



Product Evaluation Report

PER-08029

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Progressive Engineering Inc.

Initial Listing
November, 2008

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Goshen, Indiana 46528

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Listed Product

5/8" USG Securock™ Firecode X & 1/2" USG Securock™ Glass-Mat Sheathing

Listed For

United States Gypsum Company

700 North Highway 45
Libertyville, IL 60048

Progressive Engineering Inc. is an accredited Testing Laboratory and Third Party Quality Control Agency. This **Product Evaluation Report** represents a product that *Pei* has a follow-up service agreement with. This **Product Evaluation Report** in no way implies warranty for this product or relieves **United States Gypsum Company** of their liabilities for this product. *Pei* is accredited to ISO Standard 17020 and 17025. This **PER** is an official document if it is within one year of the initial or renewal date.

Approved Manufacturing Locations

USG Co. Plant #466
100 1st Street
Empire, NV 89405

USG Co. Plant #320
13425 210th Street
Sperry, IA 52637

USG Co. Plant #861
1 USG Road
Sweetwater, Tx 79556

USG Co. Plant #CGC-066
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Listing Details

5/8" USG SECUROCK™ Firecode X Glass-Mat Sheathing and **1/2" USG SECUROCK™ Glass-Mat Sheathing** are manufactured at the plant locations listed above. These plant locations have an approved Q.C. Manual to manufacture these products and are audited quarterly by *Progressive Engineering Inc.*

Product Description

5/8" USG SECUROCK™ Firecode X Glass-Mat and **1/2" USG SECUROCK™ Glass-Mat Sheathing** are noncombustible exterior gypsum sheathing panels used under exterior claddings such as brick veneer, clapboard siding, panel siding, shingle siding, shake siding and architecturally specified EIFS. Panels are available 48-in. wide, and in standard lengths of 8-ft, 9-ft, and 10-ft, with square edges. Other sizes are available on special order.

Compliance

5/8" USG SECUROCK™ Firecode X Glass-Mat Sheathing :

- Meets or exceeds the requirements of ASTM C 1117 *Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing*.
- Meets or exceeds the requirements of gypsum sheathing in accordance with the 2006 International Residential Code® and the 2006 International Building Code®.
- Non-combustible core when tested in accordance with ASTM E 136, and defined in 2006 International Building Code® Section 703.4.2.
- Surface Burning Characteristics - Flame Spread 0 / Smoke Development 0 when tested in accordance with ASTM E 84.
- Meets Type X definition in accordance with ASTM C 1396 and ASTM C 1177 when tested in accordance with ASTM E 119.
- Exceeds 15 psi flatwise tensile bond capacity required for adhesively attached EIFS when tested in accordance with ASTM C 297.

5/8" USG SECUROCK™ Firecode X Glass-Mat Sheathing is classified by Underwriter's Laboratories, Inc. as to fire resistance, surface burning characteristics, and non-combustibility. See the UL Fire Resistance Directory for fire resistive design listings.

Compliance

1/2" USG SECUROCK™ Glass-Mat Sheathing:

- Meets or exceeds the requirements of ASTM C 1117 *Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing*.
- Meets or exceeds the requirements of gypsum sheathing in accordance with the 2006 International Residential Code® and the 2006 International Building Code®.
- Non-combustible core when tested in accordance with ASTM E 136, and defined in 2006 International Building Code® Section 703.4.2.
- Surface Burning Characteristics - Flame Spread 0 / Smoke Development 0 when tested in accordance with ASTM E 84.
- Exceeds 15 psi flatwise tensile bond capacity required for adhesively attached EIFS when tested in accordance with ASTM C 297.
- Meets the requirements of a thermal barrier as defined by 2006 International Building Code® Section 2603.4.

General Product Usage and Limitations

1. These products shall be installed in accordance with ASTM C 1280 *Standard Specification for Application of Gypsum Sheathing, GA-253 Application of Gypsum Sheathing*, and the requirements of **USG** Product Literature.
2. These products shall not be used as a nail base. Mechanical attachment of exterior claddings must be made directly to the framing.
3. Securock™ can be installed on wood or steel framing. The maximum spacing for framing members is 24-in. o.c. The framing strength, fastener holding capacities of framing and fastener length is outside the scope of this Product Evaluation Report.
4. Fasteners shall be driven flush with the panel surface without countersinking or being deep enough to break the glass mat.
5. These products may be applied with long dimensions parallel or perpendicular to framing members except where limited by specific requirements. Sheathing orientation and fastener spacing may be governed by local code, or by the requirements of shear, wind or fire-resistance-rated construction. Consult local codes and site-specific construction documents to ensure such requirements are met for every assembly prior to construction.
6. These products shall remain in their original unopened packaging at the side and stored in an enclosed shelter providing protection from physical damage and exposure to the elements until used. Prevent these products from exposure to cascading water.
7. **USG** approves the use of pneumatic or gas-power-driven pin fasteners to attach Securock™ Glass-Mat Sheathing to cold-formed steel framing, provided the pin manufacturer has evaluated Securock™ with the pin fastener in accordance with ICC-ES AC259 Acceptance Criteria, and where permitted by local codes.

Physical Properties per ASTM C1177

	1/2" Securock™ Glass-Mat Sheathing	5/8" Securock™ Glass-Mat Sheathing
Flexural Strength (ASTM C473-06)		
Minimum Breaking Load		
Edge Perpendicular	107 lbf	147 lbf
Edge Parallel	80 lbf	100 lbf
Hardness (lbf)		
Core Test	15 min	15 min
End Test	15 min	15 min
Edge Test	15 min	15 min
Nail Pull Resistance	80 min	90 min
Water Absorption (% by weight)	10% max	10% max
Surface Burning	0/0	0/0

Design Shear Loads for USG Securock™ Attached to Wood Framing

Sheathing	Framing	Maximum Height to Width Aspect Ratio	Fastener	Fastener Spacing (inches o.c. around Perimeter, in Field)	Design Shear
1/2" Securock Parallel to Framing	16" o.c.	1:1	#6-18 Bugle head Screw	4 and 8	123.4 plf
1/2" Securock Parallel to Framing	16" o.c.	1:1	Hot Dipped Galv. Roofing Nail	4 and 8	122.0 plf
5/8" Securock Parallel to Framing	24" o.c.	1:1	#6-18 Bugle head Screw	4 and 8	138.1 plf
5/8" Securock Parallel to Framing	24" o.c.	1:1	Hot Dipped Galv. Roofing Nail	4 and 8	148.3 plf

Notes:

1. #6 Screws must have a minimum head dia. of .325"
2. Roofing Nails must have a minimum head dia. of .372"
3. The perimeter of the sheathing must be supported by framing members.
4. The Nails & Screws must have a minimum edge distance of 3/8".
5. Framing to be nominal 2 x4 No.1 Grade S.Y.P. minimum, 24"o.c. or less.
6. Allowable shear values are for short term wind loads.
7. Shear wall anchorage is outside of the scope of this report.

USG 5/8" Securock™ Firecode X & USG 1/2" Securock™ Glass-Mat Sheathing	
Water Vapor Transmission Rate per ASTM E 96	
Thickness	Average
1/2" (12.9mm)	33.7
5/8" (16.3mm)	26.4

USG 5/8" Securock™ Firecode X & USG 1/2" Securock™ Glass-Mat Sheathing Thermal Resistance			
Values per ASTM C 518			
Thickness (in.)	Thickness (mm)	R (K·M ² /W)	R (°F·ft ² ·h/BTU)
1/2"	12.9	0.079	0.45
5/8"	16.3	0.088	0.50

Design Loads for Negative or Positive Transverse Wind Load

Sheathing	Framing Space	Fastener	Fastener Spacing (inches o.c. around Perimeter, in Field)	Design Load (psf)
1/2" Securock	16" o.c.	#6-18 Bugle head Screw	8 and 8	26.7
1/2" Securock	16" o.c.	Hot Dipped Galv. Roofing Nail	8 and 8	30.0
1/2" Securock	24" o.c.	#6-18 Bugle head Screw	8 and 8	16.0
5/8" Securock	12" o.c.	#6-18 Bugle head Screw	4 and 4	107.3
5/8" Securock	16" o.c.	#6-18 Bugle head Screw	8 and 8	38.7
5/8" Securock	16" o.c.	Hot Dipped Galv. Roofing Nail	8 and 8	45.1
5/8" Securock	24" o.c.	#6-18 Bugle head Screw	4 and 4	34.4
5/8" Securock	24" o.c.	#6-18 Bugle head Screw	6 and 6	27.1
5/8" Securock	24" o.c.	#6-18 Bugle head Screw	8 and 8	25.2
5/8" Securock	24" o.c.	Hot Dipped Galv. Roofing Nail	8 and 8	24.3

Notes:

1. The sheathing can be installed perpendicular or parallel to the framing.
2. The perimeter of the sheathing must be supported by framing members, except edges when installed perpendicular.
3. #6 Screws with a minimum head dia. of .325"
4. 11 gage roofing nails with a minimum head dia. of .372"
5. The Nails & Screws must have a minimum edge distance of 3/8".
6. Allowable values are for short term wind loads.
7. The values in this table are based on testing per ASTM E330 and represent the ultimate capacity of the sheathing to resist fastener pull-through and/or flexural failure using a 3.0 Safety Factor. The withdrawal resistance of fasteners from framing is different on several factors including but not limited to fastener type, fastener length and framing properties. The specification of fasteners is the responsibility of the designer of record.
8. Framing and bracing are beyond the scope of this evaluation report

Product Labeling

Each panel of **Securock™** and **Securock™ Firecode X Glass-Mat Sheathing** that is covered by this **PER**, must be marked with the following information:

1. **USG's** name
2. Product Name
3. Plant Identifier & Date Code
4. This PER number & **Pei's** name or logo



Tested to

ASTM C 1177/C 1177M-06 - Standard Specification for Glass-Mat Gypsum Substrate for Use as Sheathing.

ASTM C 297-04 - Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions.

ASTM C 518-04 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

ASTM D136-04 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750° C.

ASTM E 84-07 - Standard Test Method for Surface Burning Characteristics of Building Materials.

ASTM E 96-05 - Standard Test Methods for Water Vapor Transmission of Materials.

ASTM E 72-05 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction; Section 14 Racking Load - Evaluation of Sheathing Materials on a Standard Wood Frame.

ASTM E 72-05 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction; Section 15 Racking Load - Evaluation of Sheathing Materials (Wet) on a Standard Wood Frame.

ASTM E 119-00a - Standard Methods of Fire Endurance Tests of Building Construction and Materials

ASTM E 330-02 - Standard Test Methods for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

UL 1715 - Fire Test of Interior Finish Materials.

Product Documentation

MSDS 54-070-001 dated 3/26/09

USG Securock® Glass-Mat Sheathing Installation Instructions (WB2451/Rev 6-09)

USG Securock® Glass-Mat Sheathing Submittal Sheet 09250 (WB2452/Rev 10-08)

USG Securock® Glass-Mat Sheathing Warranty (WB2453/Rev 10-08)

A Quality Control Manual Dated 2/2/2009

A follow-up Listing & Inspection agreement between Progressive Engineering Inc. and **USG Corporation**

A *Pei* test report No. 2008-0430 (A) - Evaluation of the 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing - Dated 4/22/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-0430 (B) - ASTM E96 Water Vapor Transmission Test on 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing - Dated 4/3/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-0430 (C) - ASTM C297 Flatwise Tensile Strength Tests on 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing with a Cement Base Coat and an Acrylic Base Coat - Dated 7/28/2008 - Stamped by a professional engineer.

Intertek Test Report 3152720SAT-001 - ASTM C518-04 - Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of The Heat Flow Meter Apparatus - Dated 5/29/2008.

UL Test Report 08CA05819 - Tests in accordance with ASTM E84-07 - Test for Surface Burning Characteristics of Building Materials - Dated 5/21/2008 - Stamped by a Professional Engineer.

UL Test Report 08CA05754 - Tests in accordance with ASTM E119-03 - Fire Tests of Building Construction and Materials - Revised 5/14/2009 - Stamped by a Professional Engineer.

A *Pei* test report No. 2008-1099 (A) - Evaluation of the 1/2" **USG Securock™** Glass-Mat Sheathing to ASTM C1177/C1177 M-06 - Dated 10/16/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1099 (B) - ASTM E96 Water Vapor Transmission Test on 1/2" **USG Securock™** Glass-Mat Sheathing - Dated 11/07/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1099 (D) - ASTM E72 Evaluation of Sheathing Materials - Single Sided Racking Load Using Dry 1/2" **USG Securock™** Glass-Mat Sheathing Mechanically Fastened to Wood Framing Using Screws - Dated 10/16/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1099 (E) - ASTM E72 Evaluation of Sheathing Materials - Single Sided Racking Load Using Wet/ReDry 1/2" **USG Securock™** Glass-Mat Sheathing Mechanically Fastened to Wood Framing Using Screws - Dated 11/04/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1099 (F) - ASTM E72 Evaluation of Sheathing Materials - Single Sided Racking Load Using Dry 1/2" **USG Securock™** Glass-Mat Sheathing Mechanically Fastened to Wood Framing Using Nails - Dated 10/15/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1099 (G) - ASTM E72 Evaluation of Sheathing Materials - Single Sided Racking Load Using Wet/ReDry 1/2" **USG Securock™** Glass-Mat Sheathing Mechanically Fastened to Wood Framing Using Nails - Dated 10/28/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1099 (H) - ASTM E330 Negative Wind Load Test on Dry 1/2" **USG Securock™** Glass-Mat Sheathing on Lumber Framing - Dated 10/20/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1099 (I) - ASTM E330 Negative Wind Load Test on Dry 1/2" **USG Securock™** Glass-Mat Sheathing on Lumber Framing - Dated 10/20/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1099 (J) - ASTM E330 Negative Wind Load Test on Dry 1/2" **USG Securock™** Glass-Mat Sheathing on Lumber Framing - Dated 10/28/2008 - Stamped by a professional engineer.

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A *Pei* test report No. 2008-1099 (K) - ASTM E330 Negative Wind Load Test on Dry 1/2" **USG Securock™** Glass-Mat Sheathing on Lumber Framing - Dated 10/15/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1853 (A) - ASTM E72 Evaluation of Sheathing Materials - Single Side Racking Load using Dry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Mechanically Fastened to Wood Framing Using Nails - Dated 12/23/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1853 (B) - ASTM E72 Evaluation of Sheathing Materials - Single Side Racking Load using Wet/ReDry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Mechanically Fastened to Wood Framing Using Nails - Dated 12/30/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1853 (C) - ASTM E72 Evaluation of Sheathing Materials - Single Side Racking Load using Dry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Mechanically Fastened to Wood Framing Using Screws - Dated 12/23/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1853 (D) - ASTM E72 Evaluation of Sheathing Materials - Single Side Racking Load using Wet/ReDry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Mechanically Fastened to Wood Framing Using Screws - Dated 12/29/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1853 (E) - ASTM E330 Negative Windload Test on Dry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Vertical on 16" o.c. Lumber Framing Using Screws - Dated 12/16/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1853 (F) - ASTM E330 Negative Windload Test on Dry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Horizontal on 24" o.c. Lumber Framing Using Screws - Dated 12/18/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1853 (G) - ASTM E330 Negative Windload Test on Dry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Vertical on 24" o.c. Lumber Framing Using Screws - Dated 12/19/2008 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1853 (J) - ASTM C297 Flatwise Tensile Strength Tests on 1/2" **USG Securock™** Glass-Mat Sheathing With a Cement Base Coat and an Acrylic Base Coat- Dated 1/14/2009 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1853 (K) - ASTM C297 Flatwise Tensile Strength Tests on 5/8" **USG Securock™** Glass-Mat Sheathing With a Cement Base Coat and an Acrylic Base Coat- Dated 1/14/2009 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1853 (L) - ASTM E330 Negative Windload Test on Dry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Vertical on 16" o.c. Lumber Framing Using Nails - Dated 1/21/2009 - Stamped by a professional engineer.

A *Pei* test report No. 2008-1853 (M) - ASTM E330 Negative Windload Test on Dry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Vertical on 24" o.c. Lumber Framing Using Nails - Dated 1/21/2009 - Stamped by a professional engineer.

A *Pei* test report No. 2009-0863 (A) - ASTM E330 Negative Windload Test on Dry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Vertical on 24" o.c. Lumber Framing Using Screws 4" o.c. - Dated 7/17/2009 - Stamped by a professional engineer.

A *Pei* test report No. 2009-0863 (B) - ASTM E330 Negative Windload Test on Dry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Vertical on 12" o.c. Lumber Framing Using Screws 4" o.c. - Dated 7/23/2009 - Stamped by a professional engineer.

A *Pei* test report No. 2009-0863 (C) - ASTM E330 Negative Windload Test on Dry 5/8" **USG Securock™** Firecode X Glass-Mat Sheathing Vertical on 24" o.c. Lumber Framing Using Screws 6" o.c. - Dated 7/23/2009 - Stamped by a professional engineer.

Intertek Test Report 3164994SAT-001a - ASTM C518-04 - Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of The Heat Flow Meter Apparatus - Dated 11/04/2008.

UL Test Report 09CA06340 - Tests in accordance with:

- ASTM E119-00a - Fire Tests of Building Construction and Materials - Dated 5/29/2009 - Stamped by a Professional Engineer
- ASTM E84-07 - Fire Tests For Surface Burning Characteristics of Building Materials - Dated 5/29/2009 - Stamped by a Professional Engineer
- UL 1715 - Standard Fire Test of Interior Finish Materials - Dated 5/29/2009 - Stamped by a Professional Engineer
- Tests in accordance with a combustion behavior test conducted in accordance with the standard, Behavior of Materials in a Vertical Tube Furnace at 750° C- Dated 5/29/2009 - Stamped by a Professional Engineer
- ASTM D136-04 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C- Dated 5/29/2009 - Stamped by a Professional Engineer