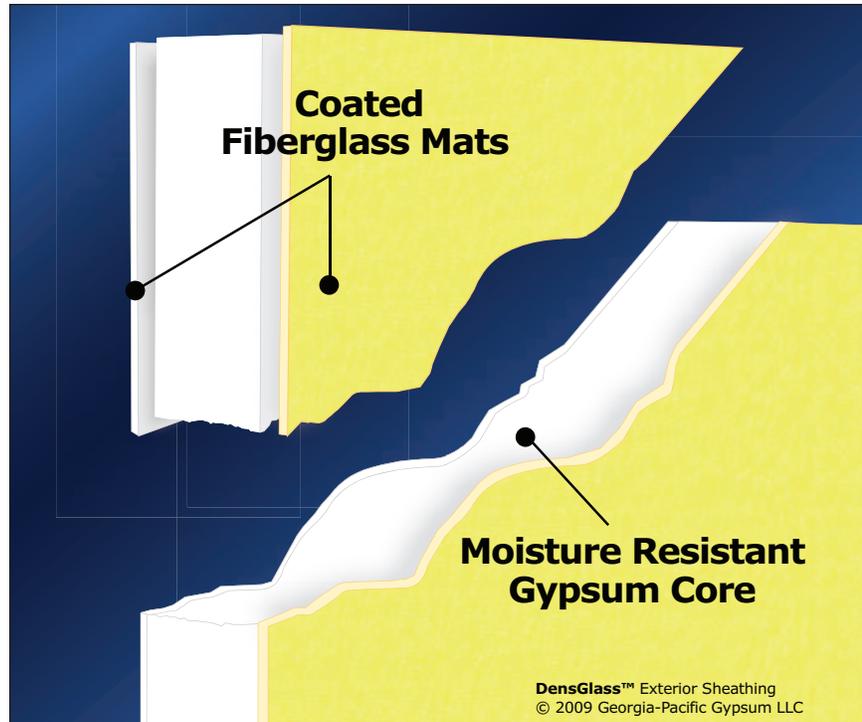


**MOISTURE- AND MOLD-RESISTANT HIGH PERFORMANCE SOLUTIONS**



**Product Overview**



DensGlass™ Exterior Sheathing (formerly DensGlass Gold® Exterior Sheathing) has fiberglass mats for superior mold and moisture resistance compared to paper-faced sheathings.

- Paperless fiberglass mats eliminate a potential food source for mold and may reduce remediation and scheduling delays associated with paper-faced drywall.
- Replaces traditional paper-faced sheathing.
- Backed with a 12-month limited warranty against in-place weather exposure damage (delamination, deterioration and decay).\*

\*For complete warranty, visit [www.gpgypsum.com](http://www.gpgypsum.com)

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When tested, as manufactured, in accordance with ASTM D 3273, DensGlass Exterior Sheathing scored a 10, the highest level of performance for mold resistance under the ASTM D 3273 test method.

The score of 10, in the ASTM D 3273 test, indicates no mold growth in a 4-week controlled laboratory test. The mold resistance of any building product when used in actual job site conditions may not produce the same results as were achieved in the controlled, laboratory setting. No material can be considered mold proof. When properly used with good design, handling and construction practices, Dens™ Brand gypsum products provide increased mold resistance compared to standard paper-faced wallboard.

**Available Sizes/Dimensions**

DensGlass Exterior Sheathing is available in 1/2" thickness and DensGlass™ Fireguard® Type X Exterior Sheathing is available in 5/8" thickness. DensGlass Exterior Sheathing is manufactured in a 4' width and 8', 9' and 10' lengths. Other lengths are available upon request.

**CAUTION: For product fire, safety and use information, go to [gp.com/safetyinfo](http://gp.com/safetyinfo).**

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DensGlass™ Exterior Sheathing (formerly DensGlass Gold® Exterior Sheathing) is the preferred substrate under brick, stone, stucco, siding and Exterior Insulation and Finishing Systems (EIFS) because of its exemplary track record. DensGlass Exterior Sheathing should be specified for any project where flexibility and easy sheathing installation are paramount without the headaches and expense of delamination, deterioration, sagging and warping. Look for the distinctive GOLD color to ensure you're using genuine DensGlass Exterior Sheathing.

### **Mold Resistance**

Independent tests confirm that DensGlass Exterior Sheathing, with its patented fiberglass mat design, resists the growth of mold when tested, as manufactured, per ASTM D 3273.

### **Strength**

Fiberglass mats penetrate into the panel to make an integrated unit that offers superb strength; outstanding resistance to delamination, deterioration, warping and job site damage; and an excellent bonding surface for EIFS. The flexural strength of DensGlass Exterior Sheathing is approximately the same in both directions. This means DensGlass Exterior Sheathing can be installed either vertically or horizontally without sacrificing wall strength between studs. DensGlass panels also protect and help stabilize structural framing.

### **Stability**

DensGlass Exterior Sheathing is extremely resistant to rippling, buckling and sagging, even under humid conditions — which makes it particularly suitable for soffits. In actual tests, DensGlass panels exceeded ASTM C 79 and ASTM C 1396 standards for humidified deflection by a factor of five times over the standard for paper-faced gypsum sheathing.

### **Fire Resistance**

DensGlass Exterior Sheathing is noncombustible as described and tested in accordance with ASTM E 136. Tests of 5/8" DensGlass Fireguard® Type X Exterior Sheathing (conducted in accordance with ASTM E 119/CAN ULC S-101) qualify the product for a variety of UL listings and other designs in the GA-600 Fire Resistance Design Manual.

### **Superior Weather Protection**

DensGlass Exterior Sheathing integrates a water-resistant, treated core with a fiberglass mat face and back to provide superb protection from the elements. Panels will not delaminate or deteriorate due to normal weather conditions — even during construction delays that last as long as 12 months after installation.

A water-resistive barrier is not required over DensGlass Exterior Sheathing to provide for the protection of the gypsum sheathing itself. Consult with the local building code, design professional, owner or cladding manufacturer for water-resistive barrier requirements. DensGlass Exterior Sheathing is the ideal substrate for a wide variety of air and water-resistive barriers including building wraps, liquid applied coatings and self-adhering membranes. See page 9 for details.

### **Easy to Handle**

DensGlass Exterior Sheathing is lightweight and easy to handle. It can be cut and fastened with standard drywall tools and fasteners. The product is much easier to work with than wood substrate, cement board or fiber cement sheathing, which tend to be heavy and bulky.

### **Outstanding Warranty**

DensGlass Exterior Sheathing is warranted by Georgia-Pacific Gypsum for 12-months from installation date with a weather exposure limited warranty, a five-year limited warranty against manufacturing defects and a 10-year limited warranty when used as a substrate for architecturally specified EIFS. For a copy of the limited warranty, call 1-800-225-6119. Or visit our Web site at [www.gpgypsum.com](http://www.gpgypsum.com).

### **Standards and Code Compliance**

DensGlass Exterior Sheathing conforms to ASTM C 1177. Application standards where applicable are in accordance with Gypsum Association Publication GA-253 for gypsum sheathing or ASTM C 1280.

Evaluated by:

- ICC-ES Legacy Report NER 574
- CCMC-12064-L
- ICC-ES Legacy Report ER 4305
- N.Y. City MEA 244-88-M
- Los Angeles RR-25008

*The data relating to fire- and sound-tested assemblies is based on the characteristics, properties and performance of materials and systems obtained under controlled test conditions as set forth under the appropriate ASTM standard, such as E 119 (fire), E 90 (sound) or E 72 (structural).*

## Physical Properties

Product Comparison	5/8" DensGlass™ Fireguard® Type X	5/8" Gypsum Sheathing, Type X	5/8" Gypsum Fiberboard	1/2" DensGlass Exterior Sheathing	1/2" Regular Gypsum Sheathing	1/2" Gypsum Fiberboard
Width, Nominal	4'	4'	4'	4'	4'	4'
Length, Standard	8', 9' 10' ± 1/4"	8', 9' 10' ± 1/4"	8' – 12'	8', 9' 10' ± 1/4"	8', 9' 10' ± 1/4"	8'
Weight/lbs/MSF	2,500	2,200	3,000 approx.	1,900	1,850	2,200 approx.
Bending Radius	8' <sup>8</sup>	n/a	30'	6' <sup>8</sup>	n/a	30'
Composition	Fiberglass mats gypsum core	Paper facings gypsum core	No facings, paper fiber and gypsum core	Fiberglass mats gypsum core	Paper facings gypsum core	No facings, paper fiber and gypsum core
Microbial listed with GREENGUARD Environmental Institute	Yes	No	No	Yes	No	No
Racking Strength, lbs./ft. (dry) (Ultimate – not design value)	>654 <sup>9</sup>	654 <sup>1</sup>	n/a	>540 <sup>9</sup>	540 <sup>1</sup>	416
Flexural Strength, <sup>4</sup> parallel, lbs. (4' weak direction)	100 <sup>7</sup>	50 <sup>2</sup>	189	80 <sup>7</sup>	40 <sup>2</sup>	124
Compressive Strength	min. 500 psi	min. 400 psi	n/a	min. 500 psi	min. 350 psi	n/a
Humidified Deflection, <sup>3,4</sup> inches	1/8"	5/8"	n/a	2/8"	10/8"	n/a
Permeance (perms) <sup>5</sup> [ng/Pa·s·m <sup>2</sup> ]	17 [970]	25 [1400]	28 (145)	23 [1300]	27 [1600]	35 [2000]
"R" Value <sup>6</sup>	.67	.56	.6	.56	.45	.50
Combustibility <sup>10</sup>	Noncombustible	Combustible	Combustible	Noncombustible	Combustible	Combustible
Linear Expansion with Change Moisture in/in % RH	6.25 x 10 <sup>-6</sup>	7.5 x 10 <sup>-6</sup>	200 x 10 <sup>-6</sup>	6.25 x 10 <sup>-6</sup>	7.5 x 10 <sup>-6</sup>	200 x 10 <sup>-6</sup>
Flame Spread, E84 CAN ULC-S102	10	15	5	10	15	5
Coefficient of Thermal Expansion in/in/°F	8.5 x 10 <sup>-6</sup>	10 x 10 <sup>-6</sup>	n/a	8.5 x 10 <sup>-6</sup>	10x10 <sup>-6</sup>	n/a
Resists Growth of Mold (tested, as manufactured, per ASTM D 3273)	Yes	No	Yes	Yes	No	Yes
Handling Characteristic	Scores with utility knife and snaps easily	Scores with utility knife and snaps easily	Requires special tools	Scores with utility knife and snaps easily	Scores with utility knife and snaps easily	Requires special tools
Fasteners	Standard	Standard	Special	Standard	Standard	Special

1. Gypsum Association – GA-253

2. Minimum requirements for ASTM C 1396

3. Maximum requirements for ASTM C 1396

4. Tested in accordance with ASTM C 473

5. Tested in accordance with ASTM E 96 (dry cup method)

6. Tested in accordance with ASTM C 518 (heat flow meter)

7. Minimum requirements for ASTM C 1177

8. Double fasteners on ends as needed

9. Tested in accordance with ASTM E 72

10. As defined and tested in accordance with ASTM E 136

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## Installation Recommendations

- DensGlass™ Exterior Sheathing (formerly DensGlass Gold® Exterior Sheathing) must be installed in accordance with the instructions in this brochure, Gypsum Association document GA-253 or ASTM C 1280. DensGlass Exterior Sheathing can be attached parallel or perpendicular to wood or metal framing. Use appropriate board orientation for specific fire assemblies and shear wall applications within this document, other reference documents or as required by designing authority. The framing width shall not be less than 1-1/2" wide for wood framing and 1-1/4" for steel framing. Framing members shall not vary more than 1/8" from the plane of the faces of adjacent framing.
- Fasteners should be driven flush with the panel surface (not countersunk) and into the framing system. Locate fasteners at least 3/8" from the ends and edges of the sheathing. Nails or screws, as listed in the fastener chart, may be used to attach DensGlass Exterior Sheathing to framing. When a pneumatic fastening system into metal is specified to attach DensGlass Exterior Sheathing, consult with manufacturer for application specifications and shear resistance data. DensGlass Exterior Sheathing is not to be used as a base for nailing or other fastening.
- Install DensGlass Exterior Sheathing with end joints staggered on horizontal applications. Ends and edges of the sheathing should fit tightly. DensGlass Exterior Sheathing panels shall not be less than 8" from the finish grade in fully weather and water-protected siding systems, and not less than 12" from the ground for properly drained and ventilated crawl spaces. Consult with the design authority for control joint recommendations.

## Wall Applications

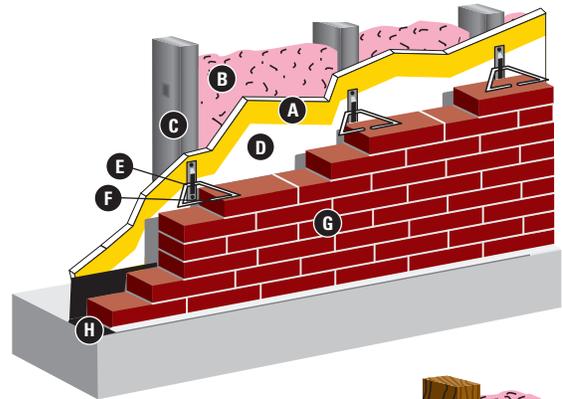
### Installing Cladding over DensGlass Exterior Sheathing

Most conventional exterior sidings and wall coverings — including wood, vinyl, composition, metal, stone, brick, wood shingles, shakes and plywood panels — may be applied over DensGlass Exterior Sheathing. Consult your local building codes for water resistive barriers (WRB) requirements.

- |                                 |                                  |                        |
|---------------------------------|----------------------------------|------------------------|
| A. DensGlass Exterior Sheathing | G. Brick Masonry or Stone Veneer | L. Fiber Cement Siding |
| B. Insulation                   | H. Flashing and Weeps            | M. Metal Siding        |
| C. Framing                      | I. Wood Shingles or Shakes       |                        |
| D. Water-Resistive Barrier      | J. Plywood Siding                |                        |
| E. Masonry Tie                  | K. Vinyl Siding                  |                        |
| F. 2" (50mm) Max. Air Space     |                                  |                        |

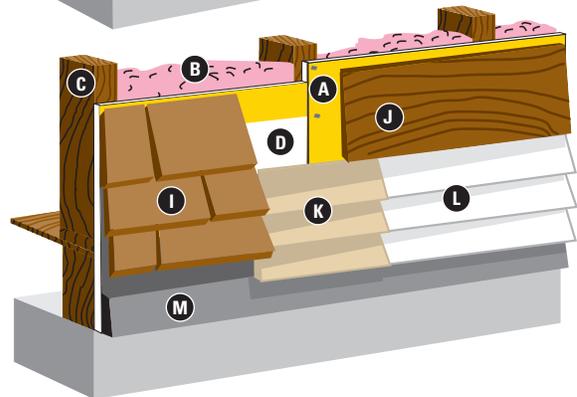
### Brick Cavity Wall

Masonry or stone veneer can be applied over DensGlass Exterior Sheathing just as it would be over any other type of sheathing. Attach the masonry ties securely through the panels and into the steel or wood framing. Space the ties as required by masonry courses. Apply water-resistive barrier as required by building code or design authority.



### Shingles, Shakes, Vinyl, Metal, Wood, Fiber Cement Siding

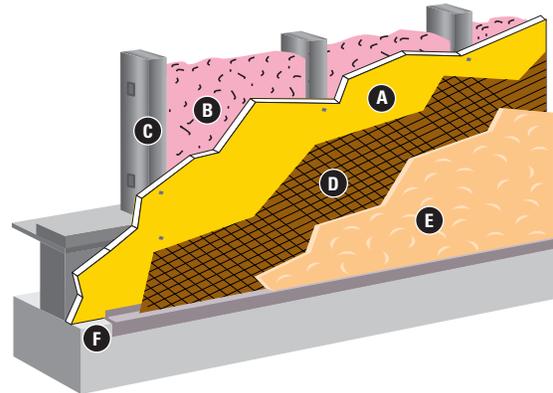
DensGlass Exterior Sheathing can be used in applications such as under wood shakes or shingles, plywood panel siding or other horizontal siding applications. All siding must be attached through the DensGlass Exterior Sheathing and into the steel or wood framing. Apply water-resistive barrier as required by building code or design authority.



*Illustrations not intended for design or specification purposes.*

## Wall Applications

- A. DensGlass™ Exterior Sheathing
- B. Insulation
- C. Framing
- D. Paper-Backed Metal Lath
- E. Conventional Stucco
- F. Minimum 1/4" Gap



### Conventional Stucco

Stucco systems may be applied over DensGlass Exterior Sheathing using paper-backed metal lath. Paper-backed metal lath must be mechanically attached through the DensGlass Exterior Sheathing into the steel or wood framing. Install stucco system in accordance with the manufacturer's instructions, the Stucco Manufacturers Association guidelines and local building code requirements.

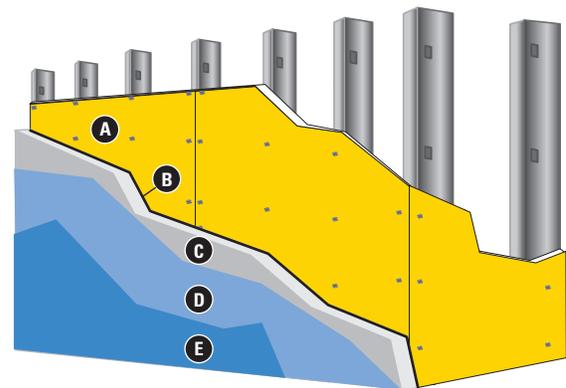
### Exterior Insulation and Finish Systems (EIFS)

DensGlass Exterior Sheathing is an ideal substrate for adhesive or mechanical application of expanded polystyrene (EPS) or extruded polystyrene insulation in EIFS applications and is recommended for all climate zones.

DensGlass Exterior Sheathing is designated as the preferred gypsum substrate for EIFS by EIMA, the EIFS industry members association, in the EIFS Durability Specifications Guideline. DensGlass panels are treated with an exclusive GOLD color primer coating. This coating, proprietary to Georgia-Pacific Gypsum and developed especially for DensGlass Exterior Sheathing, has several important advantages for EIFS applications:

- Eliminates the need for sealer/primer with adhesively applied EIFS
- Strengthens the bond between panel and surfacing product
- Makes the panel more resistant to surface water. The result: labor cost and callbacks go down while customer satisfaction on each project goes up.
- 10-year limited warranty when used in an architecturally specified EIFS application.
- Maximum framing spacing 16" o.c. for 1/2" and 24" o.c. for 5/8" DensGlass Fireguard® Type X Exterior Sheathing.

- A. DensGlass Exterior Sheathing
- B. Adhesive or Mechanically Attached
- C. Polystyrene Insulation
- D. Reinforcing Mesh Embedded in Base Coat
- E. Finish Coat



**Illustrations not intended for design or specification purposes.**

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## Fastening and Framing

Thickness	Framing Spacing	Panel Orientation	Fastener Spacing – Wood Framing <sup>4</sup>	Fastener Spacing – Metal Framing <sup>4</sup>
1/2"	24" o.c. max. <sup>1,3</sup>	Parallel <sup>3</sup> or Perpendicular	8" o.c. field <sup>2</sup> and perimeter	8" o.c. field and perimeter
5/8"	24" o.c. max. <sup>3</sup>	Parallel <sup>3</sup> or Perpendicular	8" o.c. field <sup>2</sup> and perimeter	8" o.c. field and perimeter

1. Only for mechanically attached claddings. When specified behind EIFS, maximum framing spacing for 1/2" DensGlass™ Exterior Sheathing is 16" o.c.
2. Fastener spacing around the perimeter of the wall and along intermediate vertical framing members. To meet the racking shear strength listed in the physical properties table, fastener spacing is 4" o.c. around the perimeter of each panel and 8" o.c. along vertical framing members.
3. For racking strength resistance apply panel edges parallel with framing spaced a maximum of 16" o.c. for both 1/2" and 5/8" DensGlass Exterior Sheathing.
4. Fire rated assemblies may require additional fasteners, see specific assembly details.

Fastener*	Length		Description	Application
	1/2" Thick	5/8" Thick		
	1"	1-1/4"	Bugle head fine thread, rust-resistant, drill point drywall screw	DensGlass Exterior Sheathing to heavy-gauge steel
	1"	1-1/4"	Bugle head fine thread, rust-resistant, sharp point drywall screw	DensGlass Exterior Sheathing to light-gauge metal framing furring
	1-1/4"	1-5/8"	Bugle head, rust-resistant, coarse thread sharp point screw	DensGlass Exterior Sheathing to wood framing
	1-1/4"	1-1/4" metal 1-5/8" wood	Wafer head, rust-resistant screws, drill or sharp point	DensGlass Exterior Sheathing to heavy-gauge or light-gauge, metal or wood, respectively
	1-1/2"	1-3/4"	11-gauge, galvanized nail	DensGlass Exterior Sheathing to wood framing or equivalent

\*For screws, meet or exceed ASTM C 1002 or C954.

## Negative Uniform Lateral Loads (Wind Load)\*

### 5/8" DensGlass™ Fireguard® Type X Exterior Sheathing (formerly DensGlass Gold® Exterior Sheathing) Horizontally Applied

Stud Spacing, In./O.C.	Screws, In./O.C.	Ultimate load, PSF**
16	8	127
16	6	142
16	4	192
12	8	157
12	6	204
12	4	270
8	8	208
8	6	354
8	4	410

NOTE: Apply DensGlass Exterior Sheathing to appropriately engineered framing system. Tested applied to 6" x 1-5/8" 18-gauge steel studs using #6 1-1/4" bugle head screws. Other stud sizes may be suitable.

\*Source: Tested in accordance with ASTM E 330 by Hurricane Test Laboratory. For a copy of report # G488-1001-07, contact Georgia-Pacific Gypsum Technical Hotline at 1-800-225-6119.

\*\*Maximum load capacity (not design load) of the 5/8" DensGlass™ Fireguard® Type X Exterior Sheathing applied horizontally. Apply appropriate safety factor from the design method used to calculate design load. For example, a safety factor of 3 applied to an ultimate load of 127psf results in a design load of 42.

### 1/2" and 5/8" DensGlass Fireguard Type X Exterior Sheathing Vertically or Horizontally Applied

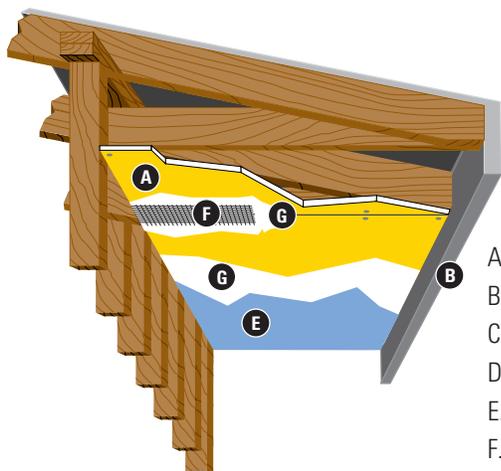
Thickness, Inches	Board Orientation	Stud Spacing, in. o.c.	Maximum Load (psf)
1/2"	Vertical	16	65
1/2"	Horizontal	16	70
5/8"	Vertical	24	68
5/8"	Horizontal	24	85
5/8"	Vertical	16	92

Source: TPI Report #89-047; wind load per ASTM E330 (bugle head screws 8" o.c.)  
Note: For information on higher negative uniform lateral loads, contact the Georgia-Pacific Gypsum Technical Hotline at 1-800-225-6119.

## Soffit Applications, Fastening, Framing and Finishing

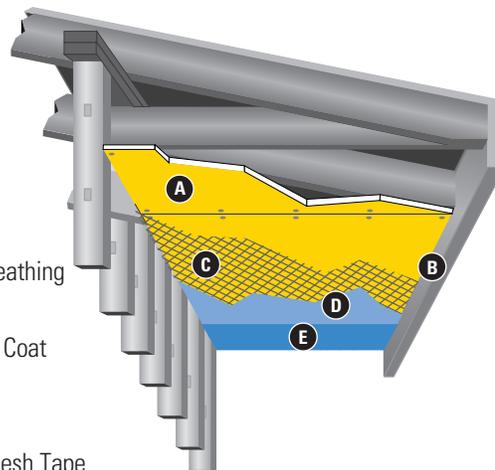
### Method #1

Painted Ceilings and Soffits  
Finished Joints



### Method #2

Exterior Ceilings and Soffits



- A. DensGlass™ Exterior Sheathing
- B. Drip Edge
- C. Reinforcing Mesh/Base Coat
- D. Base Coat
- E. Finish Coat
- F. 2" 10 x 10 Fiberglass Mesh Tape
- G. ToughRock® Setting Compound\*

\*Sandable setting compounds are not recommended.

Thickness	Framing Spacing	Orientation	Screw Spacing
1/2"	16" o.c. max	Parallel or Perpendicular	8" o.c. along framing
1/2"	24" o.c. max	Perpendicular 24" o.c. framing	8" o.c. along framing
5/8"	24" o.c. max	Parallel or Perpendicular	8" o.c. along framing

### Method #1

Embed 2" wide fiberglass mesh tape in ToughRock® 90 Setting Type joint compound, or equivalent, over all joints. Once dry, apply a skim coat of ToughRock 90 setting compound, or equivalent, over the panels to achieve a uniform, smooth finish over the entire area. Prime with exterior-grade primer and finish with two coats of exterior-grade paint.

### Method #2

Apply a synthetic-type Direct Applied Finish System in accordance with the coating manufacturer's recommendation.

### Special Conditions:

- Control joints are recommended a maximum of 30 feet or closer as specified by the design authority.
- The roof must be dried in or protection from the elements must be provided prior to installing DensGlass Exterior Sheathing in horizontal applications to prevent moisture from ponding or settling on top of the sheathing panel or within the finished soffit.
- Sandable setting compounds are not acceptable for use over DensGlass Exterior Sheathing in exterior soffit applications.
- Georgia-Pacific Gypsum's ToughRock 90 setting compound is not available in all markets. It is permissible to use setting-type joint compounds from other manufacturers that are equivalent to ToughRock 90 setting compound.

## Soffit Board Comparison

Product Comparison	1/2" DensGlass™ Exterior Sheathing	1/2" Gypsum Soffit Board	5/8" DensGlass Exterior Sheathing	5/8" Gypsum Soffit Board
Humidified Deflection <sup>1</sup> (Sag)	2/8"	7/8"	1/8"	4/8"
Water Absorption <sup>1</sup>	<10%	40%	<10%	40%
Surface Water Absorption <sup>1</sup>	.83 grams	2.5 grams	.83 grams	2.5 grams
Surface	Fiberglass mat	Paper faced	Fiberglass mat	Paper faced

1. Specified values for DensGlass Exterior Sheathing are found in ASTM C 1177, ASTM C 1396 and ASTM C 931 for gypsum soffit board, tested in accordance with ASTM C 473.

## Air and Water-Resistive Barriers

The need for moisture control, greater energy savings, comfort and improved environment is driving the use of air and water-resistive barriers. Manufacturers, building codes and standards organizations are improving the ways moisture is controlled in buildings. DensGlass™ Exterior Sheathing (formerly DensGlass Gold® Exterior Sheathing) has been widely accepted for years as the preferred substrate with these systems and provides superior performance over other sheathings. The ultimate in wall performance and peace of mind is starting with the best substrate – DensGlass Exterior Sheathing.

DensGlass Exterior Sheathing is a superior substrate for a wide variety of air and water-resistive systems which include:

- #15 asphalt felt, ASTM D 226, type 1 or equivalent
- Synthetic wraps such as Tyvek®, Typar® Metro Wrap™, ASTM E 1677 or equivalent.
- Liquid- or fluid-applied air or vapor barriers such as Tremco ExoAir™ 120, Grace Perm-A-Barrier® VP, Henry Air-Bloc™ 32 or Carlisle Barriseal®
- Water barrier systems such as Sto Guard® as manufactured by Sto Corp., Dryvit's Backstop® NT, Prosoco R-GUARD™ or equivalent
- Asphalt-based coatings
- Self-adhering membranes such as Carlisle CCW, Grace Perm-A-Barrier®, Henry Air-Bloc Vapor Barriers
- Water-resistive barrier and drainage membranes such as DELTA-DRY®

Follow manufacturer's installation recommendations for use with DensGlass panels, local building code requirements and design authority's specifications.

*Note: It is not required to provide a water-resistive barrier over DensGlass Exterior Sheathing for the protection of the gypsum sheathing itself during the 12-month weather exposure limited warranty. Consult with local building code, design professional, owner or cladding manufacturer for water-resistive barrier requirements and compatibility with the wall cladding.*

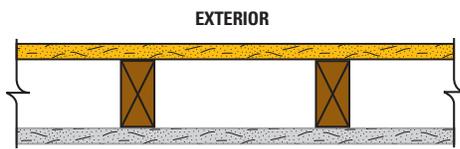
## Protection of Penetrations

All penetrations should be protected to prevent air and water infiltration. Follow building code, door/window manufacturer, or design authority's recommendations for flashing around openings, abutments to dissimilar materials and wall terminations.

In areas that do not prescribe to current code requirements but still require long-term joint protection, the following methods may be specified in lieu of an air and water-resistive barrier system: 1) Apply a bead of sealant to all joints and trowel in firmly until flat. 2) Apply enough of the same material to each fastener to cover completely when troweled flat. Use backer rod for openings larger than 1/8". 3) Apply fiberglass mesh joint tape to all joints, overlapping at intersections by the width of the tape. 4) Apply a bead of caulk along the joint. 5) Embed the caulk into the entire surface of the tape with a trowel. Use a backer rod for openings larger than 1/8". 6) Apply enough caulk to each exposed fastener to cover completely when troweled smooth. In lieu of caulk, a trowel-applied flexible polymer based, noncementitious, water resistant, protective coating may be embedded into the entire surface of the tape. Follow manufacturer's installation recommendations for use with DensGlass Exterior Sheathing, and design authority specifications. A variety of caulk and polymer based "fill" materials may be specified, including GE, Dow, Percora, Tremco, Sto, Dryvit, BASF and Proseco.

## Fire-Rated Assemblies (Wood-Framed)<sup>1</sup>

### 1-Hour Fire Rating



Test Reference: UL U337, U305, WHI 495-0702, ULC W301, GA WP 5515

Wall Thickness: 4-7/8"

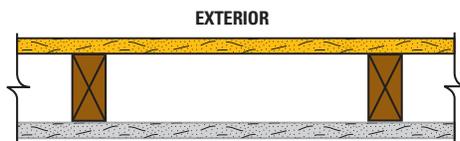
Weight per Sq. Ft.: 7.5

Exterior: 5/8" DensGlass™ Fireguard® Type X Exterior Sheathing (formerly DensGlass Gold® Exterior Sheathing) applied parallel (U337, W301, U305) or at right angles (U305) to 2 x 4 wood studs 16" o.c. with 1-3/4" galvanized roofing nails 7" o.c. for all framing members. Exterior surface covered with weather exposed cladding or finish system.

Interior: 5/8" DensArmor Plus® Fireguard® Type X interior panels or 5/8" ToughRock® Fireguard® Type X gypsum board applied parallel or at right angles to studs with 1-7/8" 6d coated nails 7" o.c. Stagger joints each side.

**(Load-bearing)**

### 1-Hour Fire Rating



Test Reference: UL U309, cUL U309

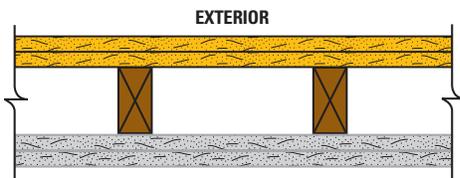
Wall Thickness: 4-7/8"

Weight per Sq. Ft.: 7.5

Exterior: 5/8" DensGlass Fireguard Type X Exterior Sheathing applied parallel or at right angles to 2 x 4 wood studs spaced 24" o.c. with 1-7/8" galvanized roofing nails 7" o.c.

Interior: 5/8" DensArmor Plus Fireguard Type X or 5/8" ToughRock Fireguard Type X gypsum board to framing with 1-7/8" 6d coated nails 7" o.c. **(Load-bearing)**

### 2-Hour Fire Rating



Test Reference: UL U301, cUL U301

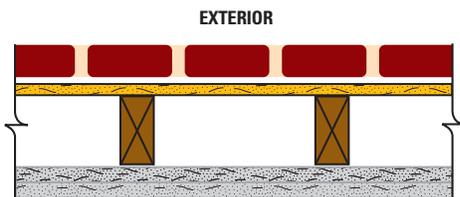
Wall Thickness: 6-1/8"

Weight per Sq. Ft.: 12.5

Exterior: Two layers 5/8" DensGlass Fireguard Type X Exterior Sheathing applied parallel or at right angles to 2 x 4 wood studs 16" o.c. Base layer attached with 1-7/8" galvanized roofing nails 16" o.c. Face layer attached with 2-3/8" galvanized roofing nails 8" o.c. Stagger joints between layers and on base layer of both sides.

Interior: Two layers 5/8" DensArmor Plus Fireguard Type X or 5/8" ToughRock Fireguard gypsum board applied horizontally or vertically to framing. Base layer attached with 1-7/8" 6d cement coated nails 6" o.c. Face layer attached with 2-3/8" 6d cement coated nails 8" o.c. Stagger joints between layers and on base layer of both sides. **(Load-bearing)**

### 2-Hour Fire Rating



Test Reference: UL U302, cUL U302, GA WP8410

Wall Thickness: 10-1/8"

Exterior: One layer 1/2" DensGlass Exterior Sheathing applied parallel or at right angles to studs with 1-3/4" galvanized roofing nails 6" o.c. Face layer is 2" x 4" x 8" clay brick with 1" air space between brick and exterior sheathing. 20-gauge galvanized wire ties attached to each stud with 8d coated nails as described above, located at every sixth course of bricks. **(Load-bearing)**

Interior: Two layers 5/8" DensArmor Plus Fireguard Type X or 5/8" ToughRock Fireguard Type X gypsum board applied parallel or at right angles to 2 x 4 wood studs 16" o.c. Base layer attached with 1-7/8" 6d coated nails 8" o.c. Face layer attached with 2-3/8" coated nails 8" o.c.

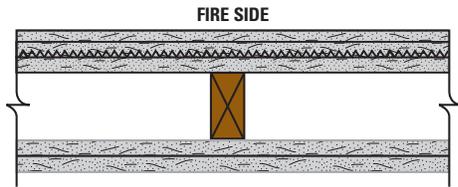
<sup>1</sup>Load restricted for Canadian applications—see UL Guide BXUV7.

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## Fire-Rated Assemblies (Wood-Framed)<sup>1</sup>

### 2-Hour Fire Rating



Test Reference: ULC 12-21-67, GA WP8420

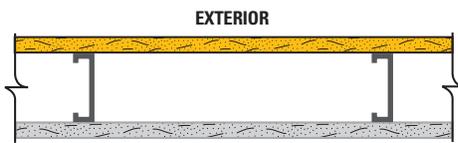
Wall Thickness: 8-5/8"

Exterior: Base layer 5/8" DensGlass™ (formerly DensGlass Gold® Exterior Sheathing) Fireguard® Type X Exterior Sheathing retardant treated 2 x 6 wood studs 16" o.c. with 6d coated nails, 1-7/8" long, 0.0915" shank, 1/4" heads, 12" o.c. and covered with a single layer fire resistant protective weather retarder paper stapled along each edge at 16" o.c. Galvanized self-furring wire mesh applied over sheathing with 8d galvanized roofing nails, 2-3/8" long, 0.113" shank, 9/32" heads, 6" o.c. Cement-stucco applied over wire mesh in two 1/2" thick coats with bonding agent applied between coats.

Interior: Base layer 5/8" DensArmor Plus® Fireguard Type X or 5/8" ToughRock® Fireguard® Type X applied parallel to studs with 6d coated nails, 1-7/8" long, 0.0915" shank, 1/4" heads, 12" o.c. Face layer 5/8" DensArmor Plus Fireguard Type X or 5/8" ToughRock® Fireguard® Type X applied at right angles to studs with 8d coated nails, 2-3/8" long, 0.113" shank, 9/32" heads, 8" o.c. at edges and 12" o.c. at intermediate studs. **(Load-bearing)**

## Fire-Rated Assemblies (Steel-Framed)

### 1-Hour Fire Rating



Test Reference: UL U465, ULC W 415, cUL U465, GA WP1081

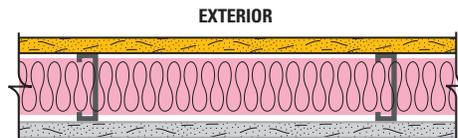
Wall Thickness: 4-7/8"

Weight per Sq. Ft.: 6 psf

Exterior: 5/8" DensGlass Fireguard® Type X Exterior Sheathing applied vertically to min. 3-5/8" corrosion resistant 25-gauge steel studs 24" o.c. with 1" Type S corrosion resistant bugle head screws 8" o.c. at board edges and 8" at intermediate studs.

Interior: 5/8" DensArmor Plus Fireguard® Type X or 5/8" ToughRock® Fireguard® Type X gypsum board applied vertically to framing with 1" Type S bugle head screws 8" o.c. at board edges and 12" at intermediate studs.

### 1-Hour Fire Rating



Test Reference: UL U425,<sup>1</sup> cUL U425

Wall Thickness: 4-3/4"

Weight per Sq. Ft.: 6 psf

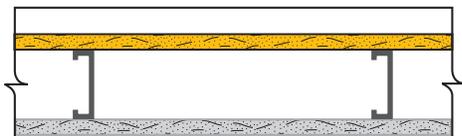
Exterior: 5/8" DensGlass Exterior Sheathing applied vertically to min. 3-1/2" corrosion resistant 20-gauge steel studs 24" o.c. with 1" Type S corrosion resistant bugle head screws 8" o.c.

Interior: 5/8" DensArmor Plus Fireguard Type X or 5/8" ToughRock Fireguard Type X gypsum board applied vertically to framing with 1" Type S bugle head screws 12" o.c. Insulation to completely fill stud cavity. **(Load-bearing: 100% of design load)**

<sup>1</sup>Load restricted for Canadian applications—see UL Guide BXUV7.

## Fire-Rated Assemblies (Steel-Framed)

### 1-Hour Fire Rating



Test Reference: SWRI 01-4409-003, GA WP 8122<sup>1</sup>

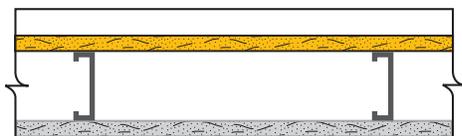
Partition Thickness: 6" - 7" Varies based on insulation thickness

Weight per Sq. Ft.: 7.0

Exterior: 5/8" DensGlass™ Fireguard® Type X Exterior Sheathing (formerly DensGlass Gold® Exterior Sheathing) applied parallel to 3-5/8" 18-gauge steel studs 16" o.c. with #6 x 1-1/4" self-drilling, corrosion-resistant, bugle head, drywall screws 8" o.c. at edges and ends and 8" o.c. at intermediate studs. Proprietary polymer modified exterior insulation and finish system applied over sheathing. 2" maximum foam-plastic thickness.

Interior: 5/8" ToughRock® Fireguard® Type X or 5/8" DensArmor Plus® Fireguard® Type X gypsum board applied parallel to studs with #6 x 1-1/4" self-drilling, bugle head drywall screws 8" o.c. at edges and ends and 12" o.c. at intermediate studs.

### 1-Hour Fire Rating



Test Reference: SWRI 01-4409-001, GA WP 8123

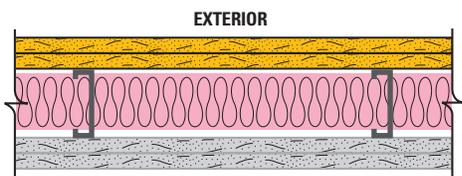
Partition Thickness: 6" - 9" Varies based on insulation thickness

Weight per Sq. Ft.: 7.0

Exterior: 5/8" DensGlass Fireguard Type X Exterior Sheathing applied parallel to 3-5/8" 18-gauge steel studs 24" o.c. with #6 x 1-1/4" self-drilling, corrosion-resistant, bugle head, drywall screws 8" o.c. at edges and ends and 8" o.c. at intermediate studs. Polymer-based exterior insulation and finish system applied over sheathing. 4" maximum foam-on-plastic thickness.

Interior: One layer 5/8" ToughRock Fireguard Type X or 5/8" DensArmor Plus Fireguard Type X gypsum board applied parallel to studs with #6 x 1-1/4" self-drilling, bugle head drywall screws 8" o.c. at edges and ends and 12" o.c. at intermediate studs.

### 2-Hour Fire Rating



Test Reference: UL U425<sup>1</sup>, cUL U425

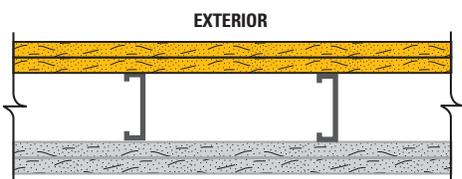
Wall Thickness: 6"

Weight per Sq. Ft.: 11 psf

Exterior: Two layers 5/8" DensGlass Fireguard Type X Exterior Sheathing applied vertically to min. 3-1/2" corrosion resistant 20-gauge steel studs 24" o.c. Base layer attached with 1" Type S-12 corrosion resistant bugle head screws 8" o.c. Face layer attached with 1-5/8" Type S-12 corrosion resistant bugle head screws spaced 8" o.c. Joints staggered.

Interior: Two layers 5/8" DensArmor Plus Fireguard Type X or 5/8" ToughRock Fireguard gypsum board applied vertically to framing. Base layer attached with 1" Type S-12 bugle head screws 12" o.c. Face layer attached with 1-5/8" Type S-12 bugle head screws spaced 12" o.c. Joints staggered. Insulation to completely fill stud cavity. **(Load-bearing: 80% of design load)**

### 2-Hour Fire Rating



Test Reference: UL U411, cUL U411

Wall Thickness: 5"

Weight per Sq. Ft.: 11.0

Exterior: Two layers 5/8" DensGlass Fireguard Type X Exterior Sheathing applied vertically to min. 2-1/2" corrosion resistant 25-gauge steel studs 24" o.c. Base layer attached with 1" Type S corrosion resistant bugle head screws 16" o.c. Face layer attached with 1-5/8" Type S corrosion resistant bugle head screws spaced 8" o.c. Joints staggered.

Interior: Two layers 5/8" DensArmor Plus Fireguard Type X or 5/8" ToughRock Fireguard Type X gypsum board applied vertically to framing. Base layer attached with 1" Type S bugle head screws 16" o.c. Face layer attached with 1-5/8" Type S bugle head screws spaced 16" o.c. in the field and along vertical edges and 12" o.c. to the floor and ceiling runners. Joints staggered. Batt or blanket insulation optional.

<sup>1</sup>Load restricted for Canadian applications—see UL Guide BXUV7.

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## Architectural Specifications

### Part 1 – General

#### 1.0 Description

Work in this section includes, but is not limited to: wall, ceiling and soffit sheathing.

Related work specified elsewhere:

Brick masonry	Finish carpentry	Joint sealers
Stone	Exterior Insulation and Finish Systems (EIFS)	Light-gauge metal framing
Cold-formed metal framing	Siding	Painting
Rough carpentry		

#### 1.1 Submittals

Product Data: Submit manufacturer's descriptive literature indicating material composition, thickness, sizes and fire resistance.

#### 1.2 Quality Assurance

Fire resistance ratings: Where applicable, provide materials and construction that are identical to those of assemblies whose fire resistance ratings are indicated.

#### 1.3 Delivery, Storage and Handling

Delivery: Deliver materials to the job site in manufacturer's original packaging, containers and bundles with manufacturer's brand name and identification intact and legible. Product also may be wrapped in temporary factory-applied plastic packaging (plastic wrap) that **must** be removed upon receipt. **Failure to remove the plastic shipping covers and plastic wrap may result in entrapment of condensation or moisture, which may cause application problems.**

Storage and handling: Store flat on a level surface and handle materials to protect against contact with damp and wet surfaces, exposure to weather, breakage and damage to edges. Provide air circulation under covering and around stacks of materials.

### Part 2 – Products

#### 2.0 Sheathing Board

Acceptable Products: 1/2" DensGlass™ Exterior Sheathing (formerly DensGlass Gold® Exterior Sheathing); 5/8" DensGlass Fireguard® Type X Exterior Sheathing

Size: DensGlass Exterior Sheathing: 1/2" (12.7mm) thick by 4' by 8', 9' or 10' (1.9 lb. per square foot); DensGlass Fireguard Type X Exterior Sheathing: 5/8" (15.9mm) thick x 4' x 8', 9' or 10' (2.5 lb. per square foot).

Composition: Gypsum sheathing manufactured in accordance with ASTM C 1177 with fiberglass mats both sides and long edges, water-resistant treated core.

Fire resistance: Noncombustible as described and tested in accordance with ASTM E 136 and CAN/ULC-S114.

1/2" or 5/8" DensGlass Exterior Sheathing: Flame spread 10, when tested in accordance with ASTM E 84 and CAN/ULC S-102.

5/8" DensGlass Fireguard Type X Exterior Sheathing is rated Type X as defined in ASTM C 1177 and can be used as a replacement to any other generic assembly utilizing a 5/8" Type X gypsum board (see GA-600 for numeric assemblies). DensGlass Fireguard Type X Exterior Sheathing is UL classified, Type DGG, in UL designs N501, N502, N505, U301, U302, U305, U309, U337, U342, U354, U355, U379, U411, U425, U465, U467, U473, U617, V417, V419, V450, X508, X516, X517 and ULC classified, Type DGG in ULC designs EW10, EW17, U301, U302, W301, W404, W415, W442, W465. DensGlass Fireguard Type X Exterior Sheathing can be used in UL assemblies where the gypsum board is listed as *Gypsum Board (Classified or Unclassified)* for thicknesses up to 5/8".

#### 2.1 Air and Water-resistive Barrier

If required by local building code, #15, nonperforated, asphalt saturated felt complying with ASTM D 226, Type 1, synthetic building wraps complying with ASTM E 1677, or other water-resistive barrier system meeting local building code requirements.

#### 2.2 Accessories

Joint tape: 2" wide 10x10 fiberglass mesh tape, see 3.2.A.

Joint compound: ToughRock® setting-type joint compound, see 3.2.A.

Nails, wood framing: 11-gauge galvanized roofing nails, 1-1/2" min. length for 1/2" DensGlass Exterior Sheathing and 1-3/4" length for 5/8" DensGlass Fireguard Type X Exterior Sheathing.

Screws, metal framing: Bugle or wafer head, self-tapping, rust-resistant, fine thread for heavy-steel gauge. Bugle or wafer head, rust-resistant sharp point, fine thread for light-gauge metal framing or furring.

Screws, wood framing: Rust-resistant, bugle or wafer head, coarse thread, 1-1/4" length sharp point for wood.

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## Part 3 – Execution

### 3.0 Preparation

Examine subframing; verify that surface of framing and furring members to receive sheathing does not vary more than 1/8" from the placement of faces of adjacent members.

### 3.1 Sheathing

Provide DensGlass™ Exterior Sheathing where indicated on drawings. Install sheathing in accordance with manufacturer's instructions and applicable instructions in GA-253 and ASTM C 1280.

Install DensGlass Exterior Sheathing with GOLD side out.

Use maximum lengths possible to minimize number of joints.

Attach DensGlass Exterior Sheathing to wood framing with nails spaced 4" o.c. at perimeter for racking shear resistance; 8" o.c. at perimeter where there are framing supports and where racking shear resistance is not required; and 8" o.c. along intermediate framing in field for both conditions. Unless specified otherwise, attach DensGlass Exterior Sheathing to metal framing with screws spaced 8" o.c. at perimeter where there are framing supports; and 8" o.c. along intermediate framing in field. A greater number of fasteners may be specified to obtain specific values.

Drive fasteners to bear tight against and flush with surface of sheathing. Do not countersink. Locate fasteners minimum 3/8" from edges and ends of sheathing panels, tight against and flush with surface of sheathing.

Water-resistive Barrier: If a water-resistive barrier is required by the local building code, design professional, owner or cladding manufacturer over DensGlass Exterior Sheathing, one of the following procedures may be used. Consult building code or design authority for proper application selection. Follow manufacturer's installation recommendations.

- A. Entire exterior face of gypsum sheathing covered with an asphalt impregnated felt or synthetic fiber wrap such as Tyvek® Commercial Wrap, or equal.
- B. Liquid applied barriers such as Sto Guard® as manufactured by Sto Corp., Dryvit's Backstop® NT, Prosoco R-GUARD™, or equal.
- C. Self adhering membranes.

### 3.2 Painted Ceilings and Soffits

Soffits must be dried in and protected from the elements during and after installation.

- A. Apply fiberglass mesh joint tape over joints and embed in setting-type joint compound specified. Skim coat surface with setting-type joint compound for smooth finish. Prime and paint with exterior grade, high quality paint.
- B. Apply EIFS with or without insulation, install as recommended by manufacturer.

## Limitations

DensGlass™ Exterior Sheathing (formerly DensGlass Gold® Exterior Sheathing) is resistant to normal weather conditions, but it is not intended for immersion in water. Cascading roof/floor water should be directed away from the sheathing until appropriate drainage is installed.

The use of forced air heaters creates volumes of water vapor which, when not properly vented, can condense on building materials. The use of these heaters and any resulting damage is not the responsibility of Georgia-Pacific Gypsum. Consult heater manufacturer for proper use and ventilation. Avoid any condition that will create moisture in the air and condensation on the exterior walls during periods when the exterior temperature is lower than the interior.

When DensGlass panels are used in slanted wall applications, that portion of the wall must be temporarily protected from the elements by the use of a water resistant barrier prior to application of the cladding. Do not allow water to pond or settle on sheathing. Also, exposed wall ends such as those that may be found in parapets must be covered to prevent water from infiltrating the cavity.

Georgia-Pacific Gypsum does not warrant and is not responsible or liable for the performance of the cladding or exterior systems applied over DensGlass Exterior Sheathing. The suitability and compatibility of any system is the responsibility of the system manufacturer or design authority.

Do not laminate DensGlass Exterior Sheathing to masonry surfaces; use furring strips or framing.

DensGlass Exterior Sheathing is not intended for roof applications. For roof applications, consult our DensDeck® roof board brochure.

DensGlass Exterior Sheathing is not intended for tile applications. For interior tile applications, consult our DensShield® tile backer brochure.

DensGlass Exterior Sheathing should not be used in lieu of plywood where required.

Do not apply DensGlass Exterior Sheathing below grade.

For all installations, design details such as fasteners, sealants and control joints per system specifications must be properly installed. Openings and penetrations must be properly flashed and sealed. Failure to do so will void the warranty.

Do not use DensGlass Exterior Sheathing as a base for nailing or mechanical fastening. Fasteners should be flush to the face of the board, not countersunk.

COMMONLY USED METRIC CONVERSIONS	
<b>Gypsum Board Thickness</b>	<b>Framing Spacing</b>
1/4 in. – 6.4 mm	16 in. – 406 mm
1/2 in. – 12.7 mm	24 in. – 610 mm
5/8 in. – 15.9 mm	<b>Fastener Spacing</b>
1 in. – 25.4 mm	2 in. – 51 mm
<b>Gypsum Board Width</b>	2.5 in. – 64 mm
2 ft. – 610 mm	7 in. – 178 mm
4 ft. – 1219 mm	8 in. – 203 mm
32 in. – 813 mm	12 in. – 305 mm
<b>Gypsum Board Length</b>	16 in. – 406 mm
4 ft. – 1219 mm	24 in. – 610 mm
5 ft. – 1524 mm	<b>Temperature</b>
8 ft. – 2438 mm	40°F – 5°C
9 ft. – 2743 mm	50°F – 10°C
10 ft. – 3048 mm	125°F – 52°C
12 ft. – 3658 mm	

## The Dens™ Brand of High-Performance Gypsum Products from Georgia-Pacific

<b>DensGlass™ Exterior Sheathing</b> (formerly DensGlass Gold® Exterior Sheathing)	The original and universal standard of superior weather resistance, with a 12-month weather exposure limited warranty. Look for the familiar GOLD color.
<b>DensShield® Tile Backer</b>	Acrylic-coated tile backer stops moisture at the surface. Lightweight and strong, built for speed on the job site. IBC/IRC Code Compliant. GREENGUARD listed for microbial resistance.
<b>DensDeck® Roof Boards</b>	Fiberglass mat coverboard with a track record of resistance <i>against</i> wind uplift, hail, foot traffic, fire, moisture and mold, in a broad range of applications. Look for green DensDeck® Prime and DensDeck® DuraGuard too.
<b>DensGlass™ Ultra Shaftliner</b>	Specially-designed panels for moisture-prone vertical or horizontal shafts, interior stairwells and area separation wall assemblies. 12-month weather exposure limited warranty. GREENGUARD listed for microbial resistance.
<b>DensArmor Plus® High-Performance Interior Panel</b>	High-performance interior panel that accelerates scheduling because it can be installed before the building is dried-in. Six-month weather exposure limited warranty. GREENGUARD Indoor Air Quality Certified® for low VOC emissions. GREENGUARD listed for microbial resistance.
<b>DensArmor Plus® Abuse-Resistant Interior Panel</b> (formerly DensArmor Plus® Abuse Guard®)	Same benefits as DensArmor Plus® High-Performance Interior Panel with added resistance to scuffs, abrasions and surface indentations. Ideal for healthcare facilities and schools. GREENGUARD Indoor Air Quality Certified® for low VOC emissions. GREENGUARD listed for microbial resistance.
<b>DensArmor Plus® Impact-Resistant Interior Panel</b> (formerly DensArmor Plus® High Impact)	Even greater durability with an embedded impact-resistant mesh for the ultimate performance in high traffic areas. Ideal for healthcare facilities, schools and correctional institutions.



### SALES INFORMATION AND ORDER PLACEMENT

U.S.A. Midwest: **1-800-876-4746** West: **1-800-824-7503**  
South: **1-800-327-2344** Northeast: **1-800-947-4497**

CANADA Canada Toll Free: **1-800-387-6823**  
Quebec Toll Free: **1-800-361-0486**

Georgia-Pacific Gypsum LLC Technical Hotline  
U.S.A. and Canada: **1-800-225-6119**



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### LIMITATION OF REMEDIES AND DAMAGES

Unless otherwise stated in our written warranty for these products, our sole liability for any product claim shall be limited to reimbursement of the cost of repair or replacement of the affected product, up to a maximum amount of two times the original purchase price for the affected product. We shall not be responsible under any circumstances for lost profits, damage to a structure or its contents, or indirect, incidental, special or consequential damages. Claims shall be deemed waived if they are not submitted to us in writing within ten (10) days after discovery of a product defect/circumstance giving rise to a claim.

**CAUTION: For product fire, safety and use information, go to [gp.com/safetyinfo](http://gp.com/safetyinfo).**

**DISCLAIMER:** Our fiberglass mat products may contain recycled material with small traces of cellulose fiber in the core, which will not affect the overall product performance or characteristics.

### HANDLING AND USE

**CAUTION:** This product contains fiberglass facings which may cause skin irritation. Dust and fibers produced during the handling and installation of the

product may cause skin, eye and respiratory tract irritation. Avoid breathing dust and minimize contact with skin and eyes. Wear long sleeve shirts, long pants and eye protection. Always maintain adequate ventilation. Use a dust mask or NIOSH/MSHA approved respirator as appropriate in dusty or poorly ventilated areas. For additional product fire, safety and use information go to [www.gp.com/safetyinfo](http://www.gp.com/safetyinfo) or call 1-800-225-6119.

### FIRE SAFETY CAUTION:

Passing a fire test in a controlled laboratory setting and/or certifying or labeling a product as having a one-hour, two-hour, or any other fire resistance or protection rating and, therefore, as acceptable for use in certain fire rated assemblies/systems, does not mean that either a particular assembly/system incorporating the product, or any given piece of the product itself, will necessarily provide one-hour fire resistance, two-hour fire resistance, or any other specified fire resistance or protection in an actual fire. In the event of an actual fire, you should immediately take any and all actions necessary for your safety and the safety of others without regard for any fire rating of any product or assembly/system.