

ARCHITECTURAL SPECIFICATIONS

Section 07500/ 07 50 00 – USG Securock® Brand High-Performance Roof Board

General Specification Notes:

References in blue are general indicators to the specifier.

The text material contained herein is intended for use as product reference material by architects, engineers, other design professionals, contractors, building code officials, or other competent construction industry trade factors having an interest in the selection, specification, and use of products manufactured by the subsidiaries of USG Corporation. It is intended solely as technical support incident to the sale and use of our products.

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This specification is intended for use to include USG Securock® Brand Gypsum-Fiber, USG Securock® Brand Glass-Mat and USG Securock® Brand Cement roof boards as a component within the specified membrane roofing system. USG Securock® Brand High-Performance Roof Board can be used as a thermal barrier, substrate board, roofing protection board, roof insulation protection board (i.e. cover board), barrier board and a re-cover board.

The specification information detailed below should be appropriately included, edited, and recorded in the roofing system specification as desired.

Part 1 – GENERAL

1.01 Description

- A. Work in this section includes, but is not limited to:
 - 1. Thermal barrier
 - 2. Substrate board
 - 3. Roofing protection board
 - 4. Roof insulation protection board
 - 5. Barrier board
 - 6. Re-cover board

- B. Related work specified elsewhere:
 - 1. Roof insulation
 - 2. Roof membrane
 - 3. Gypsum board
 - 4. Rough carpentry
 - 5. Metal roof
 - 6. Preparation for re-roofing
 - 7. Vegetated roof assemblies

1.02 Submittals

- A. Product data: Submit manufacturer's descriptive literature indicating material composition, thickness, sizes, and fire resistance that relate to the specified roof assembly.

- B. Shop drawings: Submit shop drawings indicating fastener and adhesive patterns for FMG wind uplift resistance specified.

1.03 Delivery, Storage And Handling

- A. Delivery: Deliver materials to the job site in manufacturer's original packaging, containers, and bundles with manufacturer's brand name and identification intact and legible.
- B. Storage: Keep USG Securock[®] Brand High-Performance Roof Board panels dry before, during, and after application. Outside storage must be off the ground and protected by a breathable waterproof covering. USG Securock[®] High-Performance Roof Board panels must be covered the same day as laid. Store all panels flat. Damaged materials shall be removed from the premises.
- C. Handling: USG Securock High-Performance Roof Board panels should be cut to size using utility knife and straight edge. Score surface with utility knife and bend board up sharply toward score. Use keyhole-type drywall saw or recommended score and knock-out method for penetration cut-outs and radiuses.

1.04 Limitations

- A. USG Securock High-Performance Roof Board is engineered to perform within a properly designed roof system. The use of USG Securock High-Performance Roof Board as a roofing component is the responsibility of the design professional.
- B. Consult roofing manufacturers for specific instructions on the application of their products to USG Securock High-Performance Roof Board panels.
- C. Weather conditions, dew, application temperature, installation techniques and moisture drive can have adverse effects on the performance of the roof system and are beyond the control of USG.
- D. Keep USG Securock High-Performance Roof Board panels dry before, during and after installation. USG Securock High-Performance Roof Board panels should not be installed during rains, heavy fogs and any other conditions that deposit moisture on the surface of the board. Apply only as much USG Securock High-Performance Roof Board panels that can be covered by final roof membrane system in the same day. Avoid exposure to moisture from leaks or condensation.
- E. Wind uplift (vertical pull) of the roof system as installed can be affected by many factors beyond USG's control, including moisture migrating into the roof assembly from inside or outside the building, proper fastener spacing, the quality of installation especially for fasteners and whether the framing has been properly designed and installed to meet strength and deflection criteria specified in the contract documents. For all these reasons, USG cannot guarantee the wind uplift resistance (vertical pull) of any roof assembly or system containing USG roof boards.
- F. Moisture from inside the building can be as big a risk for the roof system as moisture from outside. The contractor installing the roof and the design professional should protect the roof assembly not only from excessive moisture during the construction of the building (new concrete, paint, plaster materials) but also after the building is dried in. The HVAC system must properly manage moisture generated by the occupants of the building to make sure it is vented to the outside and does not migrate into the roof system.
- G. Panel spacing may be needed based on factors like roof deck's size, membrane color, ultimate deck surface temperature and time of year the roof is installed. The designer of record should use USG's published physical properties below to determine if spacing is needed.
- H. For re-roof or re-cover applications, existing roofing system must be dry throughout prior to application of USG Securock High-Performance Roof Board panels.
- I. Plastic or poly packaging applied at the plant to protect board during rail or other transit should be removed upon receipt to prevent condensation or trapping of moisture, which may cause application problems.
- J. USG Securock High-Performance Roof Board panels should be stored flat and off the ground with protection from the weather. If stored outdoors, a breathable waterproof covering should be used.
- K. For systems not listed, please contact your local USG Securock roofing sales representative.
- L. When applying solvent-based adhesives or primers, allow sufficient time for the solvent to evaporate to avoid damage to roofing components.
- M. USG allows the bonding of cold mastic modified bitumen and torching directly to the surface of only USG Securock Gypsum-Fiber Roof Board panels. Consult with the system manufacturer for recommendations on this application.

- N. USG recommends maximum asphalt application temperature for Type III asphalt of 455 °F (235 °C) when using USG Securock Gypsum-Fiber Roof Board. Application temperatures above these recommended temperatures may adversely affect roof system performance.
- O. USG recommends that you follow system manufactures recommendations for adhesive application and minimum tempertures requirements.
- P. Locate edge joints on, and parallel to, deck ribs. Stagger end joints of adjacent lengths of USG Securock High-Performance Roof Board panels. All board edges should be loosely abutted and never kicked in tight in ttypcal installations.

Part 2 – PRODUCTS

2.01 Gypsum Roof Board:

- A. USG Securock[®] Brand Gypsum-Fiber Roof Board
 - 1. Acceptable product and manufacturer: ¼", ⅜", ½", and ⅝" USG Securock Gypsum-Fiber Roof Board as manufactured by United States Gypsum Company.
 - 2. Composition: Impact-resistant, nonstructural, fiber-reinforced gypsum panels manufactured with a minimum 97% certified recycled content, with moisture and mold resistance throughout the panel core and surface; manufactured to conform to ASTM C1278.
 - 3. Fiber Reinforced Gypsum Panel
 - i. Size: Nominal 4' x 8', 4' x 4'
 - ii. Edges: Square
 - iii. Facers: None
 - iv. Flexural strength, parallel, lbs. min. per ASTM C473: ¼" = 40; ⅜" = 70; ½" = 110; ⅝" = 161
 - v. Compressive strength, psi, nominal: ¼" = ⅜" = ½" = ⅝" = 1800
 - vi. Flute spanability per ASTM E661: ¼" = 2-⅝"; ⅜" = 5"; ½" = 8"; ⅝" = 10
 - vii. Permeance, perms per ASTM E96: ¼" = 30; ⅜" & ½" = 26; ⅝" = 24
 - viii. R Value per ASTM E96: ¼" = 0.2; ⅜" = .3; ½" = 0.5; ⅝" = 0.6
 - ix. Coefficient of thermal expansion, inches/inch .F, per ASTM E 831: 8.0×10^{-6}
 - x. Linear variation with change in moisture, inches/inch .%RH, per ASTM D1037: 8.0×10^{-6}
 - xi. Water absorption, % max, per ASTM C473: 10
 - xii. Surface water absorption nominal grams per ASTM C473: ≤ 1.6 grams
 - xiii. Mold resistance per ASTM D3273: 10
 - xiv. Bending radius: ¼", ⅜", ½" = 25'; ⅝" = 30'
 - xv. Recycled Content: min. 97% recycled content certified Scientific Certification Systems.
- B. USG Securock[®] Brand Glass-Mat Roof Board
 - 1. Acceptable product and manufacturer; ¼", ½", and ⅝" USG Securock Glass-Mat Roof Board as manufactured by United States Gypsum Company.
 - 2. Composition: Siliconized moisture and mold resistant gypsum core, with high-performance fiberglass facer; manufactured to conform to ASTM C1177.
 - 3. Glass Mat Gypsum Panel:
 - i. Size: Nominal 4' x 8'
 - ii. Edges: Square
 - iii. Flexural strength, parallel, lbs. min. per ASTM C473: ¼" = 40, ½" = 80, ⅝" = 100
 - iv. Compressive strength, psi, nominal: ¼", ½", & ⅝" = 700-1000
 - v. Flute spanability per ASTM E661: ¼" = 2-⅝"; ½" = 5"; ⅝" = 8"
 - vi. Permeance, perms per ASTM E96: ¼" & ½" = 18, ⅝" = 16
 - vii. R Value per ASTM E96: ¼" = 0.36; ½" = 0.53; ⅝" = 0.54
 - viii. Coefficient of thermal expansion, inches/inch .F, per ASTM E 831: 8.5×10^{-6}
 - ix. Linear variation with change in moisture, inches/inch .%RH, per ASTM D1037: 6.3×10^{-6}
 - x. Water absorption, % max, per ASTM C473: 10
 - xi. Mold resistance per ASTM D3273: 10
 - xii. Bending radius: ¼" = 4'; ½" = 6'; ⅝" = 9'

- C. USG Securock[®] Brand Cement Roof Board
1. Acceptable product and manufacturer; ½" and ⅝" USG Securock Cement Roof Board as manufactured by United States Gypsum Company.
 2. Composition: Portland cement formulation with a high performance polymer-coated glass fiber mesh that is moisture and mold resistant; manufactured to conform to ASTM C1325.
 3. Cement Panel:
 - i. Size: Nominal 4' x 8'
 - ii. Edges: Square
 - iii. Flexural strength, parallel, psi, per ASTM C947: ½" > 750; ⅝" >480
 - iv. Compressive strength, psi nominal: ½" > 1000; ⅝" >1250
 - v. Flute spanability per ASTM E661: ½", ⅝" = 12"
 - vi. Permeance, perms per ASTM E96: ½", ⅝" = 5.84
 - vii. R Value per ASTM C518: ½" = 0.39; ⅝" = 0.49
 - viii. Coefficient of thermal expansion, inches/inch/°F, per ASTM E 831: 4.5×10^{-6}
 - ix. Linear variation with change in moisture, %, per ASTM D1037: < .07
 - x. Water absorption, % max, per ASTM C473: < 15
 - xi. Mold resistance per ASTM D3273: 10
 - xii. Bending radius: 6'

2.02 Miscellaneous Materials

- A. FM-approved plates and fasteners: Provide size and type in accordance with FM requirements, local code requirements, and roof system manufacturer's written recommendations. Stress plates shall be configured for application over hard surfaces.
- B. Adhesives: As recommended by roof system manufacturer.

Part 3 – EXECUTION

3.01 General

- A. Provide USG Securock[®] Brand High-Performance Roof Board panels where indicated on drawings using fastening system specified.
- B. Use maximum lengths possible to minimize number of joints. Support edge joints with deck ribs. Stagger end joints of adjacent lengths of USG Securock High-Performance Roof Board panels. Ends and edges are typically loosely butted.

3.02 Roof Board Installation

- A. Refer to roof system manufacturer's written instructions, local code requirements and Factory Mutual Global (FMG and/or Underwriters Laboratories (UL) requirements for proper installation techniques.
- B. Use fasteners specified in accordance with above requirements. Install approved fasteners with plates into the USG Securock High-Performance Roof Board panels, flush with the surface. Fasteners should be installed in strict compliance with the roof system manufacturer's installation recommendations and FMG Loss Prevention Data Sheet 1-29. Proper fastener spacing is essential to achieve wind-uplift performance.
- C. Locate edge joints on, and parallel to, deck ribs. Stagger end joints of adjacent lengths of USG Securock High-Performance Roof Board panels. All board edges should be loosely abutted and never kicked in tight in typical installations.
- D. See product data table for maximum flute span when panels are applied directly over metal decking.

3.03 Parapet (Wall) Framing and Fastening

- A. As recommended by roof system manufacturer, adhesive manufacturer, or any code body guidelines.
- B. Use appropriate corrosion-resistant fasteners as defined by roof system manufacturer.
- C. Use minimum ½" USG Securock High-Performance Roof Board for vertical wall applications.
- D. Maximum parapet framing spacing: 24" o.c. for ½" and ⅝" USG Securock High-Performance Roof Board.

- E. Fasten a maximum 8" o.c. around the perimeter and 8" o.c. on framing members in the field of the panel. Minimum fastener penetration in wood framing is ¼" and in steel framing is ⅜".

3.05 Standards and Code Compliance

- A. USG Securock[®] Brand Gypsum-Fiber Roof Board is manufactured to conform to ASTM C1278 and meets Factory Mutual 4470 Class 1 criteria as a thermal barrier or overlayment board. USG Securock Gypsum-Fiber Roof Board meets ASTM E81/UL 723 and or CAN/ULC-S102 flame spread 5 smoke developed 0. USG Securock Gypsum-Fiber Roof Board meets a Class A assembly. USG Securock Gypsum-Fiber Roof Board ⅝" meets thickness meets requirements of Type X per ASTM C1278 and may be used in P series designs as a thermal barrier.
- B. USG Securock[®] Brand Glass-Mat Roof Board is manufactured to conform to ASTM 1177, and meet FM Class 1. USG Securock Glass-Mat Roof Board complies with requirement of FM 4450 and FM 4470. UL Classified as to surface burning and ASTM E136: Flame spread 0 and smoke developed 0. Non-combustible core. ¼", ½", ⅝" thickness- Class A unlimited slope in accordance with UL790. USG Securock Glass-Mat Roof Board ⅝" thickness meets requirements of Type X per ASTM C1177, and may be used in P series designs as a thermal barrier.
- C. USG Securock[®] Brand Cement Roof Board is manufactured to conform to ASTM C1325, and meet FM Class 1. USG Securock Cement Roof Board complies with requirement of FM 4450 and FM 4470. UL Classified as to surface burning and ASTM E136: Flame spread 0 and smoke developed 0. Non-combustible core. Class A unlimited slope in accordance with UL790.
- D. USG Securock[®] Brand High-Performance Roof Board is approved with Florida Building Code for installation over insulated or non-insulated, new or existing wood, steel, concrete, or cementitious wood fiber roof decks or insulated or non-insulated existing gypsum roof decks. They may be mechanically attached or applied in ASTM D312, Type III or IV hot asphalt; ASTM D6152 SEBS modified asphalt, or other approved insulation adhesive.
- E. USG Securock High-Performance Roof Board is to be used in low-slope commercial roof construction including those systems classified in UL790 as Class A, B, or C.

END OF SECTION

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