membranes

**StoGuard™ Tape** - A self-adhering waterproof air barrier material composed of spunbound polyester fabric laminated to rubberized asphalt adhesive.

WR Grace Perm-A-Barrier®  
WR Grace Vycor®

WR Grace  
Cambridge, MA  
Tel: 800-354-5414  
www.na.graceconstruction.com

EIFS Tape  
BT-20XL

Protecto Wrap Co.  
2255 S. Delaware St.  
Denver, CO 80223  
Tel: 800-759-9727  
www.protectowrap.com

### Urethane Spray Foams

Dow Great Stuff™  
for Gap and Cracks  
Dow Great Stuff™  
for Windows and Doors

The Dow Chemical Co.  
Dow Center  
Midland, MI 48667  
Tel: 800-232-2436  
www.dow.com

Zerodraft Foam Sealant and  
Zerodraft Insulating Air Sealant

Zerodraft  
125 Traders Blvd. East, Unit 4  
Mississauga, Ontario L4Z2H3  
Tel: 905-890-5866  
Fax: 905-890-8114  
www.zerodraft.com

Always consult with manufacturer to verify proper use and handling of products. Always follow manufacturer's installation instructions and heed cautions on packaging and directions for use. Where necessary test materials to be sure of desired results.