



  
**Georgia-Pacific**  
Gypsum  
Building Reputations Together™

**TOUGHROCK®**  
Gypsum Board and Products



## Product Overview

ToughRock® gypsum boards include paper-faced gypsum panels for a variety of applications including:

- Interior wall, floor and ceiling applications
- Abuse-resistant boards
- Veneer, plaster base systems
- Type X boards for use in fire-rated assemblies (ToughRock® Fireguard X™, Fireguard C® and Fireguard X™ Mold-Guard™)

Georgia-Pacific Gypsum has engineered ToughRock gypsum boards to deliver strength in four distinct areas:

- Impact resistance – ability to withstand pre- or post-installation wear and tear
- Sag resistance – select boards may be used on ceilings\*
- Flexural strength – resistance to cracking during handling and installation
- Improved humid bonds – resistance to paper delamination from gypsum core in humid conditions

*\*Applies only to ToughRock® Lite-Weight Gypsum Board and ToughRock® Span 24® Ceiling Board. Available in select markets.*

### Georgia-Pacific Gypsum and Sustainability

Georgia-Pacific Gypsum’s definition of sustainability is meeting the needs of society today without jeopardizing our ability to do so in the future. We are committed to using resources efficiently to provide innovative products and solutions that meet the needs of customers and society, while operating in a manner that is environmentally and socially responsible, and economically sound.

We continue to focus on:

- Improving energy efficiency at our manufacturing plants
- Seeking out opportunities to reduce water use, and to reuse water more efficiently
- Finding cost effective ways to further reduce air emissions
- Recovering and reusing materials that otherwise would end up in landfills

Green building codes, standards and programs are establishing themselves across the country. They promote the use of products that contribute to the performance of the building, along with minimizing environmental and human health impacts over the life of the building or home. Because we embrace product performance and operate in an environmentally, socially and economically sound manner, owners and architects can feel good about the structures they build using our products.

Many of our products contribute to LEED® and other green building codes, standards, or program credits or requirements. To find out more, please refer to the Sustainable Materials Data Sheets (SMDS) at [www.gpgypsum.com](http://www.gpgypsum.com) for recycled content, regional materials, and low emitting materials information or use our online LEED calculator to calculate contribution for a specific credit. For general information on sustainability, click the “Sustainability” tab on the website.

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### Architectural Specifications

Georgia-Pacific Gypsum’s 3-part guide specifications are downloadable, as rewritable Microsoft® Word documents, in both CSI and ARCOM MasterSpec® formats. Georgia-Pacific Gypsum specifications and 3-D Revit® compatible models can be found at [www.gpdesignstudio.com](http://www.gpdesignstudio.com). Downloadable specifications are also available online from Building Systems Design, Inc. at [www.bssoftlink.com](http://www.bssoftlink.com), and ARCOM Product Masterspec at [www.masterspec.com](http://www.masterspec.com).

## ToughRock® Gypsum Board Physical Properties

Properties	1/4" ToughRock® Gypsum Board	3/8" ToughRock® Gypsum Board	1/2" ToughRock® Gypsum Board	1/2" ToughRock® Lite-Weight Gypsum Board
Thickness, nominal inches	1/4" (6.4 mm) ± 1/64" (0.4 mm)	3/8" (9.5 mm) ± 1/64" (0.4 mm)	1/2" (12.7 mm) ± 1/64" (0.4 mm)	1/2" (12.7 mm) ± 1/64" (0.4 mm)
Width, nominal	4' (1220 mm) ± 3/32" (2.4 mm)	4' (1220 mm) ± 3/32" (2.4 mm)	4' (1220 mm) ± 3/32" (2.4 mm) 54" (1372 mm) ± 3/32" (2.4 mm)	4' (1220 mm) ± 3/32" (2.4 mm) 54" (1372 mm) ± 3/32" (2.4 mm)
Length, standard	8' (2440 mm) to 12' (3658 mm) ± 1/4" (6.4 mm)	8' (2440 mm) to 12' (3658 mm) ± 1/4" (6.4 mm)	8' (2440 mm) to 16' (4880 mm) ± 1/4" (6.4 mm)	8' (2440 mm) to 16' (4880 mm) ± 1/4" (6.4 mm)
Edges	Tapered and square edges	Tapered and square edges	Tapered, square or tapered with round edges	Tapered edges
Surfacing	100% recycled paper face, back and long edges	100% recycled paper face, back and long edges	100% recycled paper face, back and long edges	100% recycled paper face, back and long edges
Flexural strength, <sup>2</sup> min. Parallel, lbf. (N) Perpendicular, lbf. (N)	≥16 (71) ≥46 (205)	≥26 (116) ≥77 (343)	≥36 (160) ≥107 (476)	≥36 (160) ≥107 (476)
R Value <sup>1</sup> , ft <sup>2</sup> •°F•hr/BTU (m <sup>2</sup> •K/W)	0.22 est. (0.04)	0.33 (0.06)	0.45 (0.08)	0.45 (0.08)
Nail pull resistance, <sup>2</sup> Min., lbf. (N)	≥36 (160)	≥56 (249)	≥77 (343)	≥77 (343)
Hardness, <sup>2</sup> lbf. (N) (core edge & end)	≥15 (67)	≥15 (67)	≥15 (67)	≥15 (67)
Humidified Deflection <sup>2</sup>	Not applicable	15/8" (45 mm)	10/8" (32 mm)	5/16" (8 mm) <sup>3</sup>
Packaging	Two pieces per bundle, face-to-face and end taped	Two pieces per bundle, face-to-face and end taped	Two pieces per bundle, face-to-face and end taped	Two pieces per bundle, face-to-face and end taped
Surface Burning Characteristics <sup>3</sup> (per ASTM E 84) Flame Spread Smoke Developed (The core is noncombustible when tested in accordance with ASTM E 136.)	15 0	15 0	15 0	15 0

<sup>1</sup> Per Gypsum Association document GA-235.

<sup>2</sup> Specified minimum values are as defined in ASTM C 1396.

<sup>3</sup> Products qualify for NFPA Class A or IBC Class 1.

## ToughRock® Fireguard X™ Gypsum Board Physical Properties

Properties	5/8" ToughRock® Fireguard X™	1/2" ToughRock® Fireguard C®	5/8" ToughRock® Fireguard C®
Thickness, nominal inches	5/8" (15.9 mm) ± 1/64" (0.4 mm)	1/2" (12.7 mm) ± 1/64" (0.4 mm)	5/8" (15.9 mm) ± 1/64" (0.4 mm)
Width, nominal	4' (1220 mm), 54" (1372 mm), 60" (1524 mm) ± 3/32" (2.4 mm)	4' (1220 mm) ± 3/32" (2.4 mm)	4' (1220 mm) ± 3/32" (2.4 mm)
Length, standard	8' (2440 mm) to 14' (4270 mm) ± 1/4" (6.4 mm)	8' (2440 mm) to 14' (4270 mm) ± 1/4" (6.4 mm)	8' (2440 mm) to 14' (4270 mm) ± 1/4" (6.4 mm)
Edges	Tapered, square or tapered with rounded edges	Tapered, square or tapered with rounded edges	Tapered, square or tapered with rounded edges
Flexural Strength, <sup>1</sup> min. Parallel, lbf. (N) Perpendicular, lbf. (N)	≥ 46 (205) ≥ 147 (654)	≥ 36 (160) ≥ 107 (476)	≥ 46 (205) ≥ 147 (654)
R Value, ft <sup>2</sup> •°F•hr/BTU (m <sup>2</sup> •K/W)	0.56 est. (0.10)	0.48 est. (0.08)	0.56 est. (0.10)
Nail pull resistance <sup>1</sup> minimum lbf. (N)	≥87 (387)	≥77 (343)	≥87 (389)
Hardness, <sup>1</sup> lbf. (N) (core edge and end)	≥15 (67)	≥15 (67)	≥15 (67)
Humidified Deflection <sup>1</sup>	5/8" (16 mm)	10/8" (32 mm)	5/8" (16 mm)
Packaging	Two pieces per bundle, face-to-face and end taped	Two pieces per bundle, face-to-face and end taped	Two pieces per bundle, face-to-face and end taped
Surface Burning Characteristics <sup>2</sup> (per ASTM E 84) Flame Spread Smoke Developed (The core is noncombustible when tested in accordance with ASTM E 136.)	15 0	15 0	15 0

<sup>1</sup> Specified minimum values are as defined in ASTM C 1396.

<sup>2</sup> Products qualify for NFPA Class A or IBC Class 1.

## ToughRock® Specialty Gypsum Board Physical Properties

Properties	1/2" ToughRock® Mold-Guard™ Gypsum Board	5/8" ToughRock® Fireguard X™ Mold-Guard™ Gypsum Board	5/8" ToughRock® Fireguard X™ Abuse-Resistant Gypsum Board
Thickness, nominal inches	1/2" (12.7 mm) ± 1/64" (0.4 mm)	5/8" (15.9 mm) ± 1/64" (0.4 mm)	5/8" (15.9 mm) ± 1/64" (0.4 mm)
Width, nominal	4' (1220 mm) ± 3/32" (2.4 mm)	4' (1220 mm) ± 3/32" (2.4 mm), 54" (1372 mm) ± 3/32" (2.4 mm)	4' (1220 mm) ± 3/32" (2.4 mm)
Length, standard	8' (2440 mm) to 16' (4880 mm) ± 1/4" (6.4 mm)	8' (2440 mm) to 14' (4270 mm) ± 1/4" (6.4 mm)	8' (2440 mm) to 12' (3658 mm) ± 1/4" (6.4 mm)
Edges	Tapered, square or tapered with round edges	Tapered, square or tapered with round edges	Tapered edge
Surfacing	100% recycled paper face, back and long edges	100% recycled paper face, back and long edges	100% recycled paper face, back and long edges
Flexural Strength, <sup>2</sup> min. Parallel, lbf. (N) Perpendicular lbf. (N)	≥ 36 (160) ≥ 107 (476)	≥ 46 (205) ≥ 147 (654)	≥ 46 (205) ≥ 147 (654)
R Value <sup>1</sup> , ft <sup>2</sup> •°F•hr/BTU (m <sup>2</sup> •K/W)	0.45 (0.08)	0.56 est. (0.10)	0.56 est. (0.10)
Nail pull resistance, <sup>2</sup> Min., lbf. (N)	≥77 (343)	≥87 (387)	≥87 (387)
Hardness, <sup>2</sup> lbf. (N) (core edge and end)	≥15 (67)	≥15 (67)	≥15 (67)
Humidified Deflection <sup>2</sup>	10/8" (32 mm)	5/8" (16 mm)	5/8" (16 mm)
Packaging	Two pieces per bundle, face-to-face and end taped	Two pieces per bundle, face-to-face and end taped	Two pieces per bundle, face-to-face and end taped
Surface Burning Characteristics <sup>3</sup> (per ASTM E 84) Flame Spread Smoke Developed (The core is noncombustible when tested in accordance with ASTM E 136.)	15 0	15 0	15 0

<sup>1</sup> Per Gypsum Association document GA-235.

<sup>2</sup> Specified minimum values are as defined in ASTM C 1396.

<sup>3</sup> Products qualify for NFPA Class A or IBC Class 1.

## ToughRock® Specialty Gypsum Board Physical Properties

Properties	1/2" ToughRock® Span 24® Ceiling Board	1/4" ToughRock® Flexroc® Gypsum Board	5/8" ToughRock® Fireguard C® Soffit Board
Thickness, nominal inches	1/2" (12.7 mm) ± 1/64" (0.4 mm)	1/4" (6.3 mm) ± 1/64" (0.4 mm)	5/8" (15.9 mm) ± 1/64" (0.4 mm)
Width, nominal	4' (1220 mm) ± 3/32" (2.4 mm)	4' (1220 mm) ± 3/32" (2.4 mm)	4' (1220 mm) ± 3/32" (2.4 mm)
Length, standard	8' (2440 mm) to 12' (3658 mm) ± 1/4" (6.4 mm)	8' (2440 mm) ± 1/4" (6.4 mm)	8' (2440 mm) to 12' (3658 mm) ± 1/4" (6.4 mm)
Edges	Tapered, or tapered with round edges	Tapered edge	Tapered edge
Surfacing	100% recycled paper coverings on face, back and long edges	100% recycled paper coverings on face, back and long edges	100% recycled paper coverings on face, back and long edges
Flexural Strength, <sup>2</sup> min. Parallel, lbf. (N) Perpendicular, lbf. (N)	≥ 36 (160) ≥ 107 (476)	≥ 16 (71) ≥ 46 (205)	≥ 46 (205) ≥ 147 (654)
R Value <sup>1</sup> , ft <sup>2</sup> •°F•hr/BTU (m <sup>2</sup> •K/W)	0.45 (0.08)	0.22 est. (0.04)	0.56 est. (0.10)
Nail pull resistance, <sup>2</sup> Min., lbf. (N)	≥77 (343)	≥36 (160)	≥87 (387)
Hardness, <sup>2</sup> lbf. (N) (core edge and end)	≥15 (67)	≥15 (67)	≥15 (67)
Humidified Deflection	5/16" (8 mm)	NA	4/8" (12 mm)
Packaging	Two pieces per bundle, face-to-face and end taped	Two pieces per bundle, face-to-face and end taped	Two pieces per bundle, face-to-face and end taped
Surface Burning Characteristics <sup>3</sup> (per ASTM E 84) Flame Spread Smoke Developed (The core is noncombustible when tested in accordance with ASTM E 136.)	15 0	15 0	15 0

<sup>1</sup> Per Gypsum Association document GA-235.

<sup>2</sup> Specified minimum values are as defined in ASTM C 1396.

<sup>3</sup> Products qualify for NFPA Class A or IBC Class 1.

## Fire Rating Information

ToughRock® Fireguard X™, ToughRock® Fireguard X™ Mold-Guard™ Gypsum Board and ToughRock Fireguard C® gypsum board products have been classified by UL LLC and included in numerous assembly designs investigated by UL for hourly fire resistance ratings. Several ToughRock Fireguard and ToughRock Fireguard C gypsum board products have also been listed by Underwriters Laboratories of Canada (ULC) for inclusion in fire resistance ratings. Each UL or ULC design lists specific manufacturers and products approved for use in the assembly. Products are identified as designated Types that correlate to specific board formulations. The Type designation appears on the UL or ULC label on the product. The following tables provide a quick and easy reference to identify current ToughRock gypsum board products and their designations in the UL or ULC directories.

UL Type Designation	Product Name
Type TG-C	1/2" (12.7 mm) ToughRock® Fireguard C® Gypsum Board
	1/2" (12.7 mm) ToughRock® Fireguard C® Stretch 54® Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard C® Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard C® Stretch 54® Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard C® Soffit Board
Type X	5/8" (15.9 mm) ToughRock® Fireguard X™ Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard X™ Stretch 54® Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard X™ Gypsum Sheathing
	5/8" (15.9 mm) ToughRock® Fireguard X™ Veneer Plaster Base
	5/8" (15.9 mm) ToughRock® Fireguard X™ Abuse-Resistant Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard X™ Mold-Guard™ Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard X™ Mold-Guard™ Abuse-Resistant Gypsum Board

ULC Type Designation	Product Name
Type C	1/2" (12.7 mm) ToughRock® Fireguard C® Gypsum Board
	1/2" (12.7 mm) ToughRock® Fireguard C® Stretch 54® Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard C® Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard C® Stretch 54® Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard C® Soffit Board
Type X	5/8" (15.9 mm) ToughRock® Fireguard X™ Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard X™ Stretch 54® Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard X™ Gypsum Sheathing
	5/8" (15.9 mm) ToughRock® Fireguard X™ Veneer Plaster Base
	5/8" (15.9 mm) ToughRock® Fireguard X™ Abuse-Resistant Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard X™ Mold-Guard™ Gypsum Board
	5/8" (15.9 mm) ToughRock® Fireguard X™ Mold-Guard™ Abuse-Resistant Gypsum Board

In addition, ToughRock® Fireguard X™, ToughRock® Fireguard X™ Mold-Guard™ Gypsum Board and ToughRock Fireguard C® gypsum board products are classified as "Type X" in accordance with ASTM C 1396 and may be used in generic fire-rated assemblies where Type X gypsum board (as defined in ASTM C 1396) is required. Generic systems in the GA-600 Fire Resistance Design Manual are applicable to the products of any manufacturer, including Georgia-Pacific Gypsum, provided they meet certain standards set forth in such manual, such as Type X gypsum board per applicable ASTM standard with specified thickness and size described in the design. "Type X" as used in this technical guide designates gypsum board manufactured and tested in accordance with specific ASTM standards for increased fire resistance beyond regular gypsum board. Please consult the ASTM standard for the specific product (for example, ASTM C 1396 for gypsum board) for further information and significance of use.

**It is important that you consult a design professional and the appropriate fire resistance directory or test report for complete assembly information and related information. Georgia-Pacific Gypsum does not provide architectural or engineering services. For additional fire safety information concerning Georgia-Pacific Gypsum's products visit [www.buildgp.com/safetyinfo](http://www.buildgp.com/safetyinfo).**

## Board Calculator

Determine the wall and ceiling areas:

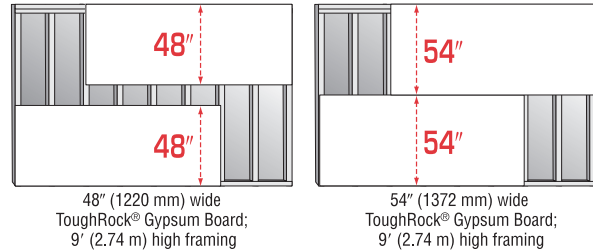
Width of the room x Length of the room = Ceiling area  
(Width + Length) x 2 x Height of the room = Wall area

For example, a 12' x 16' x 8' room has a wall/ceiling area of 640 sq. ft.

Ceiling area: 12 x 16 = 192  
Wall area: (12 + 16) x 2 x 8 = 448; 192 + 448 = 640.

### Room Measurement Table

	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
8'	224	248	272	296	320	334	368	392	416	440	464	488	512
9'	244	269	294	319	344	369	394	419	444	469	494	519	544
10'	264	290	316	342	368	394	420	446	472	498	524	550	576
11'	284	311	338	365	392	419	446	473	500	527	554	581	608
12'	304	332	360	388	416	444	472	500	528	556	584	612	640
13'	324	353	382	411	440	469	498	527	556	585	614	643	672
14'	344	374	404	434	464	494	524	554	584	614	644	674	704
15'	364	395	426	457	488	519	550	581	612	643	674	705	736
16'	384	416	448	480	512	544	576	608	640	672	704	736	768



Besides standard 4' widths, ToughRock® gypsum board is also available in a 54" width that eliminates the need for gap filler boards in horizontal applications when walls are 9' high (see above illustration). Using 54" wide gypsum board when you have 9' ceilings reduces the number of seams you'll need to finish and cuts waste.

### Panel Coverage Table (in sq. ft. of wall area)

	1 Panel	2 Panels	3 Panels	4 Panels	5 Panels	6 Panels
4' x 8' Panel	32	64	96	128	160	192
4' x 9' Panel	36	72	108	144	180	216
4' x 10' Panel	40	80	120	160	200	240
4' x 12' Panel	48	96	144	192	240	288
4' x 14' Panel	56	112	168	224	280	336
4' x 16' Panel	64	128	192	256	320	384

### Estimating

#### Estimating Gypsum Board Fasteners

Type of Fastener	Wallboard Thickness	Length of Fastener	Approx. Number of Fasteners per 1000 sq. ft. of Wallboard
Nail	1/2" (12.7 mm)	1 3/8" (35 mm)	2000
Nail	5/8" (15.9 mm)	1 1/2" (38 mm)	2000
Screw	1/2" (12.7 mm)	1 1/8" (28 mm)	1250
Screw	5/8" (15.9 mm)	1 1/4" (32 mm)	1250

#### Estimating All-Purpose Joint Compound and Tape

ToughRock® Wallboard Sq. Ft.	All-Purpose Joint Compound	Estimated Amount of GP Wallboard Tape
100–200 sq. ft.	12 lb. Pail	two 60' rolls
500 sq. ft.	48 lb. Carton	one 250' roll
800 sq. ft.	61.7 lb. Pail	two 250' rolls

## Maximum Framing Spacing for Single-Ply Construction

Single-Ply ToughRock Gypsum Board Thickness	Application <sup>2</sup>	Maximum Framing Members on Centers Spacing
Ceilings:	3/8" (9.5 mm) <sup>3</sup>	perpendicular 16" (406 mm)
	1/2" (12.7 mm)	parallel 16" (406 mm)
	5/8" (15.9 mm)	parallel 16" (406 mm)
	1/2" (12.7 mm)	perpendicular <sup>1</sup> 24" (610 mm)
Walls:	5/8" (15.9 mm)	perpendicular 24" (610 mm)
	3/8" (9.5 mm)	perpendicular 16" (406 mm)
	1/2" (12.7 mm)	parallel 24" (610 mm)

<sup>1</sup> ToughRock gypsum boards to receive hand or spray-applied water-based texture material, shall be applied perpendicular to framing. Board thickness shall be increased from 3/8" (9.5 mm) to 1/2" (12.7 mm) for 16" (406 mm) o.c. framing and from 1/2" (12.7 mm) to 5/8" (15.9 mm) for 24" (610 mm) o.c. framing.

<sup>2</sup> Nails for ToughRock gypsum boards applied over existing surfaces shall have a flat head and diamond point, and shall penetrate not less than 7/8" (22 mm), nor more than 1-1/4" (32 mm) into the framing member.

<sup>3</sup> 3/8" (9.5 mm) single-ply gypsum board shall not be applied to ceilings where the gypsum board supports insulation.



## Installation

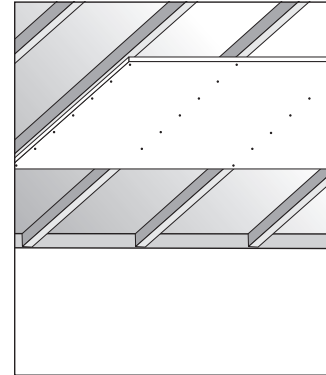
ToughRock® gypsum board products should be installed according to the most current versions of Gypsum Association GA-216 "Application and Finishing of Gypsum Panel Products" and ASTM C 840 "Standard Specification for Application and Finishing of Gypsum Board for Non-Fire Rated Construction."

### Walls

Several methods are used to attach gypsum boards to the framing including fasteners, adhesives, and fasteners and adhesives together. Nails are often used to install wallboard to wood studs. Nails should be spaced up to 8" (203 mm) o.c. along framing members. Screws may also be used to install wallboard on wood studs and are standard for steel studs. Screws should be spaced up to 16" (406 mm) for studs 16" (406 mm) o.c. or spaced 12" (203 mm) for studs spaced 24" (610 mm) o.c.

Gypsum wallboard may also be attached by using adhesive. Use a caulking gun to put a 3/8" (10 mm) bead of gypsum board adhesive on the wall studs before installing the board. Then fasten the board around the edges, 16" o.c. (406 mm) for studs spaced 16" (406 mm) o.c. and along the ends. This improves bond strength and reduces the number of fasteners needed.

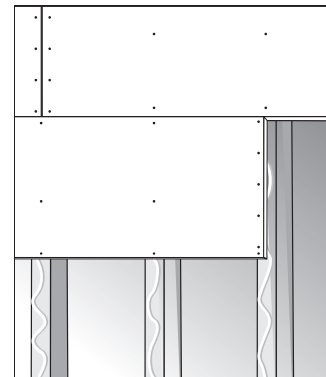
Gypsum board may be hung perpendicular or parallel to the framing members. If perpendicular, start at the top of the wall and attach the top boards first and work down the wall. Perpendicular orientation is often preferred because it generally reduces the number of joints that need to be finished. Please refer to the specific fire-rated assembly for construction details.



### Ceilings

Apply gypsum boards to the ceiling before applying gypsum boards to the walls. Joists must not be spaced more than 24" (610 mm) o.c. For residential applications use 1/2" (12.7 mm) ToughRock® Lite-Weight Gypsum Board or 1/2" (12.7 mm) ToughRock® Span 24® Ceiling Boards as a sag resistant alternative to 1/2" (12.7 mm) traditional ToughRock® gypsum panels. These panels are formulated to support spray textures paints and are able to support the same amount of insulation weight as 5/8" (15.9 mm) ToughRock® Fireguard X™ gypsum boards. Joists spaced 24" (610 mm) should only receive 1/2" (12.7 mm) ToughRock® Lite-Weight Gypsum Board, 1/2" (12.7 mm) ToughRock® Span 24® Ceiling Boards or 5/8" (15.9 mm) ToughRock® Fireguard X™ gypsum boards. The boards may be applied either parallel or perpendicular to the ceiling framing. The maximum insulation load should not be more than 2.2 lbs/sq. ft. (10.7 kg/m²). Space nails 7" (178 mm) or space screws 12" (305 mm) o.c. Please refer to the framing spacing requirements on page 8.

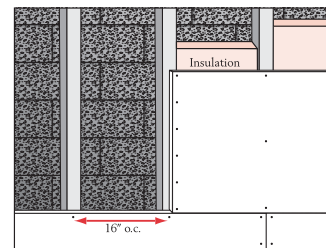
Improper framing construction and alignment can cause problems to telegraph through the boards. Excessive moisture or insulation weight can cause the ceiling boards to sag or cause problems with the joint treatment system.



### Masonry

Only interior masonry, concrete or brick walls above grade shall be acceptable masonry substrates for direct adhesion. Masonry, concrete or brick surfaces to which ToughRock® products are to be adhered to shall be free from foreign matter, projections or depressions that will impair bond.

Another recommendation is that the wall be framed with studs or furring strips, either 16" (406 mm) or 24" (610 mm) o.c. The furring strips can either be 1" (25 mm) x 2" (51 mm) or 2" (51 mm) x 2" (51 mm). Furring strips are necessary if the wall is to be insulated. Rigid foam is typically used to insulate the cavity. Gypsum wall boards would then be applied as described in the wall section above.



### Corner Bead

Metal, vinyl or paper corner beads provide strong, durable protection for outside angle corners, uncased openings, beams and soffits. The exposed portion of the bead resists impact and forms a surface to finish. Bead should be installed in one piece. Corner beads, depending on the type, may be nailed, crimped or embedded in place with drywall joint compound.

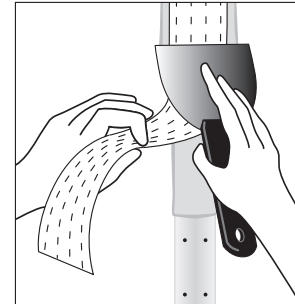
## Finishing Gypsum Board

### Joins/Levels of Finish

Please refer to the *Recommended Levels of Gypsum Board Finish*, Gypsum Association publication GA-214, for recommendations of various levels of finish of gypsum board surfaces prior to the application of specific types of final decoration. The recommended levels of finish of gypsum board surfaces varies with the final decoration and can also be dependent on the location of the boards in the structure and the type of illumination striking the surface. Also, visit Drywall Finishing Council's website at [www.dwfc.org](http://www.dwfc.org) for further information about joints and finishing gypsum boards.

### Taping

No fasteners should protrude above the surface of the gypsum board. Apply a smooth, full, even coat of all-purpose joint compound into the recess created by the tapered edges of adjoining boards with a joint finishing knife. Center a strip of wallboard tape over the joint, and press it firmly into the wet taping compound with a wallboard knife at a 45° angle. Press hard enough to squeeze excess compound out from the edge of the tape, but leave enough compound for a good bond. Pull the wallboard knife back over the tape, drawing the excess compound back over the surface of the tape. The top of the tape should be covered with a thin layer of compound. Let dry about 24 hours.



### Bedding and Finishing

When the taping coat is dry, use a 6" (152 mm) joint finishing knife to apply the second bedding coat of all-purpose joint compound. Feather the edges and let dry about 24 hours. Then apply a final finish coat with a 10" (254 mm) joint finishing knife. Extend this coat 2" (51 mm) wider than the first finish coat. Wait 24 hours, and sand lightly with a medium grit sandpaper. Avoid sanding down to the tape. Care should be taken to avoid sanding or scratching the face paper of the wallboard. Remove joint compound dust prior to decoration.

### Fastener Heads

Drive fasteners at least 3/8" (10 mm) from the edge and end of the boards. Fastener should be driven perpendicular to the face of the gypsum board. Seat nails in a shallow dimple left by the hammer head, do not crush the gypsum core or break the paper. Drywall screws should be applied with an electric screw gun with an adjustable screw-depth control head and a Phillips head bit. The screw head should be driven slightly below the face of the gypsum boards. Care should be taken to avoid breaking the face paper. For proper nail and screw spacing requirements, please refer to the Maximum Framing Spacing chart on page 8.

### Butt Joints

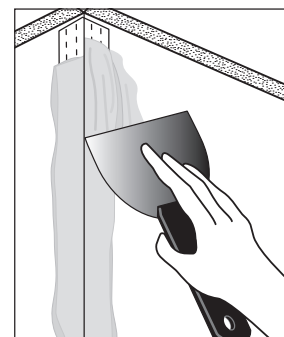
Butt joints (square cut edge joints) are finished in a similar manner as regular joints. Because butt joints are not tapered, care is needed to not allow the joint compound and tape to build up any more than necessary. To reduce the effect of the build-up, feather the edges of the finish coat to a width twice that of a tapered edge joint.

### Outside Corner

Be sure the metal or paper cornerbead is attached firmly. Use a 5" (127 mm) joint finishing knife to spread all-purpose joint compound about 3" (76 mm) or 4" (102 mm) past the metal or paper corner. Be sure to cover the edges. Let dry 24 hours. Apply second coat with a 10" (254 mm) knife. Feather edges 2" (51 mm) or 3" (76 mm) beyond first coat. Sand lightly when dry. A third coat may be needed.

### Inside Corner

Cut a strip of wallboard tape the length of the corner to be finished. Crease the tape down the center. Use a 5" (127 mm) joint finishing knife to spread all-purpose joint compound about 2" (51 mm) on both sides of the corner. With the knife press the tape into the corner. Use enough pressure to squeeze some compound from the edge of the tape, leaving enough compound to form a good bond. Feather the compound 2" (51 mm) from the edge of the tape. Let dry 24 hours, finishing only one side at a time. Let dry, finish other side of corner. Let dry, then sand. Be careful not to let the compound build up in the corner of the tape. Excess compound in the corner could cause hairline cracks.



## Recommendations and Limitations for Use

The following recommendations and limitations are important to ensure the proper use and benefits of ToughRock® gypsum board. Failure to strictly adhere to such recommendations and limitations may void the limited warranty provided by Georgia-Pacific Gypsum for such product. For additional details, please go to [www.gpgypsum.com](http://www.gpgypsum.com) and select ToughRock gypsum board.

### ToughRock Gypsum Board

1. ToughRock gypsum board products shall be stored flat rather than on edge or end and in an area that protects from direct sunlight exposure, condensation, inclement weather and other forms of moisture.
2. Job site conditions that can expose ToughRock gypsum boards to water or moisture must be avoided. The product should be kept dry throughout application.
3. Failure to remove protective plastic shipping covers can result in condensation which can lead to damage, including mold.
4. ToughRock gypsum boards are not recommended for use where they will be exposed to sustained temperature of more than 125°F (52°C) for extended periods of time.
5. When ToughRock is mechanically attached, the room temperature shall be maintained at not less than 40°F (4°C) and not less than 50°F (10°C) for adhesive application of ToughRock and for joint treatment, texturing, and decoration.
6. ToughRock gypsum boards applied to walls shall be applied with the bottom edge spaced a minimum of 1/4" (6 mm) above the floor.
7. During periods of cold or damp weather, when vapor retarder sheeting is installed on ceilings behind gypsum panel product, the ceiling batt or blanket insulation should be installed BEFORE the ToughRock gypsum boards are installed. Failure to follow this procedure creates a potential for moisture condensation on the backside of the ToughRock panel and possible ceiling sag.
8. When loose-fill insulation is used above the ceiling, the attic insulation shall be installed immediately after the ceiling panel is applied and before the ToughRock gypsum board joints are taped or any other wet finishing begins on the wall or ceiling.
9. Water-based textures, interior finishing materials and high ambient humidity conditions can produce sag in gypsum ceiling panels if adequate vapor and moisture control is not provided. The following precautions must be observed to minimize sagging of ceiling panels:
  - a) Where vapor retarder is required in cold weather conditions, the temperature of the gypsum ceiling panels and vapor retarder must remain above the interior air dew point temperature during and after the installation of panels and finishing materials.
  - b) The interior space must be adequately ventilated and air circulation must be provided to remove water vapor from the structure. Most sag problems are caused by the condensation of water within the gypsum panel. The placement of vapor retarders, insulation levels and ventilation requirements will vary by location and climate and should be reviewed by a qualified engineer if in question.

## High-Performance Gypsum Products from Georgia-Pacific

<b>DensDeck® Roof Board</b>	Fiberglass mat roof board used as the ideal thermal barrier and cover board to improve resistance to wind uplift, hail, foot traffic, fire and mold in a broad range of commercial roofing applications. Look for DensDeck Prime and DensDeck DuraGuard Roof Boards, too.
<b>DensGlass® Sheathing</b>	The original and universal standard of exterior gypsum sheathing offers superior weather resistance, with a 12-month weather exposure limited warranty. Look for the familiar GOLD color. GREENGUARD listed for microbial resistance.
<b>DensGlass® Shaftliner</b>	These specially-designed panels are perfect 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® Interior Panel</b>	High-performance interior panel accelerates scheduling because it can be installed before the building is dried-in. 12-month weather exposure limited warranty. GREENGUARD and GREENGUARD Gold certified for low VOC emissions. Listed in CHPS® High Performance Product Database as a low emitting product. GREENGUARD listed for microbial resistance.
<b>DensArmor Plus® Abuse-Resistant Interior Panel</b>	With the same benefits as the DensArmor Plus® Interior Panel, these also offer added resistance to scuffs, abrasions and surface indentations; ideal for healthcare facilities and schools. GREENGUARD and GREENGUARD Gold certified for low VOC emissions. Listed in CHPS® High Performance Product Database as a low emitting product. GREENGUARD listed for microbial resistance.
<b>DensArmor Plus® Impact-Resistant Interior Panel</b>	With even greater durability than abuse-resistant panels, these have an embedded impact-resistant mesh for the ultimate resistance in high traffic areas; ideal for healthcare facilities, schools and correctional institutions. GREENGUARD and GREENGUARD Gold certified for low VOC emissions. Listed in CHPS® High Performance Product Database as a low emitting product. GREENGUARD listed for microbial resistance.
<b>DensShield® Tile Backer</b>	Acrylic-coated tile backer stops moisture at the surface. Lightweight and strong, they are built for speed on the job site. Conforms to requirements of 2012 IBC/IRC Code. GREENGUARD listed for microbial resistance.
<b>ToughRock® Gypsum Board</b>	Paper-faced line of gypsum panels for a variety of applications including interior wall and ceiling applications, abuse-resistant boards, and panels for use in fire-rated assemblies. ToughRock products are GREENGUARD and GREENGUARD Gold certified for low VOC emissions. Listed in CHPS® High Performance Product Database as a low emitting product.
<b>ToughRock® Mold-Guard™ Gypsum Board</b>	ToughRock Mold-Guard Gypsum Board products have enhanced mold resistance in comparison to regular ToughRock® Gypsum Boards. They are GREENGUARD and GREENGUARD Gold Certified for low VOC emissions and are listed in the CHPS® High Performance Product Database as a low emitting product. The ToughRock Mold-Guard Gypsum Board is also listed as GREENGUARD microbial resistant.



### Georgia-Pacific Gypsum

U.S.A. Georgia-Pacific Gypsum LLC  
Georgia-Pacific Gypsum II LLC  
CANADA Georgia-Pacific Canada LP

#### SALES INFORMATION AND ORDER PLACEMENT

U.S.A. West: **1-800-824-7503**  
Midwest: **1-800-876-4746**  
South Central: **1-800-231-6060**  
Southeast: **1-800-327-2344**  
Northeast: **1-800-947-4497**

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

#### TECHNICAL HOTLINE

U.S.A. and Canada: **1-800-225-6119**



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#### WARRANTIES, REMEDIES AND TERMS OF SALE –

For current warranty information, please go to [www.gpgypsum.com](http://www.gpgypsum.com) and select the applicable product. All sales by Georgia-Pacific are subject to our Terms of Sale available at [www.gpgypsum.com](http://www.gpgypsum.com).

#### UPDATES AND CURRENT INFORMATION –

The information in this document may change without notice. Visit our website at [www.gpgypsum.com](http://www.gpgypsum.com) for updates and current information.

#### CAUTION: For product fire, safety and use information, go to [buildgpp.com/safetyinfo](http://buildgpp.com/safetyinfo) or call 1-800-225-6119.

#### 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.

#### 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.

[www.gpgypsum.com](http://www.gpgypsum.com)