USG
Roofing
Solutions

USG ROOFING SOLUTIONS
PORTFOLIO

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USG
IT'S YOUR WORLD. BUILD IT.®

A LEADER IN THE BUILDING MATERIALS INDUSTRY

For more than 100 years, USG has been a leader in producing innovative products and systems to build the environments in which we live, work and play. As the inventor of wallboard and mineral wool ceiling tile, USG helped create North America's building materials industry. Our flagship brands are recognized around the world and include USG Securock® Brand high-performance roof boards, USG Sheetrock® Brand gypsum panels, USG Durock® Brand cement boards and USG Donn® Brand suspension systems.

USG is North America's leading producer of gypsum wallboard, joint compound, and a vast array of related products for the construction and remodeling industries. We are also a leader in the manufacture of ceiling suspension systems and are widely recognized for our premier acoustical panels and specialty ceiling systems. Our family of products provides creative building solutions that set new standards for productivity and efficiency, helping contractors and architects deliver high-quality and innovative designs. This same level of dedication has gone into creating a portfolio of high-performing roofing products.

Our steadfast dedication to the company's core business beliefs—integrity, safety, performance, quality, diversity, innovation and service—has helped us consistently manufacture the quality products that you expect, backed by the service and support you can depend upon. Our commitment to the roofing industry is to deliver a selection of high-quality and high-performing products that give roofing professionals a better choice in the roof board category.

See usg.com for the most up-to-date product information.

A HIGH-PERFORMANCE PORTFOLIO OF ROOFING SOLUTIONS THAT STAND ABOVE THE REST

No matter what the application, the high-performance portfolio of USG roofing solutions gives you a better choice in the roof board category. Our products meet stringent performance requirements, offer exceptional features and deliver superior strength. All so you can rest easy that your vision will always be covered by the best.

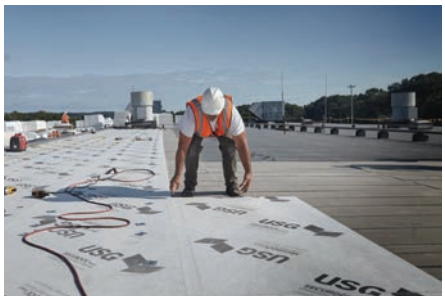
USG SECUROCK® BRAND GYPSUM-FIBER ROOF BOARD

- Cover board for fully adhered and mechanically attached systems
- Uses up to 25% fewer fasteners
- Exceptional bond and low surface absorption
- Superior wind-uplift performance
- 97% recycled content

USG SECUROCK® BRAND ULTRALIGHT COATED GLASS-MAT ROOF BOARD

- Cover boards for fully adhered systems
- Exceptional bond and low surface absorption
- Up to 18% lighter than competitive glass-mat roof boards*
- Less itch

USG SECUROCK® BRAND ULTRALIGHT GLASS-MAT ROOF BOARD



- Cover board for mechanically attached systems
- Up to 18% less weight than competitive glass-mat roof board*
- Less itch
- Scores and snaps cleanly and easily
- Unlimited slope in fire barrier applications

USG SECUROCK® BRAND CEMENT ROOF BOARD

- Ideal cover board in system applications such as liquid-applied membranes or as a parapet, fire or thermal barrier roof board
- Lightest cement board in industry
- Easy to cut and fasten
- Noncombustible

USG SECUROCK™ BRAND GYPSUM-CONCRETE PATCH

- Great for repairing gypsum roof decks
- Noncombustible
- Fast installation
- Durable

USG STRUCTURAL PANEL CONCRETE ROOF DECK

- A lighter, noncombustible alternative to plywood, metal decking and poured concrete
- Strong, durable concrete panel with great wind-uplift performance
- No moisture issues like traditional concrete decks
- Installs fast and easy

*Ultralight core is only available on 1/2" and 5/8" thicknesses

USG gives you an option of high-performing roofing solutions that are backed by the service and responsiveness that only USG can provide.
usg.com/securock

USG SECUROCK® BRAND GYPSUM-FIBER ROOF BOARD

High-performance gypsum-fiber roof board for use in low-slope commercial roofing systems

- Exceptional bond and low absorption in adhered systems
- Moisture- and mold-resistant
- Excellent wind-uplift performance
- Manufactured from 97% recycled material

DESCRIPTION

USG Securock® Brand Gypsum-Fiber Roof Board is a high-performance roof board for use in low-slope roofing systems. Its unique fiber-reinforced, uniform composition gives the panel strength and water resistance through to the core. USG Securock Gypsum-Fiber Roof Board provides exceptional bond and low absorption in adhered systems and, with uniform composition, achieves high wind-uplift ratings with no risk of facer delamination. Made from 97% recycled material, USG Securock Gypsum-Fiber Roof Board combines superior performance with sustainable design for all types of roofing systems, including single-ply, fluid-applied, built-up, spray foam, metal and modified bitumen roofing.

ADVANTAGES

Exceptional Strength: Engineered to provide superior wind-uplift performance for a wide variety of roof assemblies. USG Securock Gypsum-Fiber Roof Board has a uniform composition, providing enhanced bond strength of membrane systems with no risk of facer delamination.

Fire Performance: Provides excellent fire performance and demonstrates exceptional surface burning characteristics (ASTM E84 [CAN/ULC-S102] Flame Spread 5, Smoke Developed 0).

Moisture and Mold: Uniform water-resistant core ensures excellent moisture and mold resistance. Scored a maximum "10" for mold resistance on ASTM D3273.

Versatile: Can be used as a component in single-ply, fluid-applied, built-up, spray foam, metal and modified bitumen roofing.

Sustainability: Made from 97% recycled materials.

INSTALLATION

- 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.
- Use fasteners specified in accordance with above requirements. Install approved fasteners with plates into the USG Securock Gypsum-Fiber Roof Board, 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. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**
- Locate edge joints on, and parallel to, deck ribs. Stagger end joints of adjacent lengths of USG Securock Gypsum-Fiber Roof Board.
- All board edges should be loosely abutted and never kicked in tight in typical installations.
- Roof boards should never be installed if they exhibit frost or are below 32°F.
- See product data table below for maximum flute span when panels are applied directly over metal decking.
- For vertical parapet applications, only 1/2" or 5/8" panels should be used. Maximum framing spacing is 24" o.c.

LIMITATIONS

- USG Securock Gypsum-Fiber Roof Board is engineered to perform within a properly designed roof system. The use of USG Securock Gypsum-Fiber Roof Board as a roofing component is the responsibility of the design professional.
- Consult roofing manufacturers for specific instructions on the application of their products to USG Securock Gypsum-Fiber Roof Board.
- 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.
- Keep USG Securock Gypsum-Fiber Roof Board panels dry before, during and after installation. USG Securock Gypsum-Fiber Roof Board should not be installed during rain, heavy fog and any other conditions that deposit moisture on the surface of the board. Apply only as much USG Securock Gypsum-Fiber Roof Board that can be covered by final roof membrane system in the same day. Avoid exposure to moisture from leaks or condensation.
- 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.
- 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.
- 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.
- For reroof or re-cover applications, existing roofing system must be dry throughout prior to application of USG Securock Gypsum-Fiber Roof Board.
- 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.
- USG Securock Gypsum-Fiber Roof Board should be stored flat and off the ground with protection from the weather. If stored outdoors, a breathable waterproof covering should be used.
- When applying solvent-based adhesives or primers, allow sufficient time for the solvent to evaporate to avoid damage to roofing components.
- USG allows the bonding of cold mastic-modified bitumen, low rise urethane foam and torching directly to the surface. **Flood mopping the board to a substrate followed by a flood mopping of the membrane is allowed.** Consult with the system manufacturer for recommendation on these applications.
- USG recommends maximum asphalt application temperature for Type III **or Type IV** asphalt of 455°F when using USG Securock Gypsum-Fiber Roof Board. Application temperatures above these recommended temperatures may adversely affect roof system performance.

FIRE PERFORMANCE

- UL Classified (Type FRX-G) as to Surface Burning Characteristics in accordance with ASTM E84 (CAN/ULC-S102).
  — Flame Spread 5 and Smoke Developed 0
- 1/4", 3/8", 1/2" and 5/8" thickness—Class A in accordance with UL790 (CAN/ULC-S107). See the *UL Building Materials Directory* for more information.
- 5/8" thickness—Meets requirements of Type X per ASTM C1278 and may be used in P series designs as a thermal barrier.

SYSTEM PERFORMANCE

- FM Approved
  — Complies with requirements of FM 4450 and FM 4470
  — Meets FM Class 1

STANDARDS COMPLIANCE

USG Securock Gypsum-Fiber Roof Board is manufactured to conform to ASTM C1278, "Standard Specification for Fiber-Reinforced Gypsum Panel."

PHYSICAL PROPERTIES

	1/4″ (6.3 mm)	3/8″ (9.5 mm)	1/2″ (12.7 mm)	5/8″ (15.9 mm)
Width, standard	4′ (1,219 mm)	4′ (1,219 mm)	4′ (1,219 mm)	4′ (1,219 mm)
Length, standard	4′ (1,219 mm) and 8′ (2,438 mm)	4′ (1,219 mm) and 8′ (2,438 mm)	4′ (1,219 mm) and 8′ (2,438 mm)	4′ (1,219 mm) and 8′ (2,438 mm)
Pieces per unit for 4′ x 8′ sheets	50	40	30	24
Weight, nominal lb./unit, 4′ x 8′ sheet	2,575	2,575	2,725	2,525
Weight, nominal lb./sq. ft.	1.57	1.96	2.76	3.20
Flexural strength, parallel, lb. min., per ASTM C473	40	70	110	161
Compressive strength, psi nominal	1,800 (12.4MPa)	1,800 (12.4MPa)	1,800 (12.4MPa)	1,800 (12.4MPa)
Flute spanability per ASTM E661	2-5/8″	5″	8″	10″
Permeance, perms, per ASTM E96	30	26	26	24
R Value per ASTM C518	0.2	0.3	0.5	0.6
Coefficient of thermal expansion, inches/inch • °F, per ASTM E831	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}
Linear variation with change in moisture, inches/inch • % RH, per ASTM D1037	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}
Water absorption, % max, per ASTM C473	10	10	10	10
Surface water absorption, nominal grams, per ASTM C473	1.6	1.6	1.6	1.6
Mold resistance per ASTM D3273*	10	10	10	10
Bending radius	25′	25′	25′	30′

***ASTM D3273 Mold Resistance Testing:** In independent lab tests conducted on USG Securock® Brand Gypsum-Fiber Roof Board and USG Securock® Brand UltraLight Glass-Mat Roof Board at the time of manufacture per ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber, both panels scored a 10. The ASTM lab test may not accurately represent the mold performance of building materials in actual use. Given unsuitable project conditions during storage, installation or after completion, any building material can be overwhelmed by mold. To manage the growth of mold, the best and most cost-effective strategy is to protect building products from water exposure during storage and installation and after completion of the building. This can be accomplished by using good design and construction practices.

SUBMITTAL APPROVALS

Job Name	
Contractor	**Date**

PRODUCT INFORMATION
See usg.com for the most up-to-date product information.

CAUTION
Dust may cause irritation to eyes, skin, nose, throat, and upper respiratory tract. Cut and trim with a utility knife or hand saw to minimize dust levels. Power tools must be equipped with a dust collection system. Wear eye, skin, and respiratory protection if necessary. If eye contact occurs, flush thoroughly with water for 15 minutes. If irritation persists, call physician. Do not swallow. If swallowed, call physician. For more information call Product Safety: 800 507-8899 or see the SDS at usg.com
KEEP OUT OF REACH OF CHILDREN.

NOTE
Products described here may not be available in all geographic markets. Consult your USG Company sales office or representative for information.

NOTICE
We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

SAFETY FIRST!
Follow good safety/industrial hygiene practices during installation. Take necessary precautions and wear the appropriate personal protective equipment as needed. Read SDS and literature before specification and installation.

800 USG.4YOU
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Manufactured by
United States Gypsum Company
550 West Adams Street
Chicago, IL 60661

RF5-USA-ENG/rev. 3-18

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USG SECUROCK® BRAND ULTRALIGHT COATED GLASS-MAT ROOF BOARD

NEW COATED MAT FOR ADHERED APPLICATIONS

High-performance glass-mat roof board for use in low-slope commercial roofing systems

- Exceptional bond and low absorption in cold-applied adhesive applications
- Lighweight core; up to 18% lighter than competitive products[1]
- Moisture- and mold-resistant core and facer
- Provides protection to roof system from hail and foot traffic
- Fire-resistant for use as fire barrier and thermal barrier
- Unmatched mat-to-core tensile bond strength makes facer less likely to delaminate when cutting
- High-quality tight mat makes for easier handling and cutting

1. Lightweight applies to 1/2″ and 5/8″ thickness only.

DESCRIPTION

USG Securock® Brand UltraLight Coated Glass-Mat Roof Board is a high-performance roof board for use in low-slope commercial roofing systems. It enhances the durability of the entire roofing system when used as cover board in low-slope commercial roof systems. Its specially treated core and high-performance glass-mat facer provide protection against fire, mold and moisture. USG Securock UltraLight Coated Glass-Mat Roof Board combines superior strength and an ultralight core applicable for all cold adhesive roof applications.

ADVANTAGES

Lightweight: Newly engineered to provide exceptional strength while 18% lighter than competitive panels.

Fire Performance: Meets Factory Mutual (FM) Class 1 and Underwriters Laboratories (UL) Class A fire ratings for unlimited slope in fire barrier applications per UL 790.

Moisture and Mold: Fiberglass face and back with treated core provide moisture and mold resistance.

INSTALLATION

- Refer to roof membrane system manufacturer's written instructions, local code requirements and Factory Mutual Global (FMG) and/or Underwriters Laboratories (UL) requirements for proper installation techniques.
- Use fasteners specified in accordance with above requirements. Install approved fasteners with plates into the USG Securock UltraLight Coated Glass-Mat Roof Board, 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*. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**
- Locate edge joints on, and parallel to, deck ribs. Stagger end joints of adjacent lengths of USG Securock UltraLight Coated Glass-Mat Roof Board.
- All board edges should be loosely abutted and never kicked in tight in typical installations.
- Roof boards should never be installed if they exhibit frost or are below 32°F.
- See product data table below for maximum flute span when panels are applied directly over metal decking.
- For vertical parapet applications, only 1/2″ or 5/8″ panels should be used. Maximum framing spacing is 24″ o.c.

LIMITATIONS

- USG Securock UltraLight Coated Glass-Mat Roof Board is engineered to perform within a properly designed roof system. The use of USG Securock UltraLight Coated Glass-Mat Roof Board as a roofing component is the responsibility of the design professional.
- For use in cold-applied adhesive application only. Not recommended for hot application (i.e., torch or hot asphalt application).
- Consult roofing membrane manufacturers for specific instructions on the application of their products to USG Securock UltraLight Coated Glass-Mat Roof Board.
- 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.
- Keep USG Securock UltraLight Coated Glass-Mat Roof Board panels dry before, during and after installation. USG Securock UltraLight Coated Glass-Mat Roof Board should not be installed during rain, heavy fog and any other conditions that deposit moisture on the surface of the board. Apply only as much USG Securock UltraLight Coated Glass-Mat Roof Board that can be covered by final roof membrane system in the same day. Avoid exposure to moisture from leaks or condensation.
- 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.
- 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.
- 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.
- For reroof or re-cover applications, existing roofing system must be dry throughout prior to application of USG Securock UltraLight Coated Glass-Mat Roof Board.
- 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.
- USG Securock UltraLight Coated Glass-Mat Roof Board should be stored flat and off the ground with protection from the weather. If stored outdoors, a breathable waterproof covering should be used.
- When applying solvent-based adhesives or primers, allow sufficient time for the solvent to evaporate to avoid damage to roofing components.
- USG allows the bonding of cold mastic-modified bitumen and low rise urethane foam to the surface. Consult with the system manufacturer for recommendations on this application.
- For systems not listed, please contact your local USG Securock® Brand roofing sales representative.

FIRE PERFORMANCE

- UL Classified (Type SGMRX) as to Surface Burning Characteristics in accordance with ASTM E84 (CAN/ULC-S102).
  - — Flame Spread 0 and Smoke Developed 0
  - — Noncombustible Core per ASTM E136-12 (CAN/ULC-S114)
- 1/4", 1/2" and 5/8" thickness—Class A unlimited slope in accordance with UL790 (CAN/ULC-S107).
- 5/8" thickness—Meets requirements of Type X per ASTM C1177 and may be used in P series designs as a thermal barrier.

SYSTEM PERFORMANCE

- FM Approved
- Complies with requirements of FM 4450 and FM 4470
- Meets FM Class 1

STANDARDS COMPLIANCE

USG Securock UltraLight Coated Glass-Mat Roof Board is manufactured to conform to ASTM C1177.

PHYSICAL PROPERTIES

	1/4" (6.3 mm)	1/2" (12.7 mm)	5/8" (15.9 mm)
Width, standard	4′ (1,219 mm)	4′ (1,219 mm)	4′ (1,219 mm)
Length, standard	4′ (1,219 mm) and 8′ (2,438 mm)	4′ (1,219 mm) and 8′ (2,438 mm)	4′ (1,219 mm) and 8′ (2,438 mm)
Pieces per unit for 4′ x 8′ sheet	42	30	30
Weight, nominal lb./unit 4′ x 8′ sheet	1,613	1,632	2,112
Weight, nominal lb./sq. ft.	1.2	1.7	2.2
Flexural strength, parallel, lb. min. per ASTM C473	40	80	100
Compressive strength, psi nominal	700-1,000 (4.8MPa – 6.9MPa)	700-1,000 (4.8MPa – 6.9MPa)	700-1,000 (4.8MPa – 6.9MPa)
Flute spannability per ASTM E661	2-5/8″	5″	8″
Permeance, perms per ASTM E96	18	18	16
R Value per ASTM C518	0.36	0.53	0.54
Coefficient of thermal expansion, inches/inch • °F, per ASTM E831	8.5×10^{-6}	8.5×10^{-6}	8.5×10^{-6}
Linear variation with change in moisture, inches/inch • %RH, per ASTM D1037	6.3×10^{-6}	6.3×10^{-6}	6.3×10^{-6}
Water absorption, % max, per ASTM C473	10	10	10
Mold resistance per ASTM D3273*	10	10	10
Bending radius	4′	6′	9′

***ASTM D3273 Mold Resistance Testing:** In independent lab tests conducted on USG Securock® Brand Gypsum-Fiber Roof Board and USG Securock® Brand UltraLight Coated Glass-Mat Roof Board at the time of manufacture per ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber, both panels scored a 10. The ASTM lab test may not accurately represent the mold performance of building materials in actual use. Given unsuitable project conditions during storage, installation or after completion, any building material can be overwhelmed by mold. To manage the growth of mold, the best and most cost-effective strategy is to protect building products from water exposure during storage and installation and after completion of the building. This can be accomplished by using good design and construction practices.

SUBMITTAL APPROVALS

Job Name	
Contractor	**Date**

PRODUCT INFORMATION
See usg.com for the most up-to-date product information.

CAUTION
Dust may cause irritation to eyes, skin, nose, throat, and upper respiratory tract. Cut and trim with a utility knife or hand saw to minimize dust levels. Power tools must be equipped with a dust collection system. Wear eye, skin, and respiratory protection if necessary. If eye contact occurs, flush thoroughly with water for 15 minutes. If irritation persists, call physician. Do not swallow. If swallowed, call physician. For more information call Product Safety: 800 507-8899 or see the SDS at usg.com
KEEP OUT OF REACH OF CHILDREN.

TRADEMARKS

NOTE
Products described here may not be available in all geographic markets. Consult your USG Company sales office or representative for information.

NOTICE
We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

SAFETY FIRST!
Follow good safety/industrial hygiene practices during installation. Take necessary precautions and wear the appropriate personal protective equipment as needed. Read SDS and literature before specification and installation.

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Manufactured by
United States Gypsum Company
550 West Adams Street
Chicago, IL 60661

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Printed in USA

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USG SECUROCK® BRAND ULTRALIGHT GLASS-MAT ROOF BOARD

High-performance glass-mat roof board for use in low-slope commercial roofing systems

- Lightweight core; up to 18% lighter than competitive glass-mat roof boards[1]
- Ideal for use as cover board in single-ply mechanically attached systems
- Moisture- and mold-resistant core and facer
- Provides protection to roof system from hail and foot traffic
- Fire-resistant for use as fire barrier and thermal barrier
- Unmatched mat-to-core tensile bond strength makes facer less likely to delaminate when cutting
- High-quality tight mat makes for easier handling and cutting

1. 1/2" and 5/8" thicknesses only.

DESCRIPTION

USG Securock® Brand UltraLight Glass-Mat Roof Board is a high-performance roof board for use in low-slope commercial roofing systems. It enhances the durability of the entire roofing system when used as cover board in single-ply mechanically attached systems. Its specially treated core and high-performance glass-mat facer provide protection against fire, mold and moisture.

ADVANTAGES

Fire Performance: Meets Factory Mutual (FM) Class 1 and Underwriters Laboratories (UL) Class A fire ratings for unlimited slope in fire barrier applications per UL 790.

Easier to Cut, Handle and Install: High-quality mat produces less itchiness than competitive products.

Moisture and Mold: Fiberglass face and back with treated core provide moisture and mold resistance. Scored a maximum "10" for mold resistance on ASTM D3273.

INSTALLATION

- 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.
- Use fasteners specified in accordance with above requirements. Install approved fasteners with plates into the USG Securock UltraLight Glass-Mat Roof Board, 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. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**
- Locate edge joints on, and parallel to, deck ribs. Stagger end joints of adjacent lengths of USG Securock UltraLight Glass-Mat Roof Board.
- All board edges should be loosely abutted and never kicked in tight in typical installations.
- Roof boards should never be installed if they exhibit frost or are below 32°F
- See product data table below for maximum flute span when panels are applied directly over metal decking.
- For vertical parapet applications, only 1/2" or 5/8" panels should be used. Maximum framing spacing is 24" o.c.

LIMITATIONS

- USG Securock UltraLight Glass-Mat Roof Board is engineered to perform within a properly designed roof system. The use of USG Securock UltraLight Glass-Mat Roof Board as a roofing component is the responsibility of the design professional.
- Consult roofing manufacturers for specific instructions on the application of their products to USG Securock UltraLight Glass-Mat Roof Board.
- 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.

LIMITATIONS CONT.

- Keep USG Securock UltraLight Glass-Mat Roof Board panels dry before, during and after installation. USG Securock UltraLight Glass-Mat Roof Board should not be installed during rain, heavy fog and any other conditions that deposit moisture on the surface of the board. Apply only as much USG Securock UltraLight Glass-Mat Roof Board that can be covered by final roof membrane system in the same day. Avoid exposure to moisture from leaks or condensation.
- 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.
- 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.
- 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.
- For reroof or re-cover applications, existing roofing system must be dry throughout prior to application of USG Securock UltraLight Glass-Mat Roof Board.
- 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.
- USG Securock UltraLight Glass-Mat Roof Board should be stored flat and off the ground with protection from the weather. If stored outdoors, a breathable waterproof covering should be used.
- For systems not listed, please contact your local USG Securock® roofing sales representative.

FIRE PERFORMANCE

- UL Classified (Type SGMRX) as to Surface Burning Characteristics in accordance with ASTM E84 (CAN/ULC-S102).
  - — Flame Spread 0 and Smoke Developed 0
  - — Noncombustible Core per ASTM E136-12 (CAN/ULC-S114)
- 1/4", 1/2" and 5/8" thickness—Class A unlimited slope in accordance with UL790 (CAN/ULC-S107).
- 5/8" thickness—Meets requirements of Type X per ASTM C1177 and may be used in P series designs as a thermal barrier.

SYSTEM PERFORMANCE

- FM Approved
- Complies with requirements of FM 4450 and FM 4470
- Meets FM Class 1

STANDARDS COMPLIANCE

USG Securock UltraLight Glass-Mat Roof Board is manufactured to conform to ASTM C1177.

PHYSICAL PROPERTIES

	1/4" (6.3 mm)	1/2" (12.7 mm)	5/8" (15.9 mm)
Width, standard	4′ (1,219 mm)	4′ (1,219 mm)	4′ (1,219 mm)
Length, standard	8′ (2,438 mm)	8′ (2,438 mm)	8′ (2,438 mm)
Pieces per unit for 4′ x 8′ sheet	42	30	30
Weight, nominal lb./unit 4′ x 8′ sheet	1,688	1,632	2,112
Weight, nominal lb./sq. ft.	1.2	1.7	2.2
Flexural strength, parallel, lb. min. per ASTM C473	40	80	100
Compressive strength, psi nominal	700-1,000 (4.8MPa – 6.9MPa)	700-1,000 (4.8MPa – 6.9MPa)	700-1,000 (4.8MPa – 6.9MPa)
Flute spannability per ASTM E661	2-5/8″	5″	8″
Permeance, perms per ASTM E96	18	18	16
R Value per ASTM C518	0.36	0.53	0.54
Coefficient of thermal expansion, inches/inch • °F, per ASTM E831	8.5×10^{-6}	8.5×10^{-6}	8.5×10^{-6}
Linear variation with change in moisture, inches/inch • %RH, per ASTM D1037	6.3×10^{-6}	6.3×10^{-6}	6.3×10^{-6}
Water absorption, % max, per ASTM C473	10	10	10
Mold resistance per ASTM D3273*	10	10	10
Bending radius	4′	6′	9′

***ASTM D3273 Mold Resistance Testing:** In independent lab tests conducted on USG Securock® Brand Gypsum-Fiber Roof Board and USG Securock® Brand UltraLight Glass-Mat Roof Board at the time of manufacture per ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber, both panels scored a 10. The ASTM lab test may not accurately represent the mold performance of building materials in actual use. Given unsuitable project conditions during storage, installation or after completion, any building material can be overwhelmed by mold. To manage the growth of mold, the best and most cost-effective strategy is to protect building products from water exposure during storage and installation and after completion of the building. This can be accomplished by using good design and construction practices.

SUBMITTAL APPROVALS

Job Name	
Contractor	**Date**

PRODUCT INFORMATION
See usg.com for the most up-to-date product information.

CAUTION
Dust may cause irritation to eyes, skin, nose, throat, and upper respiratory tract. Cut and trim with a utility knife or hand saw to minimize dust levels. Power tools must be equipped with a dust collection system. Wear eye, skin, and respiratory protection if necessary. If eye contact occurs, flush thoroughly with water for 15 minutes. If irritation persists, call physician. Do not swallow. If swallowed, call physician. For more information call Product Safety: 800-507-8899 or see the SDS at usg.com
KEEP OUT OF REACH OF CHILDREN.

NOTE
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NOTICE
We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

SAFETY FIRST!
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USG SECUROCK® BRAND CEMENT ROOF BOARD

- Ideal for use as a cover board in system applications such as liquid-applied membranes or as a parapet, fire or thermal barrier roof board
- Lightest cement board in the industry
- Environmentally sustainable product—lower weight reduces embodied energy and embodied emissions
- Water-durable, mold-resistant substrate
- Will not rot, warp, delaminate or disintegrate
- Easy to cut and fasten
- Noncombustible

DESCRIPTION

USG Securock® Brand Cement Roof Board is a high-performance roof board for use in low-slope roofing systems. As the lightest and easiest-to-use cement board in the industry, it enhances the entire roofing system as both a cover board and as a parapet, fire or thermal barrier roof board. As a cover board, USG Securock Cement Roof Board can be used with a variety of membranes and systems including fully adhered and mechanically attached systems, but it is ideal for applications such as liquid-applied membranes and cold mastic-modified bitumen. As a parapet, fire or thermal barrier roof board, USG Securock Cement Roof Board has an unlimited slope classification and is noncombustible. Because this product is cement-based, it provides superior compressive strength, water durability and mold resistance.

ADVANTAGES

Exceptional Strength: Engineered to provide superior wind-uplift performance for a wide variety of roof assemblies. USG Securock Cement Roof Board is formed in a continuous process using an aggregated Portland cement slurry with polymer-coated, glass-fiber mesh completely encompassing edges and both surfaces, which enhances bond strength of membrane systems and gives excellent resistance to delamination.

Fire Performance: Meets Factory Mutual (FM) Class 1 and Underwriters Laboratories (UL) Class A fire ratings for unlimited slope in fire-barrier applications per UL 790.

Moisture and Mold: Scored a maximum "10" for mold resistance on ASTM D3273 and is highly water durable.

Versatile: Can be used as a component in single-ply, fluid-applied, spray foam, metal and cold-applied modified bitumen roofing. Comes in both 4′ x 8′ and 4′ x 4′ sizes.

INSTALLATION

- 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.
- Use fasteners specified in accordance with above requirements. Install approved fasteners with plates into the USG Securock Cement Roof Board, 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. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**
- Only use corrosion-resistant fasteners that are compatible with concrete. Approved fasteners include: USG Durock™ Brand Tile Backer Screws for steel framing (or equivalent), 1-1/4″ and 1-5/8″ for 14- to 20-gauge steel framing; USG Durock™ Tile Backer Screws for wood framing (or equivalent), 1-1/4″, 1-5/8″ and 2-1/4″ for wood framing; and nails (1-1/2″ hot-dipped galvanized roofing nails).
- Locate edge joints on, and parallel to, deck ribs. Stagger end joints of adjacent lengths of USG Securock Cement Roof Board.
- All board edges should be loosely abutted and never kicked in tight in typical installations.
- Roof boards should never be installed if they exhibit frost or are below 32°F.
- For vertical parapet applications—maximum stud spacing: 16″ o.c., maximum fastener spacing: 8″ o.c. for wood and steel framing. Always consult a design professional for actual spacing.

LIMITATIONS

- USG Securock Cement Roof Board is engineered to perform within a properly designed roof system. The use of USG Securock Cement Roof Board as a roofing component is the responsibility of the design professional.
- Consult roofing manufacturers for specific instructions on the application of their products to USG Securock Cement Roof Board.
- 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.
- Keep USG Securock Cement Roof Board panels dry before, during and after installation. USG Securock Cement Roof Board should not be installed during rain, heavy fog and any other conditions that deposit moisture on the surface of the board. Apply only as much USG Securock Cement Roof Board that can be covered by final roof membrane system in the same day. Avoid exposure to moisture from leaks or condensation.
- 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.
- 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.
- 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.
- For reroof or re-cover applications, existing roofing system must be dry throughout prior to application of USG Securock Cement Roof Board.
- 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.
- USG Securock Cement Roof Board should be stored flat and off the ground with protection from the weather. Preferred storage location is an enclosed shelter providing protection from the elements. However, if stored outdoors, a breathable waterproof covering should be used.
- When applying solvent-based adhesives or primers, allow sufficient time for the solvent to evaporate to avoid damage to roofing components.
- Consult with the system manufacturer for recommendations on all applications.
- USG Securock Cement Roof Board is formulated to develop fine microcracking (also known as multiple cracking) in the panel. The microcracking process helps to evenly relieve the stored strain energy in the product due to handling and installation, external loads and/or panel restrained movement. The presence of microcracks in the panel should not be considered a product defect.
- USG recommends maximum asphalt application temperature for Type III asphalt of 450°F when using USG Securock Cement Roof Board. Application temperatures above these recommended temperatures may adversely affect roof system performance.

FIRE PERFORMANCE

- UL Classified (Type DCB) as to Surface Burning Characteristics in accordance with ASTM E84 (CAN/ULC-S102).
  - — Flame Spread 0 and Smoke Developed 0
  - — Noncombustile Core per ASTM E136-12 (CAN/ULC-S114)
- Class A unlimited slope in accordance with UL790 (CAN/ULC-S107). See the *UL Building Materials Directory* for more information.

SYSTEM PERFORMANCE

- FM Approved
- Complies with requirements of FM 4450 and FM 4470
- Meets FM Class 1

STANDARDS COMPLIANCE

USG Securock Cement Roof Board is manufactured to conform to ASTM C1325, "Standard for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units."

PHYSICAL PROPERTIES

Thickness, nominal	1/2" (12.7 mm)	5/8" (15.9 mm)
Width, standard	4' (1,219 mm)	4' (1,219 mm)
Length, standard	4' (1,219 mm) and 8' (2,438 mm)	4' (1,219 mm) and 8' (2,438 mm)
Pieces per unit for 4' x 8' sheets	30	24
Weight, nominal lb./unit, 4' x 8' sheet	2,375	2,880
Weight, nominal lb./sq. ft.	2.4	3.0
Flexural strength, parallel, psi, per ASTM C947	>750	>480
Compressive strength, psi nominal	>1,000 (6.9MPa)	>1,250 (8.6MPa)
Flute spanability per ASTM E661	12"	12"
Permeance, perms, per ASTM E96	5.84	5.84
R Value, °F.ft².h/Btu, per ASTM C518	0.39	0.49
Coefficient of thermal expansion, inches/inch/°F, per ASTM E831	4.5×10^{-6}	4.5×10^{-6}
Linear variation with change in moisture, %, per ASTM D1037	<0.07	<0.07
Water absorption, % max, per ASTM C473	<15	< 15
Mold resistance, per ASTM D3273*	10	10
Minimum bending radius	6'	6'

***ASTM D3273 Mold Resistance Testing:** In independent lab tests conducted on USG Securock® Brand Cement Roof Board at the time of manufacture per ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber, scored a 10. The ASTM lab test may not accurately represent the mold performance of building materials in actual use. Given unsuitable project conditions during storage, installation or after completion, any building material can be overwhelmed by mold. To manage the growth of mold, the best and most cost-effective strategy is to protect building products from water exposure during storage and installation and after completion of the building. This can be accomplished by using good design and construction practices.

SUBMITTAL APPROVALS

Job Name	
Contractor	**Date**

PRODUCT INFORMATION
See usg.com for the most up-to-date product information.

CAUTION
Dust may cause irritation to eyes, skin, nose, throat, and upper respiratory tract. Cut and trim with a utility knife or hand saw to minimize dust levels. Power tools must be equipped with a dust collection system. Wear eye, skin, and respiratory protection if necessary. If eye contact occurs, flush thoroughly with water for 15 minutes. If irritation persists, call physician. Do not swallow. If swallowed, call physician. For more information call Product Safety: 800-507-8899 or see the SDS at usg.com
KEEP OUT OF REACH OF CHILDREN.

TRADEMARKS

NOTE
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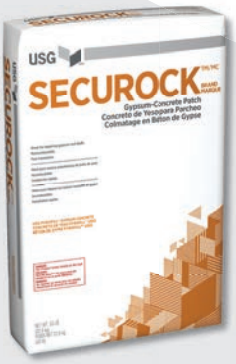

USG SECUROCK™ BRAND GYPSUM-CONCRETE PATCH (FORMERLY PYROFILL®)

Great for repairing poured-in-place roof decks such as gypsum roof decks and lightweight insulating concrete surfaces.

- Durable: over 500 psi compressive strength
- Fast installation
- Noncombustible
- Feather-edge where needed

DESCRIPTION

USG Securock™ Brand Gypsum-Concrete Patch is mill formulated and composed of specially calcined gypsum and wood chips or shavings. It is mixed at the job site with clean water only and poured in place as a patch for existing gypsum decks. USG Securock Gypsum-Concrete Patch is noncombustible and used in several UL-approved roof deck systems.

ADVANTAGES

Exceptional Strength: Engineered to provide over 500 psi of compressive strength that will accept foot traffic and fasteners within four hours of application.

Fire Performance: USG Securock Gypsum-Concrete Patch is a noncombustible material that provides excellent fire performance and is used in several UL-approved roof deck systems.

Versatile: Can be used as a patch in many roof decks such as gypsum, vermiculite concrete, perlite concrete and cellular foam concrete.

LIMITATIONS

- Protect from moisture in storage and on the job.
- Close open bags as tightly as possible; discard compromised or old open bags.
- Not to be applied over moist or wet surfaces.
- Must be protected from direct exposure to moisture after installed.
- Shelf life of six months under protected storage conditions.

INSTALLATION

- Keep all equipment clean.
- Use only clean water for mixing: do not add sand, aggregate or any other material.
- Deck must be structurally sound and free from debris or contaminants that might prevent proper bonding of USG Securock Gypsum-Concrete Patch. Weak or deteriorated material must be removed from the deck to provide a solid base.
- Add USG Securock Gypsum-Concrete Patch to water.
- Spread slurry at once after mixing and screed to desired thickness.
- DO NOT retemper USG Securock Gypsum-Concrete Patch.
- Machine mixing: Use 5–5.6 gal. (18.9–21.2 L) of clean water per 50 lb. (22.6 kg) of USG Securock Gypsum-Concrete Patch; do not overwater.
- Mixing can be accomplished with mortar mixer or pail and drill with a mortar mixer attachment.
- This product provides a minimum dry density of 50 lb./cu. ft. (801 kg/m^3).
- Sets in 30–60 minutes.
- Use a spread of 6 sq. ft. per bag for a 2″ slab.
- Mechanically attach base sheet to surface after material has set.
- Recommended formboard is: 5/8″ USG Securock® Brand Glass-Mat Roof Board or 5/8″ USG Securock® Brand Gypsum-Fiber Roof Board.
- If retarder is needed, use USG Gypsum Plaster Retarder (Standard Strength). See *USG Gypsum Plaster Retarder* (P783) for more information.

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FIRE PERFORMANCE

- Noncombustibility in accordance with ASTM E136.
- Fire-rated and approved for use in UL Roof Deck Systems (P676, P503, P207, P229, P505, P507, P783).

STANDARDS COMPLIANCE

USG Securock Gypsum-Concrete Patch is manufactured to conform to ASTM C317, "Standard Specification for Gypsum Concrete."

PHYSICAL PROPERTIES

Bags per pallet	70
Weight, nominal lb./pallet	3,500
Weight, nominal lb./bag	50
Compressive strength after set	>500 psi (3.4MPa)
Set time	30–60 minutes
Dry density	50-52 pcf
R value	0.67 °F.ft².h/Btu/inch, per ASTM C518

SUBMITTAL APPROVALS

Job Name	
Contractor	**Date**

PRODUCT INFORMATION
See usg.com for the most up-to-date product information.

DANGER
May cause cancer by inhalation of respirable crystalline silica. Do not handle until all safety precautions have been read and understood. Use only in a well-ventilated area, wear a NIOSH/MSHA-approved respirator. Wear protective gloves/protective clothing/eye protection. If swallowed, inhaled, or skin irritation occurs immediately get medical attention. When mixed with water, this material hardens and becomes very hot sometimes quickly. DO NOT attempt to make a cast enclosing any part of the body using this material. Dust from mixing may cause irritation to eyes, skin, nose, throat and upper respiratory tract. If on skin: Wash with plenty of water. Dispose of in accordance with local, state, and federal regulations. For more information call Product Safety: 800 507-8899 or see the SDS at usg.com
KEEP OUT OF REACH OF CHILDREN.

NOTE
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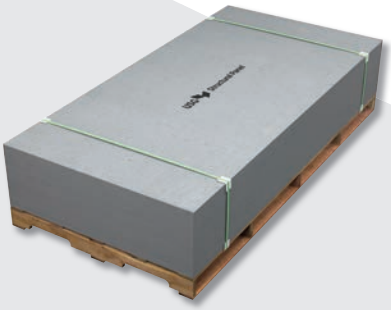
USG STRUCTURAL PANEL CONCRETE ROOF DECK



A concrete roof deck that can be combined with other noncombustible materials to create 1- and 2-hour fire-rated roof-ceiling assemblies.

- Strong, durable concrete panel; great uplift ratings
- Dimensionally stable; panel will not buckle or warp like wood sheathing; no moisture issues like structural concrete
- Installs fast and easy: circular saw for cutting; screws for fastening
- Meets the criteria of ASTM E136-12 for use in all types of noncombustible construction

DESCRIPTION

USG Structural Panel Concrete Roof Decks are mechanically fastened to cold-formed steel joists or framing members. This roof system is designed to carry gravity and lateral loads. Roof membranes may be applied directly over USG Structural Panel Concrete Roof Decks. For retrofit or renovation projects, USG Structural Panel Concrete Roof Decks can also be installed on wood-joists and hot-rolled steel framing. See recommended fasteners within this submittal sheet.

USG Structural Panel Concrete Roof Decks can carry a total load, live and dead, of 150 psf (7.2 kPa) on cold-formed steel framing spaced 48″ (1,219 mm) o.c.

USG Structural Panel Concrete Roof Decks have a linear variation with change in moisture content of less than 0.10%. This means that the panels will not buckle or warp like wood sheathing.

Cutting USG Structural Panel Concrete Roof Decks require a carbide-tipped saw blade and a circular saw equipped with dust collection or suppression to lessen airborne dust. Fastening is also conventional, using a screw gun and self-drilling No. 8-gauge screws. Because these panels are so durable, they may be installed in most weather conditions, including mild precipitation (rain or snow) and temperatures from 0°F to 125°F (-18°C to 52°C).

LIMITATION

USG Structural Panel Concrete Roof Decks should not be left in service without an appropriate roof membrane covering.

INSTALLATION

To perform in the expected manner, USG Structural Panel Concrete Roof Decks must be installed according to USG specifications, using only the listed materials and components. For a complete set of specifications, email usgstructural@usg.com.

As with all types of construction, appropriate safety procedures must be followed to protect installers from personal injuries resulting from lifting incorrectly, falling, and eye, hand and lung irritation.

Care must be taken when placing pallets of USG Structural Panel Concrete Roof Decks on roof framing. A pallet of USG Structural Panel Concrete Roof Decks, 20 sheets, 3/4″ x 4′ x 8′ (19 mm x 1,219 mm x 2,438 mm) weighs approximately 3,400 lb. (1,542 kg). Do not exceed limits when loading pallets or panels on open framing or completed roof assemblies. Store units next to structural walls where the joists meet the wall. See *USG Structural Panel Concrete Roof Deck Field Installation Guideline* (form SCP43) for additional information.

INSTALLATION CONT.

RECOMMENDED FASTENERS

USG recommends the following fasteners for the installation of USG Structural Panels to structural framing:

Manufacturer	16 ga. Cold-Formed Steel (1/2 in. [13 mm] Min. Edge Distance)		SPF Lumber (5/8 in. [16 mm] Min. Edge Distance)		1/4 in. (6.5 mm) A36 Hot-Rolled Steel (3/4 in. [19 mm] Min. Edge Distance)	
	Part #	Fastener Pull-Through[1]	Part #	Fastener Pull-Through[1]	Part #	Fastener Pull-Through[1]
Grabber Construction Products, Inc.	CGH8158LG	581 lb. (264 kg)	C8200L2M	581 lb. (264 kg)	—	—
Simpson Strong-Tie Company Inc	CBSDQ158S	581 lb. (264 kg)	WSNTLG2S	581 lb. (264 kg)	TBG1260S	581 lb. (264 kg)
SENCO[2]	—	—	GL24AABF[3]	581 lb. (264 kg)	—	—

Notes:
1. Fastener pull-through capacities are based upon the minimum average ultimate tested capacity for all tabulated fasteners. The engineer or designer of record shall apply an appropriate safety factor (ASD) or resistance factor (LRFD).
2. SENCO 8d ring shank nails are manufactured with a length of 2-3/8 in., head diameter of 0.266 in., and a shank diameter of 0.113 in. Equivalent 8d ring shank nails meeting these dimensional requirements may be utilized when approved by the engineer or designer of record.
3. Minimum edge distance for nails is 1/2 in.

General Notes: In accordance with PER-14076, the minimum screw pattern is 6 in. (153 mm) o.c. along the perimeter of the panels and 12 in. (305 mm) o.c. in the field of the panels. Do not use a larger size screw unless specified by the structural engineer. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects**.

FRAMING

The steel roof framing must be designed to meet the strength and deflection criteria specified in the contract documents. The attachment flange or bearing edge must be a minimum 1-5/8″ (41 mm) wide with at least 3/4″ (19 mm) of the panel bearing on the supporting flange. Metal framing must be a minimum 16 gauge and spaced no greater than 48″ (1,219 mm) o.c. Follow the contract documents and the steel framing manufacturer's recommendations for the proper installation and bracing of the framing.

TRAFFIC PROTECTION

Place sheathing materials (i.e. additional layer of USG Structural Panel or plywood) on the roof in high traffic areas to protect newly installed concrete roof decks. See *USG Structural Panel Concrete Roof Deck Field Installation Guideline* (form SCP43) for additional information.

APPLICATION

Cut panels to size with a circular saw equipped with carbide-tipped blade and a dry dust collection device or a water-dispensing device that limits the amount of airborne dust. Wear safety glasses and a NIOSH-approved N95 dust mask when cutting this panel. Dispose of collected dust in a safe manner and in compliance with local, state and federal ordinances.

Install USG Structural Panel Concrete Roof Decks with the long edges perpendicular to the framing. Apply the panel with the print markings facing up toward the installer. Fasten each panel after it has been placed following the fastening schedule listed in the contract documents. Install panels in a running bond pattern so that end joints fall over the center of the framing members and are staggered by at least two supports from where the end joints fall in the adjacent rows. **Tongue and groove joints should be free of debris and fitted tightly without any gapping.** For all panels less than 24″ (610 mm) wide, all edges must be supported by blocking. Blocking must be cold-formed from steel complying with AISI General, with a minimum 54 mils (0.0538 inch or 1.36 mm) base metal thickness (no. 16 gauge) and a minimum G60 galvanized coating. The attachment flange or bearing edge must be at least 1-5/8″ (41 mm) wide and at least 3/4″ (19 mm) of the panel must bear on the supporting flange or edge. See *USG Structural Panel Concrete Roof Deck Field Installation Guideline* (form SCP43) for additional information.

Installed panels shall not be exposed to weather for more than 90 days. Care must be taken to avoid accumulation of snow and/or ice on installed panels. Brooms should be used for snow removal whenever possible. Excessive shoveling or scraping may damage installed panel surface.

In the event of significant accumulations of snow and/or ice, use indirect heat from temporary space heaters to melt the affected areas. To prevent damage to USG Structural Panel Concrete Roof Decks, never expose the panels to direct flame for the purpose of snow removal and/or deicing efforts. At no time should salts, fertilizers or other chemicals be used on the panels for anti-icing and/or deicing purposes.

ROOFING SYSTEM

Follow the contract documents and the roof system manufacturer's recommendations for the application of roof materials. Before the application of roof materials, ensure that all panels are properly fastened, with the fastener head driven flush or slightly below the surface of the panels.

PRODUCT DATA

Sizes and Packaging: 3/4″ x 4′ x 8′ (19 mm x 1,219 mm x 2,438 mm) panels. Each panel weighs approximately 170 lb. (77 kg) and is intended to be handled by two people. USG Structural Panel Concrete Roof Decks are packaged in 20-piece units.

Availability: USG Structural Panel Concrete Roof Decks are sold through any USG distributor. Email usgstructural@usg.com for information on availability and a dealer in your area.

Storage: USG Structural Panel Concrete Roof Decks are shipped in 20-piece units. Panels should be stored in a horizontal position and uniformly supported. Panels must be covered when stored in unprotected areas.

Excessive moisture and freezing temperatures may result in panels sticking together within the units. Therefore, care should be taken to ensure units of USG Structural Panel Concrete Roof Decks are not exposed to excessive moisture, ice and snow. In the event that panels do become frozen together within a unit, the unit needs to be brought to a temperature above 32°F (0°C) to allow the ice to melt naturally. Never physically pry panels apart. Salt, fertilizer or other deicing agents should not be used at any time. Covering the units completely with tarps or similar coverings is an easy way to avoid panels freezing together.

Maintenance: USG Structural Panel Concrete Roof Decks do not require any regular maintenance except to remove standing water and repair damage from abuse. Any cracked or broken panels should be replaced with sound USG Structural Panel Concrete Roof Decks that are secured following the fastening schedule prescribed in the original installation documents. The replacement panels must be a minimum of 24″ (610 mm) wide and must span a minimum of two supports. If not, the replacement panel must be fully blocked on all sides. See *USG Structural Panel Concrete Roof Deck Field Installation Guideline* (form SCP43) for additional information.

TEST DATA

Physical and Mechanical Properties	Test Standard	Typical Values Standard (Metric)
Concentrated load	ASTM E661	550 lb. (2.45 kN) static 0.108″ (2.7 mm) max. deflection @ 200 lb. (0.89 kN)
Fastener lateral resistance[a]	ASTM D1761, Sec. 10.2	>210 lb. (0.93 kN) dry >160 lb. (0.71 kN) wet
Density[b]	ASTM C1185	75 lb./ft.^{3} (1,201 kg/m^3)
Weight at 3/4″ (19 mm) thickness	ASTM D1037	5.3 lb./ft.^{2} (26 kg/m^2)
pH value	ASTM D1293	10.5
Linear variation with change in moisture (25% to 90% relative humidity)	ASTM C1185, Sec. 8	<0.10%
Thickness swell	ASTM D1037, B	Max. 3.0%
Freeze/thaw resistance	ASTM C1185	Passed (50 cycles)
Mold resistance	ASTM D3273 ASTM G21	10 0
Water absorption[c]	ASTM C1185, Sec. 5.2.3.1	<15.0%
Noncombustibility	ASTM E136 -12 (unmodified) CAN/ULC-S114	Passed Passed
Surface-burning characteristics (flame spread/smoke developed)	ASTM E84 CAN/ULC-S102	0/0
Long-term durability	ASTM C1185, Sec. 13	Min. 75% retention of physical properties
Water durability	ASTM C1185, Sec. 5	Min. 70% retention of physical properties
Termite resistance	AWPA Standard E1-13	9.8
Low VOC emissions	CDPH/EHLB/Standard Method V1.1-2010[d]	Compliant

(a) Fastener lateral resistance measured with #8 1-5/8″ (41 mm) Hi-Low screw.
(b) Density measured at equilibrium conditioning per Section 5.2.3.1., 28 days after manufacturing.
(c) Absorption measured from equilibrium conditioning followed by immersion in water for 48 hours.
(d) Reference Standard: California Department of Public Health CDPH/EHLB/Standard Method Version 1.1, 2010 (Emission testing method for CA Specification 01350).

SYSTEM PERFORMANCE

Description	Reference
Code Reports	PER-14076
Ultimate Uniform Load	1,50psf (7.2kPa) @ 48″ (1,219 mm) o.c. See Table
Shear Diaphragm Ratings	1,641plf[b] (23.9kN/m)
UL 1-, 1.5-, 2-Hour Fire Resistance Designs	P561, P562, P573
UL Roofing System, Uplift Resistance	TGIK.R25352

(a) On steel framing.
(b) Joists spaced 48″ (1,219 mm) o.c. and fasteners spaced 4″ (102 mm) o.c. at the perimeter and 12″ (305 mm) o.c. in field, fully blocked. See the Progressive Engineering Inc. Product Evaluation Report PER-14076.

LOAD TABLE

The following table represents the load-carrying capacity of USG Structural Panel Concrete Roof Decks. For the most up-to-date load tables, see the Progressive Engineering Inc. report, PER-14076. For technical questions, email usgstructural@usg.com. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**

Ultimate Uniform Load for USG Structural Panel Concrete Roof Deck

Joist Spacing - inches (millimeters)	12″ (305 mm)	16″ (406 mm)	24″ (610 mm)	32″ (813 mm)	48″ (1,219 mm)
Uniform Load - psf (kPa)	1,320 psf (63.2 kPa)	744 psf (35.6 kPa)	330 psf (15.8 kPa)	240 psf (11.5 kPa)	150 psf (7.2 kPa)

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa.
(1) **Ultimate Load Values have no safety factor included.**
(2) Two framing spans minimum per panel piece.
(3) Ultimate Uniform Load Table for general reference only.
For complete load capacities, consult Progressive Engineering Inc. Product Evaluation Report PER-14076
(4) Blocking at all joints perpendicular to framing to be a minimum of 16 gauge 3-5/8″ wide track. For sheathing installation where a single span condition exists, additional track blocking is required perpendicular to the framing located mid-way between the edges of the panel.

SUBMITTAL APPROVALS

Job Name	
Contractor	**Date**

PRODUCT INFORMATION
See usg.com for the most up-to-date product information.

DANGER
Causes skin irritation. Causes serious eye damage. May cause an allergic skin reaction. May cause respiratory irritation. May cause cancer by inhalation of respirable crystalline silica. Do not handle until all safety precautions have been read and understood. Avoid breathing dust. Use only in a well-ventilated area, wear a NIOSH/MSHAapproved respirator. Wear protective gloves/protective clothing/eye protection. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses and continue rinsing. Immediately call a poison center/doctor. If on skin: Wash with plenty of water. Take off contaminated clothing and wash before reuse. Contaminated work clothing should not be allowed out of the workplace. If skin irritation or rash occurs, or otherwise exposed or concerned: Get medical attention. Store locked up. Dispose of in accordance with local, state, and federal regulations. For more information call Product Safety: 800 507-8899 or see the SDS at usg.com. **KEEP OUT OF REACH OF CHILDREN.**

NOTICE
We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

SAFETY FIRST!
Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protection equipment. Read SDS and literature before specification and installation.

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USG SECUROCK® BRAND HIGH-PERFORMANCE ROOF BOARDS

USG has a full range of high-performance roof board products, giving consumers a choice in the roof board industry.

USG Securock® Brand Gypsum-Fiber Roof Board outperforms the competition and is made from 97 percent recycled material. USG Securock® Brand UltraLight Glass-Mat Roof Board meets the stringent performance requirements and specifications of competitive glass-mat roof boards while being easier to handle. Plus, both boards come with the customer service, flexibility and responsiveness that only USG can deliver. All of this adds up to a roof board portfolio that goes above and beyond the competition.

USG SECUROCK® BRAND ULTRALIGHT GLASS-MAT ROOF BOARD

Performance	1/4" USG Securock® Brand UltraLight Glass-Mat Roof Board	1/4" GP DensDeck®[1]	1/2" USG Securock® Brand UltraLight Glass-Mat Roof Board	1/2" GP DensDeck®[1]	5/8" USG Securock® Brand UltraLight Glass-Mat Roof Board	5/8" GP DensDeck®[1]
Compressive strength, psi	700-1,000 (4.8MPa – 6.9MPa)	900 (6.2 MPa)	700-1,000 (4.8MPa – 6.9MPa)	900 (6.2 MPa)	700-1,000 (4.8MPa – 6.9MPa)	900 (6.2 MPa)
Flute span	2-5/8"	2-5/8"	5"	5"	8"	8"
Bending radius	4'	5'	6'	8'	9'	12'
Flexural strength, Method B, parallel, lbf. min. per ASTM C473	40	40	80	80	100	100
Permeance, perms	18	50	18	35	16	32
Water absorption, % max, per ASTM C473	10	10	10	10	10	10
Coefficient of thermal expansion, inches/inch • °F, per ASTM E831	8.5×10^{-6}	8.5×10^{-6}	8.5×10^{-6}	8.5×10^{-6}	8.5×10^{-6}	8.5×10^{-6}
Linear variation with change in moisture, inches/inch • % RH, per ASTM D1037	6.3×10^{-6}	6.3×10^{-6}	6.3×10^{-6}	6.3×10^{-6}	6.3×10^{-6}	6.3×10^{-6}
Mold resistance per ASTM D3273*	10	10	10	10	10	10
ASTM Standard	C1177	C1177	C1177	C1177	C1177	C1177

USG SECUROCK® BRAND GYPSUM-FIBER ROOF BOARD

Performance	1/4" USG Securock® Brand Gypsum-Fiber	1/4" GP DensDeck® Prime[1]	3/8" USG Securock® Brand Gypsum-Fiber	1/2" GP DensDeck® Prime[1]	1/2" USG Securock® Brand Gypsum-Fiber	5/8" GP DensDeck® Prime[1]	5/8" USG Securock® Brand Gypsum-Fiber
Compressive strength, psi	1,800 (12.4MPa)	900 (6.2 MPa)	1,800 (12.4MPa)	900 (6.2 MPa)	1,800 (12.4MPa)	900 (6.2 MPa)	1,800 (12.4MPa)
Flute span	2-5/8"	2-5/8"	5"	5"	8"	8"	10"
Flexural strength, Method B, parallel, lbf. min. per ASTM C473	40	40	70	80	110	100	155
Nail-pull resistance, min. lb./ft.	80	40[2]	110	80[2]	120	90[2]	145
Water absorption, % max, per ASTM C473	10	10	10	10	10	10	10
Coefficient of thermal expansion, inches/inch • °F, per ASTM E831	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}
Linear variation with change in moisture, inches/inch • % RH, per ASTM D1037	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}	8.0×10^{-6}
Mold resistance per ASTM D3273*	10	10	10	10	10	10	10
ASTM Standard	C1278	C1177	C1278	C1177	C1278	C1177	C1278

***ASTM D3273 Mold Resistance Testing:** In independent lab tests conducted on USG Securock® Brand Gypsum-Fiber Roof Board and USG Securock® Brand UltraLight Glass-Mat Roof Board at the time of manufacture per ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber, both panels scored a 10. The ASTM lab test may not accurately represent the mold performance of building materials in actual use. Given unsuitable project conditions during storage, installation or after completion, any building material can be overwhelmed by mold. To manage the growth of mold, the best and most cost-effective strategy is to protect building products from water exposure during storage and installation and after completion of the building. This can be accomplished by using good design and construction practices.

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A MORE ECONOMICAL PRODUCT

When compared to GP DensDeck® products, USG Securock Gypsum-Fiber Roof Board has better compressive strength and flute spanability. Testing confirms that you can substitute a 3/8″ USG Securock Gypsum-Fiber Roof Board for other 1/2″ products and still achieve superior performance.

Compressive Strength (psi)	0	450	900	1,350	1,800
3/8″ USG Securock® Brand Gypsum-Fiber Roof Board					1,800
1/2″ GP DensDeck® Prime[1]			900		

Wind Uplift (psf)	60	75	90	105	120
3/8″ USG Securock® Brand Gypsum-Fiber Roof Board[4]					120
1/2″ GP DensDeck® Prime[3, 4]			90		

Flute Spanability (inches)	1	2	3	4	5
3/8″ USG Securock® Brand Gypsum-Fiber Roof Board					5
1/2″ GP DensDeck® Prime[1]					5

EASIER HANDLING AND INSTALLATION

USG Securock UltraLight Glass-Mat Roof Board has a high-quality glass-mat, making it less itchy and easier to work with. The high mat-to-core tensile bond strength also makes mat less likely to delaminate when cutting.

USG Securock Gypsum-Fiber Roof Board, with its uniform composition of gypsum and cellulose fibers, does not require a glass-mat facer for strength. This makes the panel easy to handle with no itchiness.

USG Securock Gypsum-Fiber Roof Board is ideal for fully adhered applications. It achieves high bond strength without the use of an additional primer. It also has very low surface absorption, giving additional installed cost savings on labor and materials.

USG Securock® Brand Cement Roof Board is the lightest cement board in the industry. Ideal for use as a cover board in system applications such as liquid-applied membranes or as a parapet, fire or thermal barrier roof board. It's easy to cut and fasten and is noncombustible.

BEST CHOICE FOR ALL APPLICATIONS

USG Securock® Brand high-performance roof boards go above and beyond to meet your needs for all applications.

Applications	USG Securock® Brand Gypsum-Fiber Roof Board	USG Securock® Brand UltraLight Glass-Mat Roof Board	USG Securock® Brand Cement Roof Board	USG Securock® Brand UltraLight Coated Glass-Mat Roof Board
Single ply mechanically attached	✓	✓	✓	✓
Single ply fully adhered	✓	–	✓	✓
Low rise foam adhesive	✓	–	✓	✓
Modified Bitumen torch applied	✓	–	✓	–
Modified Bitumen cold applied	✓	–	✓	✓
Modified Bitumen hot mopped	✓	–	✓	–
Built-up roof	✓	–	✓	–
Built-up roof hybrid	✓	–	✓	–
Self adhered	✓	–	✓	✓
Spray foam	✓	–	✓	✓
Thermal barrier	✓	✓	✓	✓
Fire barrier	✓	✓	✓	✓
Vapor barrier substrate	✓	✓	✓	✓

ENVIRONMENTALLY FRIENDLY

USG Securock Gypsum-Fiber Roof Board is the ideal choice for projects where high-recycled content is a priority. It is manufactured from a combination of flue gas desulfurization (FGD) gypsum and cellulose fibers. Flue gas desulfurization (FGD) gypsum is a byproduct from coal-based electrical plants. It is indistinguishable from natural mined gypsum rock in performance and quality, and its use in USG Securock Gypsum-Fiber Roof Board eliminates landfill waste. Likewise, the cellulose fibers are recycled and sourced locally from a packaging manufacturer. The final result is a high-performance roof board with over 97 percent recycled content.

Footnotes
1. Georgia-Pacific DensDeck® data taken from GP Lit. Item # 622602
2. Minimum per ASTM C1177, Georgia-Pacific DensDeck® data not provided in Lit. Item #622602
3. Roofnav.com - RN# 223182
4. 16 fasteners/ 4x8 board for both USG and GP.

PRODUCT INFORMATION
See usg.com for the most up-to-date product information.

TRADEMARKS
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The trademarks DensDeck and related marks are trademarks of Georgia-Pacific Gypsum LLC or its affiliates.

NOTE
Products described here may not be available in all geographic markets. Consult your USG Company sales office or representative for information.

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We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

SAFETY FIRST!
Follow good safety and industrial hygiene practices during handling and installation of all products and systems. Take necessary precautions and wear the appropriate personal protective equipment as needed. Read material SDS and related literature on products before specification and/or installation.

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USG SECUROCK® BRAND HIGH-PERFORMANCE ROOF BOARD APPLICATIONS

There are four basic components in a low-slope commercial roof assembly:

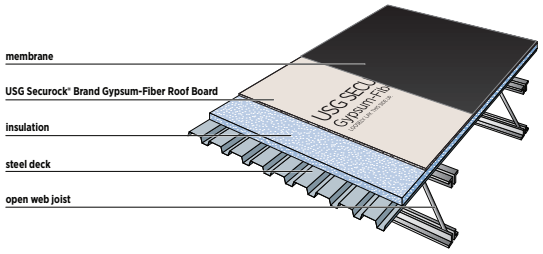
- A structural deck and joists, which can be formed of steel, wood or concrete
- Insulation, including polyisocyanurate (ISO), extruded polystyrene (XPS) or expanded polystyrene (EPS)
- Roof cover board installed between the insulation and the roofing membrane to protect the insulation and support the membrane, improving fire protection, traffic and hail resistance, and wind-uplift performance
- A membrane or membrane system, which can be built-up roofing (BUR), single-ply or modified bitumen

The following are for illustration purposes only. USG Securock® Brand high-performance roof boards are engineered to perform within a properly designed roof system. The use of USG Securock high-performance roof boards as a roofing component is the responsibility of the design professional. Consult roofing manufacturers for specific instructions on the application of their products to USG Securock high-performance roof boards.

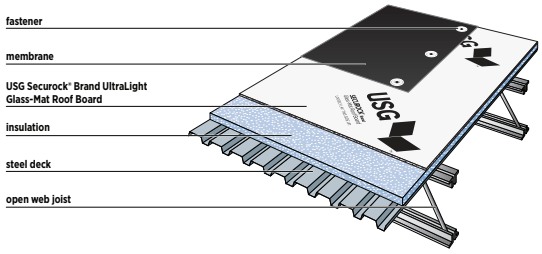
COVER BOARD

USG Securock high-performance roof board is placed directly below the roofing membrane, providing primary support for the membrane and protecting the underlying insulation layer from damage during installation and for the service life of the roof. Cover boards are used as impact protection for insulation boards (foot traffic, hail, etc.), to insulation protection from EPDM heat transfer, a surface to which asphalt can be mopped, and as a fire barrier for external fire.

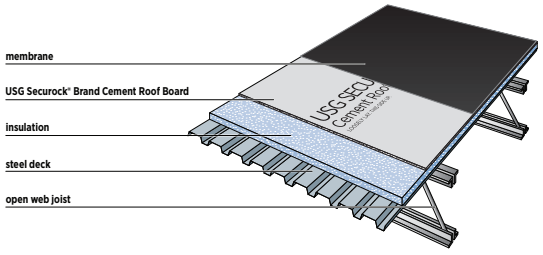
USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane



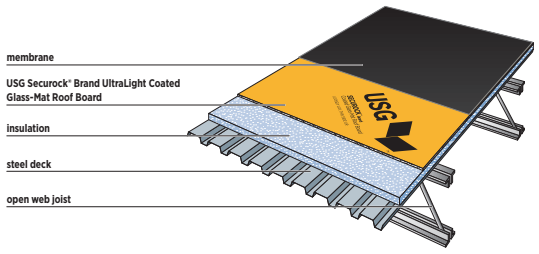
USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane



USG Securock® Brand Cement Roof Board recommended for fully adhered membrane



USG Securock® Brand UltraLight Coated Glass-Mat Roof Board recommended for fully adhered membrane



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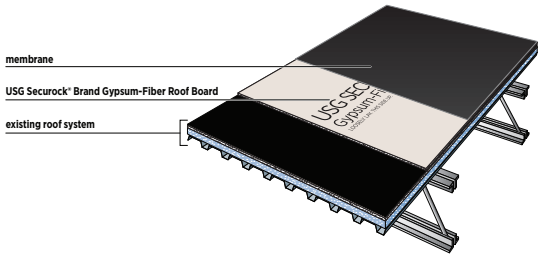
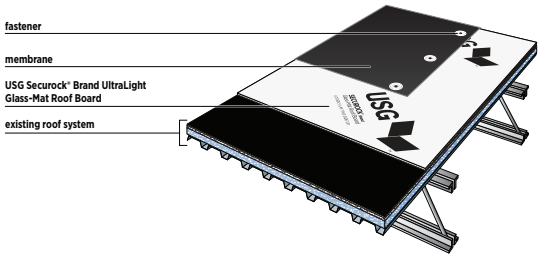
ROOF RE-COVER BOARD

USG Securock high-performance roof board is placed over the existing membrane surface, where it functions as a separator and a support layer between the old roof and the new roofing membrane. Roof re-cover boards provide a flat substrate for new roofs and have all of the benefits of a cover board.

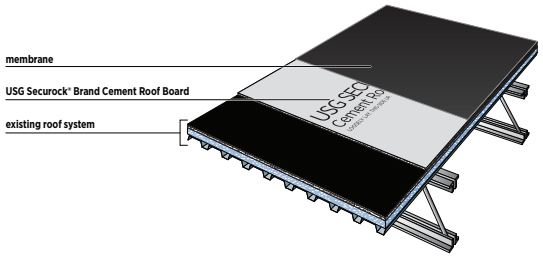
USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane



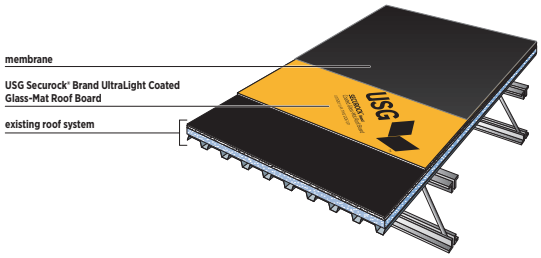
USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane



USG Securock® Brand Cement Roof Board recommended for fully adhered membrane



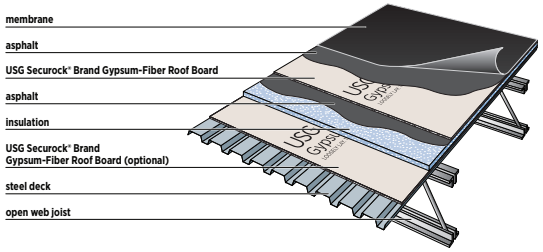
USG Securock® Brand UltraLight Coated Glass-Mat Roof Board recommended for fully adhered membrane



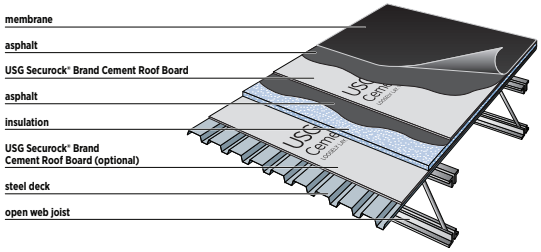
HOT ASPHALT SUBSTRATE (HOT MOP)

USG Securock® Brand Gypsum-Fiber Roof Board can be mechanically fastened, bonded with mastic or adhesives, or hot mopped to foam insulation. All hot-applied roofing systems can then be mopped directly onto the unprimed roof board without concern for blistering or delamination. USG Securock Gypsum-Fiber Roof Board is your best option for hot mopping.

USG Securock® Brand Gypsum-Fiber Roof Board



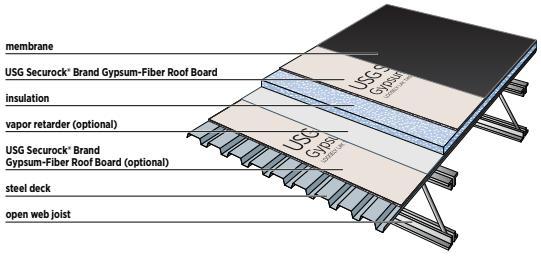
USG Securock® Brand Cement Roof Board



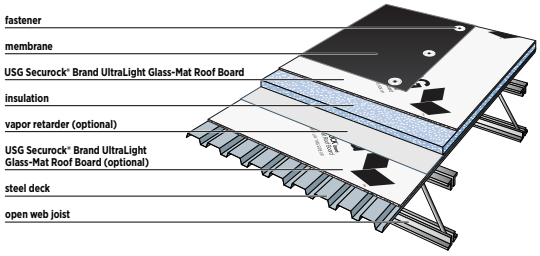
SUBSTRATE FOR VAPOR RETARDERS

USG Securock high-performance roof board is placed over the roof deck to provide support for the vapor barrier. The membrane may be loose laid; attached with cold mastics, hot asphalt or adhesives; or mechanically fastened, depending on the roof assembly. The roof board is used as a substrate for retarder adhesion to reduce condensation.

USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane

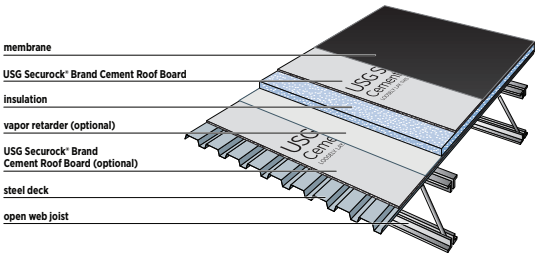


USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane

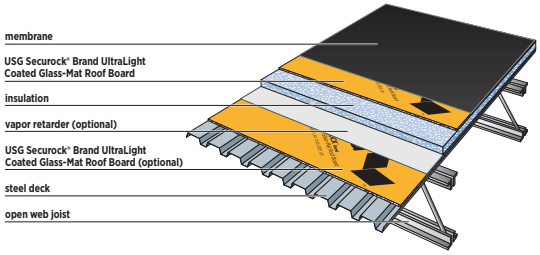


SUBSTRATE FOR VAPOR RETARDERS CONT.

USG Securock® Brand Cement Roof Board recommended for fully adhered membrane



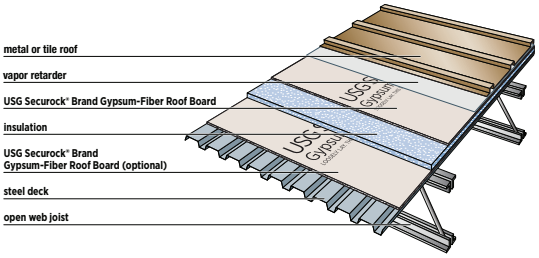
USG Securock® Brand UltraLight Coated Glass-Mat Roof Board recommended for fully adhered membrane



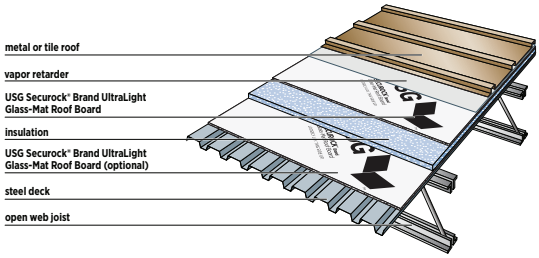
METAL OR TILE ROOF THERMAL BARRIER

USG Securock high-performance roof board provides a thermal barrier in conjunction with a standing-seam metal or tile roofing system. It also provides noise reduction and hail resistance. Thermal barriers reduce thermal "shock" and slow heat escape from building and act as a fire barrier for internal fire.

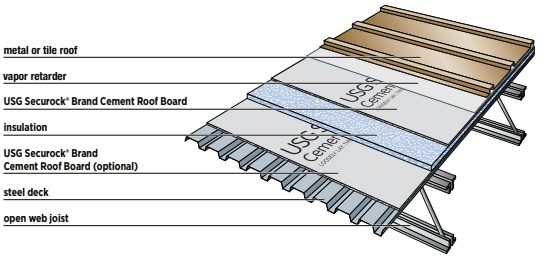
USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane



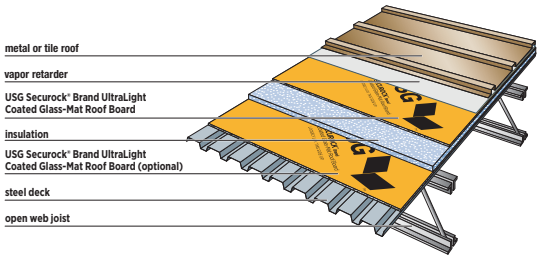
USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane



USG Securock® Brand Cement Roof Board recommended for fully adhered membrane



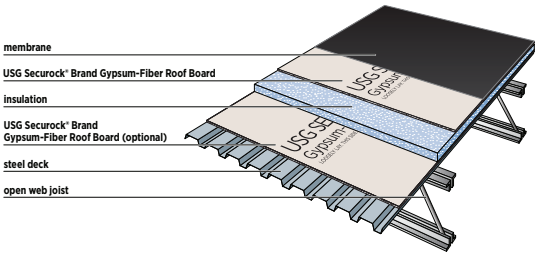
USG Securock® Brand UltraLight Coated Glass-Mat Roof Board recommended for fully adhered membrane



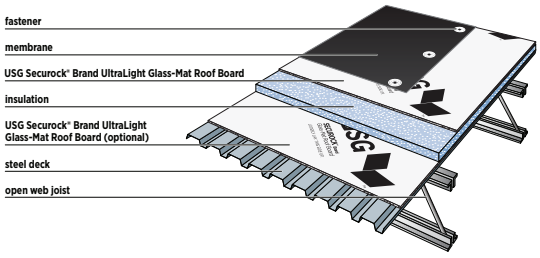
THERMAL BARRIER

USG Securock high-performance roof board provides a thermal barrier installed directly to metal deck for both expanded and extruded polystyrene insulation. Thermal barriers reduce thermal "shock" and slow heat escape from building and act as a fire barrier for internal fire.

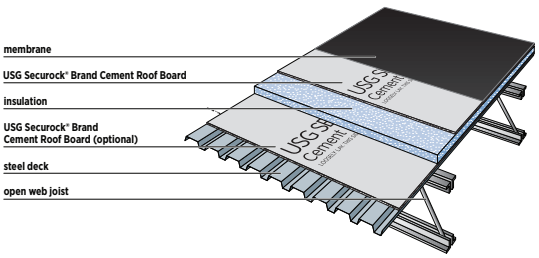
USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane



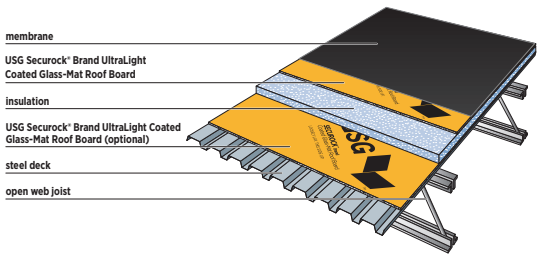
USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane



USG Securock® Brand Cement Roof Board recommended for fully adhered membrane



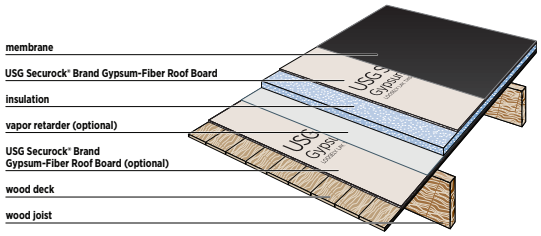
USG Securock® Brand UltraLight Coated Glass-Mat Roof Board recommended for fully adhered membrane



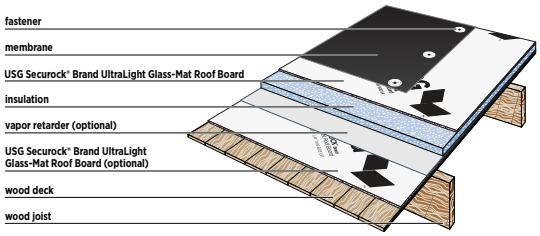
FIRE BARRIER UNDERLAYMENT

USG Securock high-performance roof board is used as a barrier board underlayment below optional rigid foam insulation on a combustible deck to achieve a Class A, B or C fire-resistance rating. See the *UL Building Materials Directory* for more information.

USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane

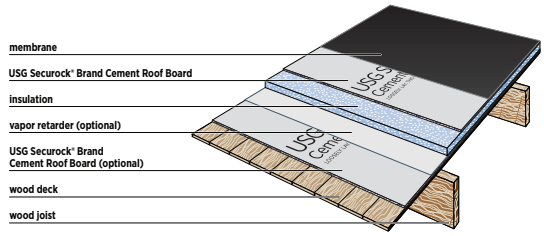


USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane

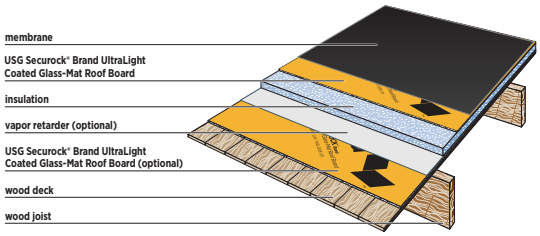


PARAPET WALL SUBSTRATE

USG Securock® Brand Cement Roof Board recommended for fully adhered membrane

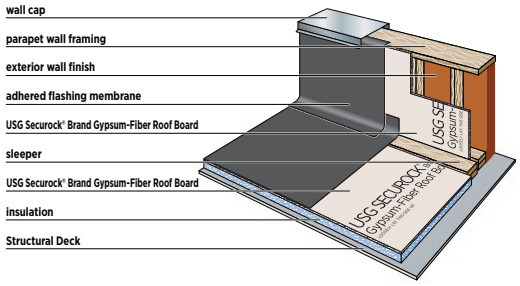


USG Securock® Brand UltraLight Coated Glass-Mat Roof Board recommended for fully adhered membrane

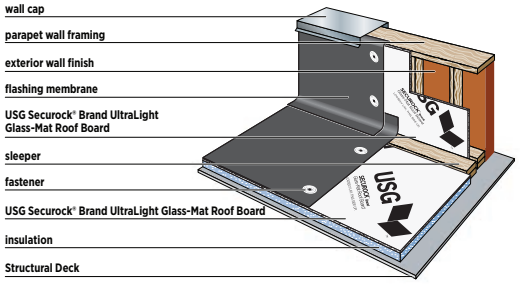


USG Securock high-performance roof board is fastened to wood or metal framing along the parapet wall for roofing membrane flashing support.

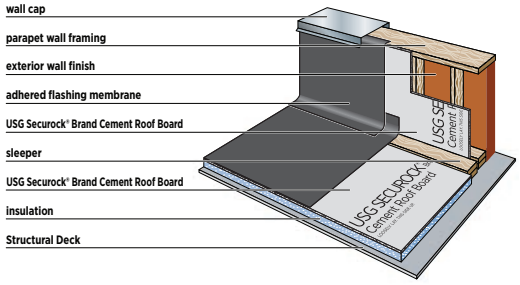
USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane



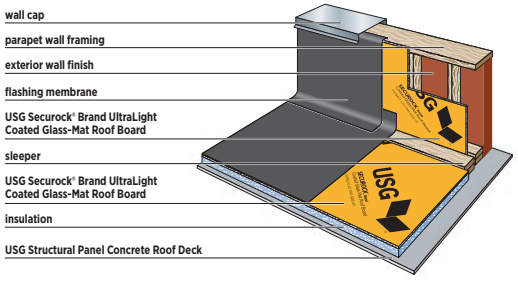
USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane



USG Securock® Brand Cement Roof Board recommended for fully adhered membrane



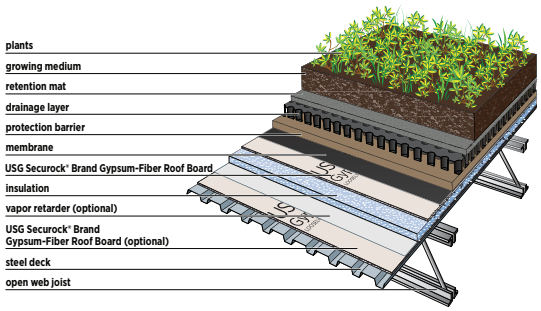
USG Securock® Brand UltraLight Coated Glass-Mat Roof Board recommended for fully adhered membrane



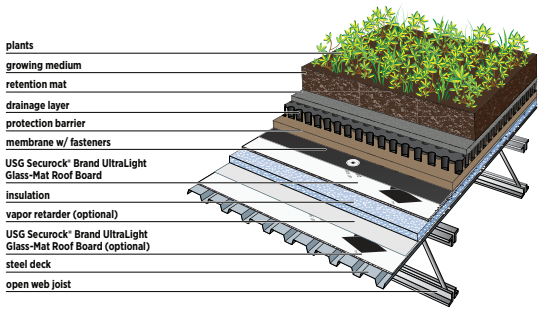
VEGETATIVE ROOFS

USG Securock high-performance roof boards provide an exceptional base for all vegetative roof assemblies while protecting the underlaying insulation from damage.

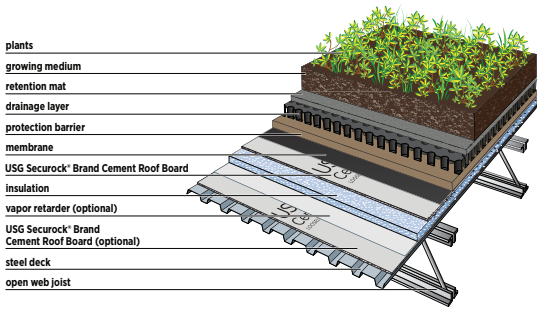
USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane



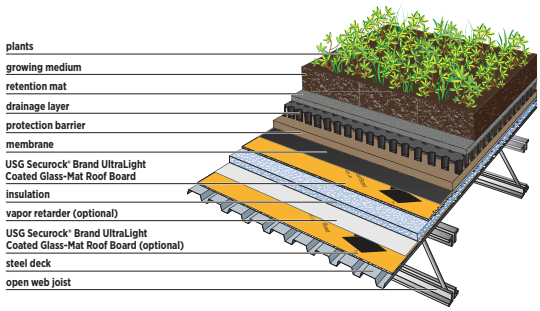
USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane



USG Securock® Brand Cement Roof Board recommended for fully adhered membrane



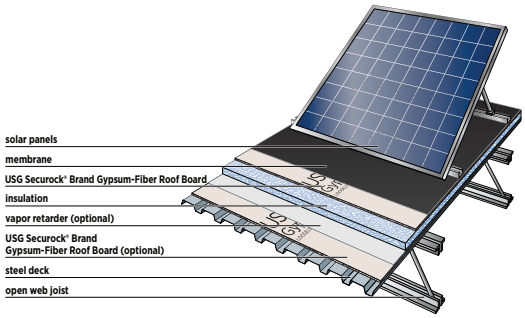
USG Securock® Brand UltraLight Coated Glass-Mat Roof Board recommended for fully adhered membrane



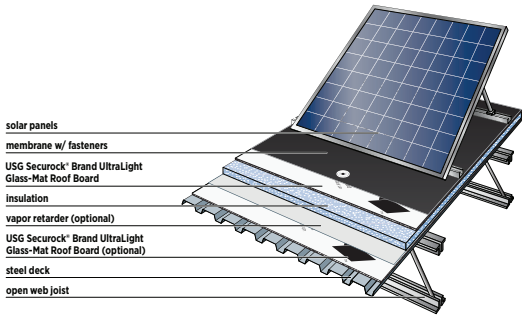
SOLAR ROOFS

USG Securock high-performance roof boards provide a strong and stable base for all solar roof assemblies while protecting the underlaying insulation from damage.

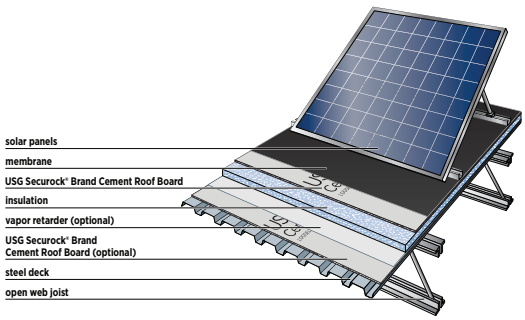
USG Securock® Brand Gypsum-Fiber Board recommended for fully adhered membrane



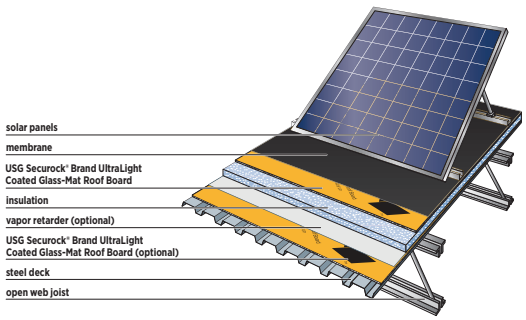
USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for fully adhered membrane



USG Securock® Brand Cement Roof Board recommended for fully adhered membrane



USG Securock® Brand UltraLight Coated Glass-Mat Roof Board recommended for fully adhered membrane



RF44-USA-ENG/rev. 2-18

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Chicago, IL 60661

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usg.com/securock

PRODUCT INFORMATION
See usg.com for the most up-to-date product information.

TRADEMARKS

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USG STRUCTURAL PANEL CONCRETE ROOF DECK

HIGH-PERFORMANCE APPLICATIONS

A concrete roof deck that can be combined with other structural noncombustible materials to achieve one- and two-hour fire-rated roof-ceiling assemblies.

- Strong, durable concrete panel; great uplift ratings
- Dimensionally stable; panel will not buckle or warp like wood sheathing; no moisture issues like cast in place structural concrete
- Installs fast and easy: circular saw with ordinary carbide tipped blade for cutting; screws for fastening
- Meets the criteria of ASTM E136-12 for use in all types of noncombustible construction

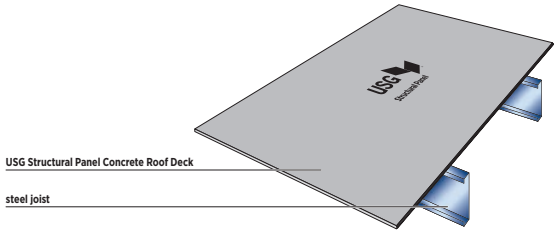
USG Structural Panel Concrete Roof Deck is an innovative technology designed to provide a structural roof sheathing mechanically attached to structural framing, without the need for thermal barriers, pouring, setting or curing.

LOW-SLOPE APPLICATIONS

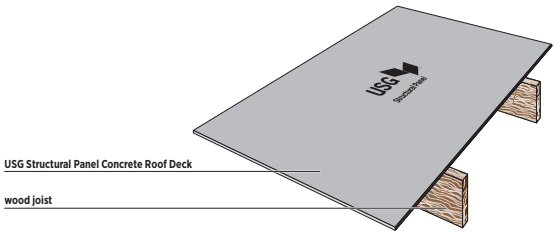
There are five basic components to a low-slope roof assembly:

- Structural framing (or joists), which can be cold formed steel, wood or open web steel trusses
- Concrete Roof Deck, serving as the noncombustible, nonrotting, dimensionally stable, structural sheathing
- Insulation, including polyisocyanurate (ISO), extruded polystyrene (XPS) or expanded polystyrene (EPS)
- Roof cover board installed between the insulation and the roofing membrane to protect the insulation and support the membrane, improving fire protection, traffic and hail resistance, and wind-uplift performance
- A membrane or membrane system, which can be built-up roofing (BUR), single-ply or modified bitumen

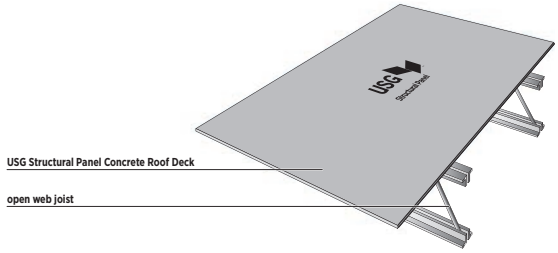
USG Structural Panel Concrete Roof Deck over Cold Formed Steel



USG Structural Panel Concrete Roof Deck over Wood Frame



USG Structural Panel Concrete Roof Deck over Open Web Joist



The following are for illustration purposes only. USG Structural Panels and USG Securock® Brand high-performance roof boards are engineered to perform within a properly designed roof system. The use of USG Securock high-performance roof boards as a roofing component is the responsibility of the design professional. Consult roofing system manufacturers for specific instructions on the application of their products to USG Securock high-performance roof boards. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**

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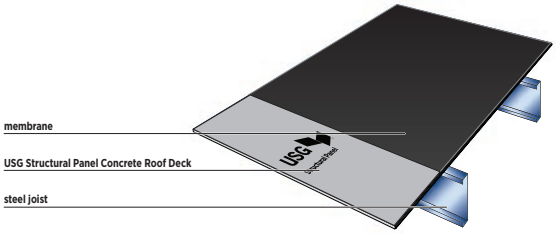
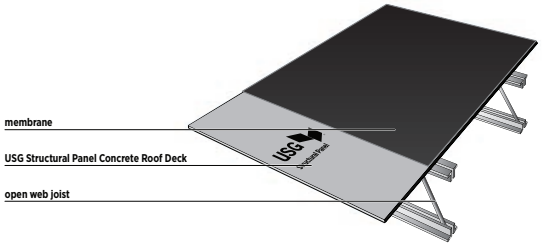
DIRECT APPLIED (MEMBRANE DIRECT)

USG Structural Panel Concrete Roof Deck is a substrate for direct-applied roof systems. Whether hot asphalt (hot mop), or adhesively applied, USG Structural Panel Concrete Roof Deck will serve as a noncombustible structural sheathing. USG Structural Panel Concrete Roof Deck is a dimensionally stable panel that does not need to be gapped. As an inorganic, termite-resistant per AWPA Standard E1-13, nonrotting substrate, it's ideal for membrane direct applications.

USG Structural Panel Concrete Roof Deck over Cold Formed Steel



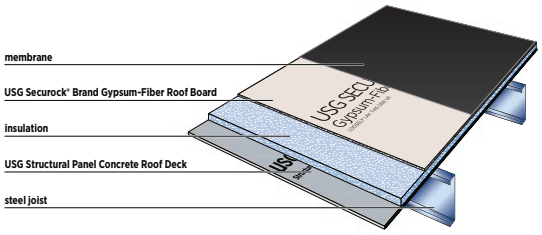
USG Structural Panel Concrete Roof Deck over Open Web Joists



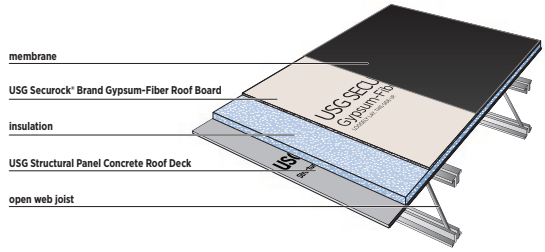
INSULATED SYSTEMS

USG Structural Panel Concrete Roof Deck is a structural substrate when using ISO, XPS or EPS insulations, and does not require the use of a thermal barrier. The placement of USG Securock high-performance roof board directly below the roofing membrane provides primary support for the membrane and protects the underlying insulation layer from damage during installation, foot traffic and hail.

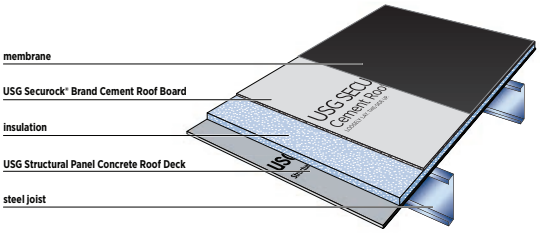
USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane



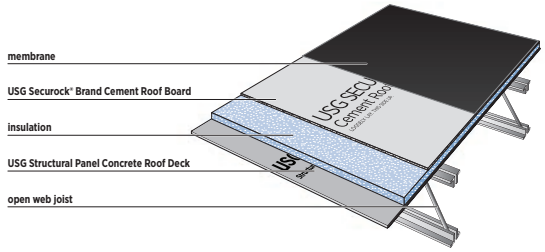
USG Structural Panel Concrete Roof Deck over Open Web Joists with USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane



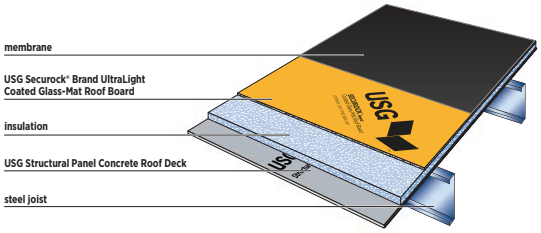
USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock® Brand Cement Roof Board recommended for fully adhered membrane



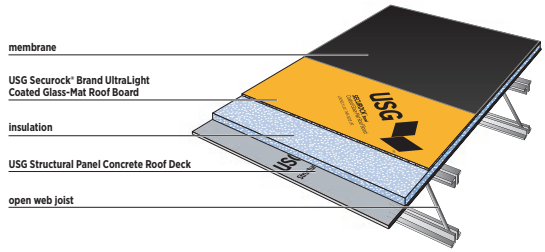
USG Structural Panel Concrete Roof Deck over Open Web Joists with USG Securock® Brand Cement Roof Board recommended for fully adhered membrane



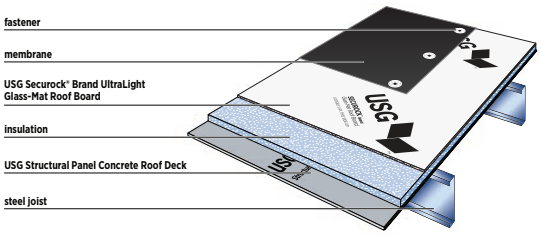
USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock® Brand UltraLight Coated Glass-Mat Roof Board recommended for fully adhered membrane



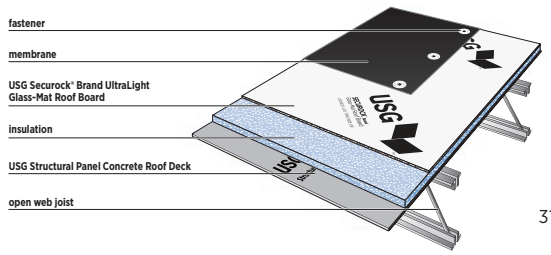
USG Structural Panel Concrete Roof Deck over Open Web Joists with USG Securock® Brand UltraLight Coated Glass-Mat Roof Board recommended for fully adhered membrane



USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane



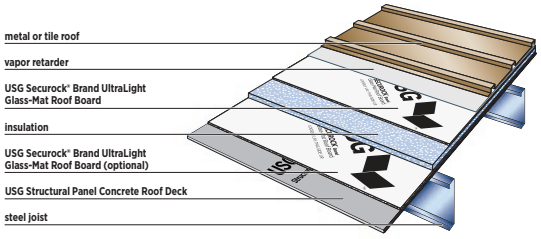
USG Structural Panel Concrete Roof Deck over Open Web Joists with USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane



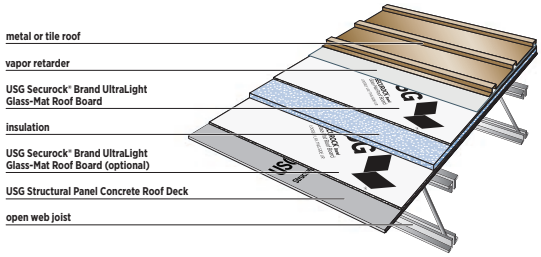
METAL OR TILE ROOF

USG Structural Panel Concrete Roof Deck provides the structural sheathing over cold formed steel or open web joists, without the need for a thermal barrier. USG Securock high-performance roof board provides an optional thermal barrier in conjunction with a standing-seam metal or tile roofing system. It also provides noise reduction and hail resistance. Thermal barriers reduce thermal "shock" and slow heat escape from building and act as a fire barrier for internal fire.

USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached Metal or Tile Roof



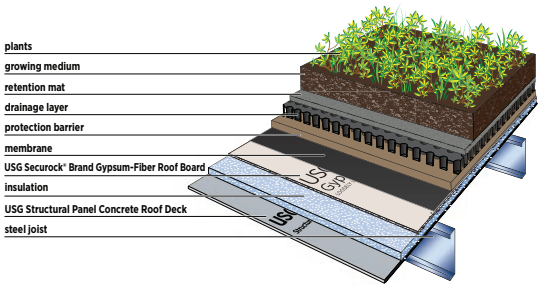
USG Structural Panel Concrete Roof Deck over Open Web Joists with USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached Metal or Tile Roof



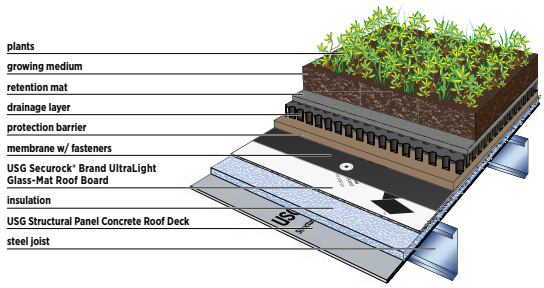
VEGETATIVE OR GREEN ROOF

USG Structural Panel Concrete Roof Deck provides the structural sheathing over cold formed steel or open web joists, without the need for a thermal barrier. It can be a suitable substructure for Vegetative or Green Roofs.

USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane



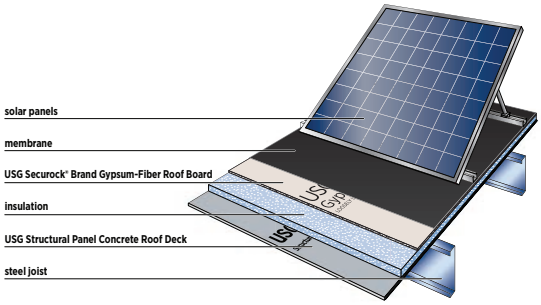
USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane



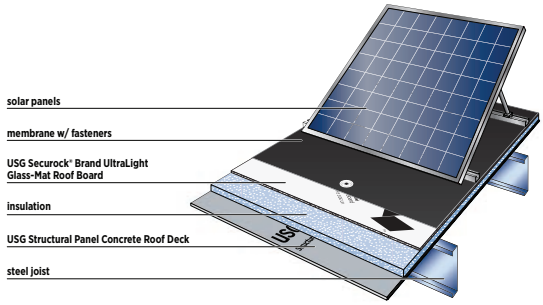
SOLAR ROOF

USG Structural Panel Concrete Roof Deck provides the structural sheathing over cold formed steel or open web joists, without the need for a thermal barrier. It can be a suitable substructure for photovoltaic or solar panels.

USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock® Brand Gypsum-Fiber Roof Board recommended for fully adhered membrane



USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock® Brand UltraLight Glass-Mat Roof Board recommended for mechanically attached membrane

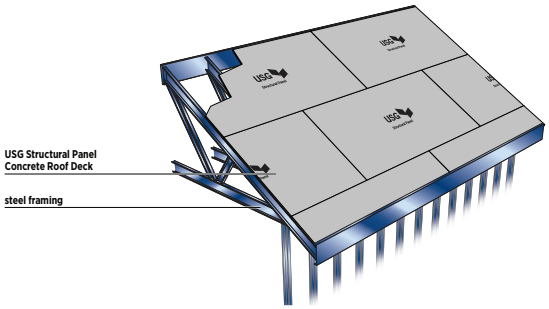


STEEP-SLOPE APPLICATIONS

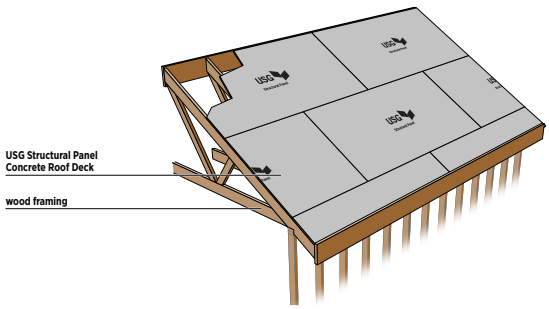
There are four basic components to a steep-slope roof assembly:

- Structural framing (or joists), which can be cold formed steel, or wood trusses
- Concrete Roof Deck, serving as the noncombustible, nonrotting, dimensionally stable, structural sheathing
- Membrane or roof felt and underlayment
- Exterior cladding or roof covering, shingles, standing-seam metal or clay tile

USG Structural Panel Concrete Roof Deck over Cold Formed Steel Truss



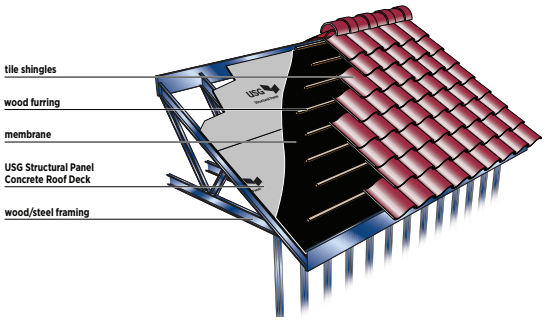
USG Structural Panel Concrete Roof Deck over Wood Truss



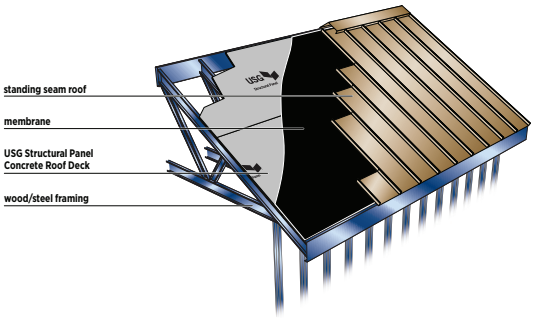
The following are for illustration purposes only. USG Structural Panels are engineered to perform within a properly designed roof system. The use of USG Structural Panel Concrete Roof Deck as a roofing component is the responsibility of the design professional. Consult roofing system manufacturers for specific instructions on the application of their products to USG Structural Panel Concrete Roof Deck. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**

USG Structural Panel Concrete Roof Deck provides the structural sheathing over cold formed steel or wood trusses, without the need for a thermal barrier. Its inorganic core results in a noncombustible, nonrotting, dimensionally stable substrate ideal for a variety of exterior grade coverings, such as:

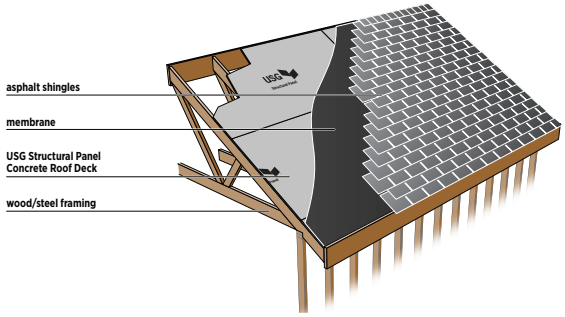
USG Structural Panel Concrete Roof Deck over Cold Formed Steel Truss with Clay Tile



USG Structural Panel Concrete Roof Deck over Cold Formed Steel Truss with Standing Seam Roof



USG Structural Panel Concrete Roof Deck over Wood Truss with Asphalt Shingles

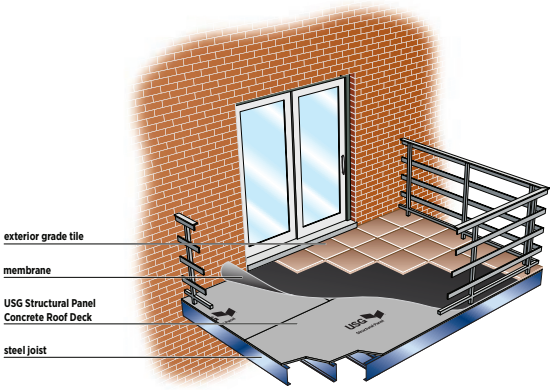


ADDITIONAL APPLICATIONS

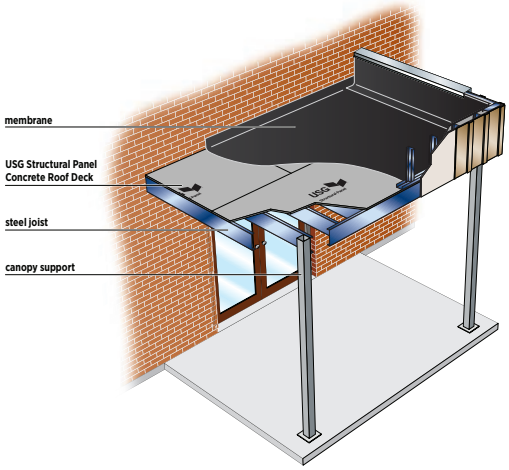
The following are for illustration purposes only. In addition to the previous applications, USG Structural Panel Concrete Roof Deck can be the structural sheathing for balconies and canopies. The use of USG Structural Panel Concrete Roof Deck as a decking component is the responsibility of the design professional. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**

ADDITIONAL APPLICATIONS CONT.

USG Structural Panel Concrete Roof Deck in balcony application



USG Structural Panel Concrete Roof Deck In canopy system



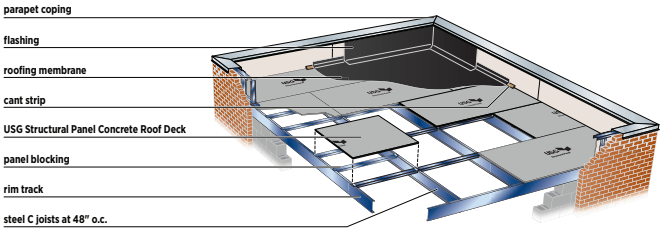
LOAD TABLE

The following table represents the uniformly distributed load capacity of USG Structural Panel Concrete Roof Decks. For the most up-to-date load tables, see the Progressive Engineering Inc. report, **PER-14076**. For technical questions, email usgstructural@usg.com. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**

Ultimate Uniform Load for USG Structural Panel Concrete Roof Deck

Joist Spacing - inches (millimeters)	12″ (305 mm)	16″ (406 mm)	24″ (610 mm)	32″ (813 mm)	48″ (1,219 mm)
Uniform Load - psf (kPa)	1,320 psf (63.2 kPa)	744 psf (35.6 kPa)	330 psf (15.8 kPa)	240 psf (11.5 kPa)	150 psf (7.2 kPa)

For SI: 1 inch = 25.4mm, 1 psf = 47.88 Pa.
(1) **Ultimate Load Values have no safety factor included.**
(2) Two framing spans minimum per panel piece. See SCP43, page 6 for single span framing recommendations.
(3) Ultimate Uniform Load Table for general reference only.
For complete load capacities, consult Progressive Engineering Inc. Product Evaluation Report **PER-14076**
(4) Blocking at all joints perpendicular to framing to be a minimum of 16 gauge 3-5/8″ wide track. For sheathing installation where a single span condition exists, additional track blocking is required perpendicular to the framing located mid-way between the edges of the panel.



RECOMMENDED FASTENERS

USG recommends the following fasteners for the installation of USG Structural Panels to structural framing

Ultimate Uniform Load for USG Structural Panel Concrete Roof Deck	16 ga. Cold-Formed Steel (1/2 in. [13 mm] Min. Edge Distance)		SPF Lumber (5/8 in. [16 mm] Min. Edge Distance)		1/4 in. (6.5 mm) A36 Hot-Rolled Steel (3/4 in. [19 mm] Min. Edge Distance)	
	Part #	Fastener Pull-Through[1]	Part #	Fastener Pull-Through[1]	Part #	Fastener Pull-Through[1]
Grabber Construction Products, Inc.	CGH8158LG	581 lb.	C8200L2M	581 lb. (264 kg)	—	—
Simpson Strong-Tie Company Inc.	CBSDQ158S	(264 kg)	WSNTLG2S	581 lb. (264 kg)	TBG1260S	581 lb. (264 kg)
SENCO[2]	—	581 lb.	GL24AABF3	581 lb. (264 kg)	—	—

(1) Fastener pull-through capacities are based upon the minimum average **ultimate tested capacity** for all tabulated fasteners. The engineer or designer of record shall apply an appropriate safety factor (ASD) or resistance factor (LRFD).
(2) SENCO 8d ring shank nails are manufactured with a length of 2-3/8 in., head diameter of 0.266 in., and a shank diameter of 0.113 in. Equivalent 8d ring shank nails meeting these dimensional requirements may be utilized when approved by the engineer or designer of record.
(3) Minimum edge distance for nails is 1/2 in.

General Notes: In accordance with **PER-14076**, the minimum screw pattern is 6 in. (153 mm) o.c. along the perimeter of the panels and 12 in. (305 mm) o.c. in the field of the panels. Do not use a larger size screw unless specified by the structural engineer. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**

PRODUCT INFORMATION
See usg.com for the most up-to-date product information.

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REDUCED FASTENER ASSEMBLIES

USG Roofing Solutions initiated a new test program at Factory Mutual to obtain approvals on reduced fastener amounts for ratings of FM 1-90 and 1-120. Listed below are the results of these tests.

How does this affect you?

Using USG Securock® Brand Gypsum-Fiber Roof Boards allows you to build a better roof system with the best roof board on the market and save your customers money on fasteners and labor at the same time—a win for everyone.

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REDUCED FASTENER ASSEMBLIES

FM 1-90 RATINGS

Description	Fastener Density
1/4" 4'x8' USG Securock® Brand Gypsum-Fiber Roof Board with 10 fasteners per board	1 per 3.2 sq. ft.
3/8" 4'x8' USG Securock® Brand Gypsum-Fiber Roof Board with 8 fasteners per board	1 per 4.0 sq. ft.
1/2" 4'x8' USG Securock® Brand Gypsum-Fiber Roof Board with 8 fasteners per board	1 per 4.0 sq. ft.
5/8" 4'x8' USG Securock® Brand Gypsum-Fiber Roof Board with 6 fasteners per board	1 per 5.33 sq. ft.

FM 1-120 RATINGS

Description	Fastener Density
3/8" 4'x8' USG Securock® Brand Gypsum-Fiber Roof Board with 16 fasteners	1 per 2.0 sq. ft.

ROOF BOARD PRODUCT COMPARISON GUIDE

Performance	1/4" USG Securock® Brand Gypsum-Fiber	1/4" DensDeck® Prime[1]	3/8" USG Securock® Brand Gypsum-Fiber	1/2" DensDeck® Prime[1]	1/2" USG Securock® Brand Gypsum-Fiber	5/8" DensDeck® Prime[1]	5/8" USG Securock® Brand Gypsum-Fiber
Compressive strength, psi	1,800 (12.4MPa)	900 (6.2 MPa)	1,800 (12.4MPa)	900 (6.2 MPa)	1,800 (12.4MPa)	900 (6.2 MPa)	1,800 (12.4MPa)
Flute span	2-5/8"	2-5/8"	5"	5"	8"	8"	10"
Flexural strength, Method B, parallel, lbf. min. per ASTM C473	40	40	70	80	110	100	155
Nail pull resistance, min. lb./ft.	80	40[2]	110	80[2]	120	90[2]	145
Water absorption, % max, per ASTM C473	10	10	10	10	10	10	10
Mold resistance per ASTM D2373**	10	10	10	10	10	10	10
ASTM Standard	C1278	C1177	C1278	C1177	C1278	C1177	C1278

**ASTM D3273 Mold Resistance Testing – In independent lab tests conducted on USG Securock® Brand Gypsum-Fiber Roof Board and USG Securock® Brand UltraLight Glass-Mat Roof Board at the time of manufacture per ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber, both panels scored a 10. The ASTM lab test may not accurately represent the mold performance of building materials in actual use. Given unsuitable project conditions during storage, installation or after completion, any building material can be overwhelmed by mold. To manage the growth of mold, the best and most cost-effective strategy is to protect building products from water exposure during storage and installation and after completion of the building. This can be accomplished by using good design and construction practice.

(1) Georgia-Pacific DensDeck® data taken from GP Lit. Item # 622602.
(2) Minimum per ASTM C1177, Georgia-Pacific DensDeck® data not provided in Lit. Item #622602.

COMPARISON FASTENER RATES

Most Single and Multi-Ply Membranes				
Membranes	**1/4"**	**3/8"**	**1/2"**	**5/8"**
USG Securock® Brand Gypsum-Fiber Roof Board	10	8	8	6
Competitive Primed Glass-Mat	12	N/A	10	8

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PRODUCT INFORMATION
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NOTE
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THE IMPORTANCE OF COVER BOARDS IN ROOFING ASSEMBLIES

BY: DERRICK HUTCHINSON, PRODUCT MANAGER - USG ROOFING SOLUTIONS

When designing a roofing assembly, many factors need to be taken into consideration. Performance attributes, product quality, aesthetics, price and quantity must be carefully examined. One key product often overlooked during this process is a cover board.

Using cover boards is an integral part of creating a roofing assembly. A cover board is a thin substrate to which a roof membrane is adhered. However, the use of a cover board far exceeds that of a substrate — it also serves as a critical component that helps to extend the life of a roof. Without a cover board, the roof is missing added durability; the building is more susceptible to hail, fire and wind damage.

Hail is damaging to insulation, but by using a cover board, the impact is minimized. Insulation damage results in a reduction of the roof's thermal resistance, or R-value. R-value is the measure of heat flow through a material. The higher the R-value, the greater the resistance of heat flow through it. Hail damage on a roof without a cover board can easily pierce the insulation, which will increase the heat flow through it, thereby increasing the energy cost of the building.

Cover boards also serve as a fire barrier protecting the roof from external fire. Insulation is very flammable and cover boards offer a layer of protection that prevents the insulation from igniting in the event of a fire. This in turn makes buildings safer as fires are less likely to spread from one building to the next.

Additionally, cover boards help to increase the wind uplift value of a roof assembly by providing a strong, high performing layer of protection. However, strict adherence to the recommended fastener spacing is key to wind uplift performance. This prevents potential damage that may occur during unfavorable weather. According to Factory Mutual, a global property insurance company, wind-uplift results show that including a cover board is extremely beneficial to the building. They can double the wind uplift of certain assemblies or achieve the same rating with fewer fasteners.

The National Roofing Contractors Association (NRCA) has endorsed the use of cover boards in all low slope roofs due to the insulation's negative attributes like facer delamination, powdering, shrinkage, cupping and edge cavitation. Cover boards help to support the insulation in the event of these failures. All of these uses of cover boards provide added security and lower cost of ownership for the building.

Just as cover boards are used to protect against various potential threats, they come in a variety of compositions tailored to an array of applications. With so many options for cover boards, selecting the appropriate product may be challenging at first. By keeping in mind the desired result, the process becomes easier.

DIFFERENT COVER BOARDS HAVE DIFFERENT PHYSICAL PROPERTIES

There are many types of cover boards that are suitable for an assortment of applications. Each has features and benefits suitable for a desired result. The most common are:

Gypsum Fiber: A fiber-reinforced, uniform composition cover board that can be used in most roof applications. Gypsum-fiber cover boards typically provide unmatched wind uplift and hail performance, higher than any other cover board, with no risk of facer delamination. This product also protects against moisture and mold.

Gypsum: A gypsum core and a glass-mat facer provide protection from moisture and mold. This product is usually available with a coated or uncoated glass facer. The coated facer allows for adhesion of the membrane, while an uncoated facer is typically used for a mechanically attached single-ply application that doesn't require adherence to the membrane.

Cement: Typically cementitious-based with a reinforcement mesh for added strength, these products are typically water durable and will not rot, warp, delaminate or disintegrate. They may also be noncombustible, providing a great fire barrier for any roof assembly or parapet wall.

Wood Fiber: Typically made from wood fiber and bonded together with a resin. These cover boards are typically used in hot mop and torched applications.

High-Density Insulation: Fairly new to the market. These boards are typically composed of a compressed polyisocyanurate core with a coated glass-mat facer, making it a lightweight product.

Perlite: Consist of expanded perlite, cellulose binder and mineral aggregate. This cover board is typically used in hot mop and torched applications.

Asphaltic: Made of a mineral fortified, asphalt-based core with fiberglass facers. These boards are typically used in an asphaltic roof system.

Mineral Fiber Board: Consist of rock wool or mineral fiber. These boards provide good sound properties and are typically used in asphaltic roof systems.

Most of the aforementioned boards can also be used as a thermal barrier that is placed directly over the roof deck. In this application, the cover board provides a fire barrier in the case of an internal fire. This significantly increases the time required to melt the insulation, which adds fuel to the flames. The cover board also serves as a substrate for a vapor retarder in this application.

Cover boards are ideal because most will provide excellent fire properties and the necessary strength to allow the roof to withstand hail impact, windstorms and foot traffic. It is essential to understand which cover board is the best match for each individual application.

DETERMINING WHICH COVER BOARD IS RIGHT FOR THE JOB

Typically the membrane materials and necessary roof functions determine which type of cover board should be used. For example, if a building is on the Florida coast and a 300 psf rating with a single-ply membrane is needed, a gypsum fiber cover board may be the best option due to its high strength, wind-uplift performance and durability.

When selecting a cover board, it is important to keep in mind which properties are most crucial for the job and the type of roof system desired. Knowing the properties of each cover board helps when selecting the one that will provide the best value for the building. Some building codes may also dictate the necessary fire and wind-uplift properties the roof should achieve. Including a cover board may help achieve these approvals.

After selecting the proper cover board, correct installation is essential to ensure the cover board will perform as expected.

INSTALLING COVER BOARDS

Cover boards are installed directly under the membrane and above the insulation. Many are fastened directly down into the deck, or they can be adhered to insulation with low-rise foam adhesive or hot asphalt.

To ensure cover boards are installed correctly:

1. Stagger the cover board and insulation joints.
2. Install using approved fasteners with plates or adhesive and follow manufacturers' directions for fastener spacing.
3. Only install what can be covered by a final membrane system within the same day.

Selecting and installing the appropriate type of cover board can lead to energy efficiency and other benefits for the building. This in turn creates a higher performing building which is beneficial to the building owner and all occupants of the space.

COVER BOARDS CONTINUE TO IMPACT THE LIFE CYCLE OF A BUILDING

Cover boards were first used as a barrier board for hot-applied and solvent-based adhesive to prevent damage to the insulation and blisters in the membrane system. These original cover boards were weak and low performing as their only job was to serve as a barrier board. Over the years, the industry has collected more detailed information about roofs and how storms and normal roof maintenance can damage a roof. As a result, additional properties have been added to cover boards making them stronger and thereby increasing the life span of a roof. Additionally, building codes have played a role in the development of cover boards. The need for higher fire and wind-uplift performance has driven innovation resulting in higher performing cover boards. It is expected that cover boards will continue adding value to the roofing system and the building owner. Even though using a cover board is an additional step, it has enabled contractors to create a long lasting, more durable roof. The desire for buildings that are energy efficient, high performing and sustainable continues to drive development of products that achieve these ratings as well.

As cover boards are becoming more the norm in roofing systems, there is an ongoing challenge to identify what else they can do. How can cover board functions increase? Can they help make the roofers work more efficiently? Can cover boards provide more value to the building owner, and if so, what is it? These questions will drive innovation and product development in the years to come.

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ROX DEVELOPMENT CUSTOM HOME

USG STRUCTURAL SOLUTIONS PROJECT PROFILE

INSTALLING ONLY THE BEST IN THIS GC'S HOME

Jason Roxburgh and his wife, Emily, dreamed of building their own custom single-family home in one of Chicago's unique up-and-coming neighborhoods. But they had a lot of unanswered questions. Where should we land? How are we going to build it? Can we manage the project ourselves, given we both have full-time jobs? These were just some of the unknown details as they pondered how to make their dream a reality.

Luckily, Jason was a talented contractor in his own right. He knew, through his Rox Development Company, that he could act as General Contractor (GC) and manage the construction of the custom single-family home himself. He and Emily decided to take the plunge in 2015 and broke ground in early 2016.

The Roxburgh home is located in the heart of Chicago's revitalized West Bucktown neighborhood. The property consists of three floors, with a roof deck and a third-floor balcony, for a total square footage of 2,700—a sizeable footprint in 'the concrete jungle,' surrounded by a mix of much older single-family homes, multiunit rentals, and commercial and retail properties.

"I only want the best for our home," said Roxburgh. "We're intending on living here for a very long time, and the materials we're using have to be the best—no compromises. That's why we're installing as many USG products as we can. The company has been around for more than a hundred years so they know what they're doing."

Roxburgh and his subcontractors have purchased nearly all the products they're installing from the local L&W Supply, Zechman Supply, as well as ABC Supply Co. The USG-manufactured products include everything from structural panels, roofing and sheathing, to interior panels and finishes, backerboards, shower systems and flooring.

"Every time a new subcontractor or installer comes to my home, they say it's a tank, given the USG Structural Panels I've used and the other quality USG products. It makes me proud and happy to know that I'm building something with longevity for my wife and me."

Jason and Emily are aiming to complete their West Bucktown home in the Fall of 2016, just in time to enjoy it with family and friends over the holidays.

"Every time a new subcontractor or installer comes to my home, they say it's a tank, given the USG Structural Panels I've used and the other quality USG products."

Jason Roxburgh
Owner of Rox Development, Homeowner and USG Corporation Employee

KEY PRODUCTS

- USG Structural Panels (Concrete Subfloor and Concrete Roof Deck)
- USG Securock® Brand Gypsum-Fiber Roof Board
- USG Securock® Brand Glass-Mat Sheathing
- USG Sheetrock® Brand UltraLight Panels Firecode® X
- USG Sheetrock® Brand UltraLight Mold Tough® Panels
- USG Sheetrock® Brand Finishing Products
- USG Durock® Brand Cement Board
- USG Durock™ Brand UltraLight Foam Tile Backerboard
- USG Durock™ Brand Shower System
- USG Levelrock® Brand RH Series Floor Underlayment

"Roxburgh's home is likely going to achieve LEED® Gold status, if not Platinum.

We've designed the home to be very energy efficient and sustainable from the get-go. We don't have too much more to do to achieve the recognition. I'm doing it for our quality of living and future utility expenses, but also for the overall value of the home."

"I chose USG Structural Panels—the Concrete Subfloor and the Concrete Roof Deck—because I want the benefits of concrete, without the time delay, added weight and complexity of bringing another contractor to site. The USG Structural Panels are dimensionally stable and noncombustible. I don't have to worry about mold, rot, termites, fire or even floor squeaks. The products are rock solid."

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PROJECT PROFILE

Application/Building Type: Stadium Retractable Roof

Project Name: Marlins Park

Location: Miami, Florida

Contractor: PetersenDean Roofing and Solar Systems, Inc.

Featured Products: USG Securock® Brand Gypsum-Fiber Roof Board

usg.com/securock

USG SECUROCK® BRAND HITS IT OUT OF THE PARK FOR MIAMI MARLINS STADIUM

With an eye on performance, aesthetics, sustainable design and the fan experience, Miami-Dade County and the Florida Marlins had their bases covered when their new ballpark opened for the 2012 season.

Performance expectations were high—literally—for the new Marlins Park, especially when it came to the stadium's retractable roof. Consisting of three metal-decked operable panels, the lower east and west panels cover the stands while the highest elevated center panel rises 200 feet over second base to allow for pop flies.

That elevation puts the roof in one of the area's highest wind zones, requiring the assembly to withstand 140-mile-per-hour winds. The roof system includes 18- and 20-gauge metal steel decking with 11-foot joist spacing. Carlisle HP-H Polyiso insulation board, 2.0" thick, and 5/8" USG Securock® Brand Gypsum-Fiber Roof Board were mechanically fastened to the decking.

A 60-mil Carlisle Sure-Weld® TPO membrane was then fully adhered to the USG Securock Gypsum-Fiber Roof Board. "The building's elevation, design and the owner's plans for a Factory Mutual Global insured property, combined with the stringent Miami-Dade County and UL Class A building criteria, all drove the wind-uplift design pressure," said a representative from PetersenDean, the park's roofing contractor. "There are very high uplift requirements with this application. Yet at the time drawings were prepared, there wasn't a system yet approved in Miami-Dade County to meet the stadium's requirements."

That changed when United States Gypsum Company and Carlisle SynTec stepped up to bat to perform extensive testing for a USG Securock roof board and Carlisle membrane assembly.

"USG Securock Gypsum-Fiber Roof Board and Carlisle far exceeded the building's performance requirements. The products came out on top. No one else could meet both the wind-uplift and Class A fire test requirements," said Bernie Abrami, manufacturer's representative with ProRep for USG Securock® Brand and Carlisle. "The superior compressive strength of USG Securock also resists membrane puncture from flying debris during south Florida's severe weather."

USG Securock Gypsum-Fiber Roof Board is fire resistant and ideal for use in all types of commercial low-slope

> **"USG Securock® Brand Gypsum-Fiber Roof Board... far exceeded the building's performance requirements. The products came out on top. No one else could meet both the wind-uplift and Class A fire test requirements."**
>
> **Bernie Abrami**
> Manufacturer's Representative ProRep for USG Securock® Brand and Carlisle SynTec Systems

roofing systems. The board is engineered to provide superior wind-uplift performance for a wide variety of roof assemblies. Its fiber-reinforced, uniform composition gives the panel strength and water resistance through to the core.

"We didn't have any problems with blistering or bubbling that we do with other cover boards," the PetersenDean representative noted. "It was easy to contour if we had inconsistencies in the deck substrate. And, because a single-ply membrane fully adheres to the smooth board surface, you get a nice-looking, uniform and clean finished product. The owner not only demanded a high-performance system, but also one that was pleasing to the eye."

> **We feel appreciated by USG and USG Securock. We get great support that we don't get with other providers.**
>
> Representative from PetersenDean Roofing and Solar Systems, Inc.

Sustainable design was another project priority. The Marlins Park planned to become the first LEED® Silver–certified retractable-roof baseball stadium. Green design initiatives included a goal that ultimately more than 20 percent of the project's total material would come from recycled content.

USG Securock Gypsum-Fiber Roof Board is made from 95 percent recycled materials and has earned independent certification from Scientific Certification Systems for this achievement.

A Double Play: Fan and Contractor Comfort

The ballpark's retractable roof provides relief from south Florida's almost daily summer rains and high heat with average summer temperatures of 87°F—weather conditions that made a demanding project even more so for the contractors installing the roof.

"It's hot and sweaty. The guys are tied up on cable for fall protection. Anything that makes moving materials easier and more efficient is a big benefit for comfort, safety and production," Abrami said.

That was the experience the crew from PetersenDean, the nation's third largest roofing contractor, had as they installed USG Securock. Because the gypsum-fiber roof board's composition of gypsum and cellulose fibers does not require a glass-mat facer for strength, the panel is easy to handle with no itchiness.

"We like it because it's user-friendly. The ease of working with USG Securock allowed us to install the board in a timely manner in a very difficult application where the sides and end of the roof are at a steep vertical slope of 18/12. Some of the roof panels are straight up and down," the PetersenDean representative explained.

Another benefit project team members cited was the gypsum-fiber board's low surface absorption, which increases the ability to predict adhesive usage and find additional material cost savings.

PetersenDean has installed approximately 2 million square feet of USG Securock roof board in projects in Florida and Puerto Rico during the past three years.

"We feel appreciated by USG and USG Securock," the PetersenDean representative said. "We get great support that we don't get with other providers. The quality of the material and service is what makes USG Securock our preferred roof board."

The new Marlins Park is owned by Miami-Dade County. Architect Earl Santee of POPULOUS is one of the most experienced ballpark architects in the world, working on nearly 20 Major League Baseball parks.

RF42-USA-ENG/rev. 2-18

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UPDATING AN AGING RAILWAY BUILDING TO BE SAFE AND COMPLIANT

PROJECT PROFILE

AMTRAK RAILYARD
RENSSELAER, NY

The Amtrak Rail Building 100 was well overdue for a new roof. After years of damage from constant rain, wind and industrial debris, the existing metal roof was starting to give way. Amtrak needed a simple, low-cost solution that could be installed efficiently without removing the current roof. They were under a tight timeline and strict OSHA rules and regulations. Carlisle's membrane, using the OMG RhinoBond® system, bonded well to the plates on our USG Securock® Brand UltraLight Glass-Mat Roof Board.

To complete the job quickly and safely, Amtrak needed a lightweight roof board product that was easy to deliver, handle and install without compromising the quality of the building. USG Securock® Brand UltraLight Glass-Mat Roof Board is the lightest glass-mat roof board on the market.

The construction team quickly discovered three major benefits from using the product.

> **We appreciate the opportunity to work with Titan on this Amtrak project utilizing our new lightweight USG Securock® Brand UltraLight Glass-Mat Roof Boards.**

Nick Young
Regional Sales Manager, USG

1 LIGHTWEIGHT & EASY TO HANDLE

> **It's lighter than other competitive boards so one person can lift and move the product as needed. Handling is 100% better.**

Rich Van Auken
Foreman, Titan Roofing

2 COST EFFECTIVE

> **The board is easy to cut and handle, which saved us time on site. We also noticed the ease of use and less waste; both helped to cut down on material costs and labor.**

Rich Van Auken
Foreman, Titan Roofing

3 HEALTH AND SAFETY

> **Saves our workers' backs from injuries, and they aren't as tired at the end of the day.**

Dan Washock
Project Manager, Titan Roofing

PRODUCT OVERVIEW

USG Securock® Brand UltraLight Glass-Mat Roof Board is a high-performance roof board used in low-slope commercial roofing systems. It enhances the durability of the entire roof, and its specially treated core and facer provide protection against fire, mold and moisture.

1,300
Squares of Roof Board to Install

18%
lighter than competitive glass-mat roof boards

PRODUCT BENEFITS

- Lightweight and easy to handle
- Quicker to cut with less waste
- Faster installation
- Light weight allows more volume per truck
- Lower costs and increased productivity

BONUS

High-quality facer with less itchiness than competitive products

TAKE IT FROM TITAN

"I would recommend [it] to other contractors 100%."

Rich Van Auken
Foreman, Titan Roofing

"It's not just a bunch of talk. We tested it and it works."

Dan Washock
Project Manager, Titan Roofing

CASE STUDY

Apartment complex under construction in South Jordan, Utah

New Construction

Using New Roofing Products in Utah

by Rich Willett, USG product manager

Despite a slowly recovering economy, construction of new apartment complexes continues in Utah. Western National Contractors, Irvine, Calif., is in the process of building the first phase of "The Daybreak Apartments" in South Jordan, Utah, just outside of Salt Lake City. When completed, a multitude of new families in the area's westward expansion will call the project home. The first phase has more than 185,000-sq.ft. of roof area covering eight apartment buildings with 320 new luxury apartments, a clubhouse, and numerous support buildings.

Noorda Architectural Metals, Salt Lake City, Utah, is the roofing contractor on the project. Chris Noorda, owner of the company, and Aaron Howe, who manages the roofing division, together selected the complex's roofing system and chose a GAF Materials Corporation's mechanically attached 60 mil TPO membrane over USG Corporation's new 1/4" Securock glass-mat roof board. "We needed a total roof system that could stand up to our cold winters and hot summers, and we wanted to work with manufacturers who have proven track records to give the owner the best possible value for his money," Noorda explained.

Noorda Architectural is a GAF Master Select Contractor and has installed many thousands of square feet of GAF's TPO roof membrane. Additionally Noorda recently installed 3/8" Securock gypsum-fiber roof board on a LEED project called "Art Space Commons." The gypsum-fiber roof board's 95% recycled content helped support the environmental goals of MJSA Architecture, Salt Lake City, Utah, the architect for Art Space Commons. "We knew that USG was going to produce a roof board with glass-mat facer and we were eager to try the new board based on our experience with the quality and service the company has always provided us," Howe added.

Working with Jim Sheltmire and Paul Schnieders of D7 Weather Protection System, Park City, Utah, representatives for GAF and USG roofing products in Utah, Howe was able to secure the initial production run of the new glass-mat roof board for the Daybreak project which arrived just in time to start the roofing work. "We were excited to work with Noorda and that Daybreak Apartments was the first project for our new glass-mat roof board," said Sid Teachey, USG Securock national sales manager.

Given this project's wood framed construction, a fire barrier was required. Securock glass-mat roof board meets Factory Mutual (FM) class 1 and Underwriters Laboratories (UL) Class A fire ratings for unlimited slope in fire barrier applications per UL 790 making it a perfect match for the project requirements.

The glass-mat roof board is ideal for use in low-slope commercial roofing systems. In addition to providing fire protection, building professionals can enhance the durability of the entire roofing system when they use the glass-mat roof board as a cover board in single-ply mechanically attached systems. Also, with its specially treated core and high-performance glass-mat facer, the product is moisture and mold resistant scoring a ten, the highest score for mold resistance on ASTM D3273.

"Our workmen are very pleased with the way the board handles and the ease of cutting," said Howe. "We are satisfied with the performance qualities of the product. The way it works in the hands of the men installing it is paramount to us."

So next time you fly in to Salt Lake City International Airport keep an eye to the west valley and when you see that huge apartment complex with the gleaming white Energy Star roof, know that it is protected for many years to come through the combined efforts of Noorda Architectural Metals, USG Corporation, and GAF Material Corporation. The first phase of Daybreak Apartments is expected to open soon.

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USG SECUROCK® BRAND ROOF BOARD SAMPLES AND LITERATURE

DESCRIPTION	FORM #	COMMODITY CODE
USG Securock® Brand Gypsum-Fiber Roof Board 1/4″ sample	RF2A	051155
USG Securock® Brand Gypsum-Fiber Roof Board 3/8″ sample	RF2B	051156
USG Securock® Brand Gypsum-Fiber Roof Board 1/2″ sample	RF2C	051157
USG Securock® Brand Gypsum-Fiber Roof Board 5/8″ sample	RF2D	051158
USG Securock® Brand UltraLight Glass-Mat Roof Board 1/4″ sample	RF29A	051162
USG Securock® Brand UltraLight Glass-Mat Roof Board 1/2″ sample	RF29B	051163
USG Securock® Brand UltraLight Glass-Mat Roof Board 5/8″ sample	RF29C	051164
USG Securock® Brand UltraLight Coated Glass-Mat Roof Board	RF80	—
USG Securock® Brand Cement Roof Board 1/2″ sample	RF50	050545
USG Structural Panel Concrete Roof Deck 3/4″ sample	SCP36	050546
USG Securock® Brand Gypsum-Fiber Roof Board Submittal Sheet	RF5	—
USG Securock® Brand UltraLight Glass-Mat Roof Board Submittal Sheet	RF32	—
USG Securock® Brand Cement Roof Board Submittal Sheet	RF51	—
USG Securock™ Brand Gypsum-Concrete Patch Submittal Sheet	RF53	—
USG Structural Panel Concrete Roof Deck Submittal Sheet	SCP35	438686
USG Securock® Brand High-Performance Roof Boards—Product Comparison Guide	RF3	430198
USG Securock® Brand Gypsum-Fiber Roof Board Tip Sheet	RF18	900118
USG Securock® Brand Roof Boards Portfolio Brochure	RF39	438271
USG Securock® Brand High-Performance Roof Boards—Product Binder	RF16	900074
USG Securock® Brand Gypsum-Fiber Roof Board Installation DVD—English/Spanish	RF21	437957
USG Securock® Brand High-Performance Roof Boards—Fastener Patterns	RF41	438335
USG Securock® Brand High-Performance Roof Boards—Architectural Specifications	RF43	438336
USG Structural Panel Concrete Roof Deck Engineering Specifications	SCP52	—
USG Securock® Brand High-Performance Roof Boards—Applications	RF44	438337
USG Structural Panel Concrete Roof Deck—High-Performance Applications	SCP68	—
USG Reduced Fasteners Assemblies Sell Sheet	RF77	—
The Importance of Cover Boards in Roofing Assemblies White Paper	RF79	—
USG Securock® Brand UltraLight Glass-Mat Roof Board Product Attribute Report	RF72	—
USG Securock® Brand Cement Roof Board Product Attribute Report	RF73	—
USG Securock® Brand Gypsum Fiber Roof Board Product Attribute Report	RF74	—

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