

GP G-P Gypsum
DensDeck®
Roof Boards

DensDeck® DensDeck Prime® DensDeck DuraGuard®



**Mold
and Moisture
Resistant
PAPERLESS
SOLUTIONS**

Overview of Products

The mold resistance of DensDeck products has been tested, as manufactured, in accordance with ASTM D 3273. The ASTM D 3273 test is 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, DensDeck products provide increased mold resistance.

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Over 20 Years of DensDeck Roof Boards – Proven Performance

With hundreds of millions of square feet installed in a complete range of roofing systems and climate extremes, DensDeck roof boards have proven their toughness and versatility, which helps stiffen and stabilize roof decks. Their unique construction has been shown to withstand delamination, deterioration, warping and job site damage far more effectively than paper-faced gypsum board and other conventional roofing products such as wood fiberboard and perlite.

- Treated gypsum core for moisture resistance and sound insulation
- Fire- and rot-resistant
- Holds up well under normal foot traffic
- Easy to install in all types of roof systems
- Ideal product for direct membrane application

DensDeck® roof boards are designed to address four persistent challenges inherent in commercial roofing assemblies: fire resistance, moisture resistance, strength and dimensional stability. DensDeck roof board is a patented glass mat faced, noncombustible, nonstructural, moisture resistant treated gypsum core panel.

DensDeck Prime® roof board combines all the features of standard DensDeck roof board with an enhanced surface treatment. The green surface coating makes the board user-friendly by allowing a uniform spread of adhesives, which results in a stronger, more consistent bond. For cold mastic and torch applied modified bitumen as well as all fully adhered single-ply systems, DensDeck Prime roof board provides a stronger, more economical installation by reducing the amount of mastic or adhesive, eliminating the field primer* and reducing the number of fasteners required to achieve high wind uplift values.

DensDeck DuraGuard® provides a durable low perm, integrated coating with all the features of DensDeck roof board. Additionally, the DuraGuard coating provides an ideal substrate for a wide variety of adhered roofing systems, including self-adhered and hot-mopped membranes. Field primer that is typically used to prepare the substrates for self adhesive membranes can be eliminated by using DensDeck DuraGuard roof board.* Also, DensDeck DuraGuard roof board can be used as a substrate under commercial roof tile applications.

** Consult with membrane manufacturer for actual priming requirements*

G-P Gypsum Products and LEED

Many of our products may qualify to contribute to earning LEED credits through their Green Building Rating System for *New Construction & Major Renovations Version 2.1* (LEED-NC 2.1) and other current LEED building standards. Determine the GP Gypsum plant source by calling the GP Technical Hot-Line at 800-225-6119, and you may qualify for points in the following LEED categories:

- | | |
|--|--|
| Materials and Resources | Innovation in Design Credit |
| <ul style="list-style-type: none"> • Recycled Content Credits 4.1 and 4.2 • Regional Materials Credits 5.1 and 5.2 | <ul style="list-style-type: none"> • When tested, as manufactured, product resists growth of mold pursuant to the test method ASTM D 3273 |

Versatility of DensDeck Products

Applications	Systems
Cover board	Single-ply (thermoplastic/elastomeric)
Overlayment (fire barrier protection)	Modified bitumen (torched/cold/hot mopped)
Underlayment (thermal barrier)	Built-up roofing systems (asphalt/coal tar)
Reroof/recover board	Hybrid systems
Separator board (heat/solvent barrier)	Metal roofing
New and re-roof applications	Self-adhesive
Vapor barrier substrate	Spray foam (SPUR)
Air barrier component	Liquid membranes
Parapet wall substrate	Roof tile and slate roofing systems
	Wood shake

Patents

DensDeck, DensDeck Prime and DensDeck DuraGuard roof boards are manufactured under one or more of the following U.S. patents: 4,647,496; 4,810,569; 4,879,173; 5,135,805; 5,148,645; 5,220,762; 5,319,900; 5,342,680; 5,371,989; 5,644,880; 5,704,179; 5,791,109; 5,718,785; 5,883,024; 6,001,496. Other patents pending.

Areas of Use

Schools and government buildings – Improved fire resistance protects the safety of occupants.

Health care facilities – Fire resistance and reduced potential for mold growth are important in these settings.

Major airports – Improved fire and sound isolation contribute to the comfort and safety of travelers.

National retail chains – Improved hail resistance means less damage and lower maintenance bills for owners and managers.

Manufacturing Facilities – Superior fire resistance for long term performance.

Nursing homes & churches – Superior fire resistance ensures peace of mind where safety is critical.

Sports Arenas – Improved strength and fire resistance contribute to safety of visitors.

Food processing plants – Mold and moisture resistance make for a better indoor air environment.

Coastal communities – High wind uplift resistance provides protection from severe weather conditions.

DensDeck roof boards are an excellent fire barrier over steel decks and combustible roof decks.

Roofing specifications for steel deck installations often require a fire barrier as the component applied above the metal. This element controls and limits the amount of fuel contributed to a fire beneath the roof.

Factory Mutual (FM) Class 1 minimum tested, 1/4" DensDeck roof board is the only 1/4" gypsum product that meets the calorimeter requirements for conventionally insulated steel decks. DensDeck panels are an excellent fire barrier in built-up, modified bitumen and single-ply roofing systems. When tested to ASTM E 84, achieved a rating of 0 flame spread and 0 smoke developed. 5/8" DensDeck Fireguard™ roof board can replace classified or unclassified 5/8" gypsum board in roof assemblies in the UL Fire Resistance Directory under the prefix "P."

DensDeck, DensDeck Prime® and DensDeck DuraGuard® roof boards have achieved a very comprehensive Class A (UL 790) fire rating at Underwriters Laboratories and FM Approvals (E108) due to their outstanding fire resistance.

- ASTM E 84 with DensDeck and DensDeck Prime roof board: Flame Spread 0, Smoke Developed 0
- ASTM E 119 with 5/8" DensDeck Fireguard Type X roof board: UL Classified Type DD
- Due to the outstanding fire performance of 5/8" DensDeck Fireguard Type X roof board, this product can replace any classified or unclassified 5/8" gypsum board in an assembly in the UL Fire Resistance Directory under the prefix "P."
- 5/8" DensDeck Fireguard Type X roof board is classified by Underwriters Laboratories and can be used in the following UL "P" assemblies: P225, P227, P230, P235, P254, P257, P259, P266, P508, P510, P512, P514, P518, P701, P713, P714, P717, P718, P719, P720, P722, P725, P726, P727, P728, P729, P730, P731, P732, P733, P734, P735, P736, P738, P739, P740, P801, P803, P805, P811, P814, P815, P818, P819, P821, P825, P826, P828, P921.
- UL of Canada R210, R217, R221, R222, R223, R224, R225, R702, R703, R705, R804, R805, R806.
- ANSI/UL 1256 Steiner Tunnel "Fire Classified Construction." This listing allows direct application on steel decking with 1/4", 1/2" or 5/8" DensDeck, DensDeck Prime or DensDeck DuraGuard roof boards under foamed plastic insulations.

Properties, Standards and Classifications

DensDeck® Roof Boards

Properties	1/4"	1/2"	5/8"
Thickness, nominal	1/4" + 1/16"	1/2" ± 1/32"	5/8" ± 1/32"
Width, standard	4' ± 1/8"	4' ± 1/8"	4' ± 1/8"
Length, standard	8' ± 1/4"	8' ± 1/4"	8' ± 1/4"
Weight, lbs./sq. ft., nominal	1.1	1.95	2.5
Surfacing	Glass mat	Glass mat	Glass mat
Flexural Strength ¹ , parallel, lbs. min.	40	80	100
Flute Spanability ²	2-5/8"	5"	8"
Permeance ³ , Perms	50	35	32
"R" Value ⁴	.28	.56	.67
Linear Variation with Change in Temp., in/in °F	8.5x10 ⁻⁶	8.5x10 ⁻⁶	8.5x10 ⁻⁶
Linear Variation with Change in Moisture, in/in %RH	6.25x10 ⁻⁶	6.25x10 ⁻⁶	6.25x10 ⁻⁶
Water Absorption ⁵ , % max	10.0	10.0	10.0
Compression Strength, psi nominal	500 - 900	500 - 900	500 - 900
Surface Water Absorption ⁵ , grams, nominal	2.5	2.5	2.5
Flame Spread, Smoke Developed (ASTM E 84)	0/0	0/0	0/0
UL Classification	UL 1256, ULC S-126, UL Class A (UL 790), ULC S-107	UL 1256, ULC S-126, UL Class A (UL 790), ULC S-107	UL 1256, ULC S-126, UL Classified "P" assemblies, ULC Classified "R" assemblies, ULC S-101, Class A (UL 790), ULC S-107
FM Approvals <i>see Roof Nav for wind uplifts, www.roofnav.com</i>	FM CLASS 1 (FM 4450)	FM Class 1 (FM 4450)	FM Class 1 (FM 4450)
Mold Resistance ⁶	Mold resistant	Mold resistant	Mold resistant
Bending Radius	5'	8'	12'

Properties, Standards and Classifications

DensDeck Prime® Roof Boards

Properties	1/4"	1/2"	5/8"
Thickness, nominal	1/4" + 1/16"	1/2" ± 1/32"	5/8" ± 1/32"
Width, standard	4' ± 1/8"	4' ± 1/8"	4' ± 1/8"
Length, standard	4' and 8' ± 1/4"	4' and 8' ± 1/4"	4' and 8' ± 1/4"
Weight, lbs./sq. ft., nominal	1.15	1.975	2.55
Surfacing	Glass mat non-asphaltic coating	Glass mat with non-asphaltic coating	Glass mat with non-asphaltic coating
Flexural Strength ¹ , parallel, lbs. min.	40	80	100
Flute Spanability ²	2-5/8"	5"	8"
Permeance ³ , perms	50	35	32
"R" Value ⁴	.28	.56	.67
Linear Variation with Change in Temp., in/in °F	8.5x10 ⁻⁶	8.5x10 ⁻⁶	8.5x10 ⁻⁶
Linear Variation with Change in Moisture, in/in %RH	6.25x10 ⁻⁶	6.25x10 ⁻⁶	6.25x10 ⁻⁶
Water Absorption ⁵ , % max	10.0	10.0	10.0
Compression Strength, psi nominal	500 - 900	500 - 900	500 - 900
Surface Water Absorption ⁵ , grams, nominal	<2.0	<2.0	<2.0
Flame Spread, Smoke Developed (ASTM E 84)	0/0	0/0	0/0
UL Classification	UL 1256, ULC S-126, UL Class A (UL 790), ULC S-107	UL 1256, ULC S-126, UL Class A (UL 790), ULC S-107	UL 1256, ULC S-126, UL Classified "P" assemblies, ULC Classified "R" assemblies, ULC S-101, Class A (UL 790), ULC S-107
FM Approvals <i>see Roof Nav for wind uplifts, www.roofnav.com</i>	FM CLASS 1 (FM 4450)	FM Class 1 (FM 4450)	FM Class 1 (FM 4450)
Mold Resistance ⁶	Mold resistant	Mold resistant	Mold resistant
Bending Radius	5'	8'	12'

DensDeck DuraGuard® Roof Boards

Properties	1/4"	1/2"	5/8"
Thickness, nominal	1/4" + 1/16"	1/2" ± 1/32"	5/8" ± 1/32"
Width, standard	4' ± 1/8"	4' ± 1/8"	4' ± 1/8"
Length, standard	4' and 8' ± 1/4"	4' and 8' ± 1/4"	4' and 8' ± 1/4"
Weight, lbs./sq. ft., nominal	1.5	2.0	2.5
Surfacing Treatment to one side	Glass mat Durable, low perm coating	Glass mat Durable, low perm coating	Glass mat Durable, low perm coating
Flexural Strength ¹ , parallel, lbs. min.	40	80	100
Flute Spanability ²	2-5/8"	5"	8"
Permeance ³ , perms	<2	<2	<2
"R" Value ⁴	.28	.56	.67
Linear Variation with Change in Temp., in/in °F	8.5x10 ⁻⁶	8.5x10 ⁻⁶	8.5x10 ⁻⁶
Linear Variation with Change in Moisture, in/in %RH	6.25x10 ⁻⁶	6.25x10 ⁻⁶	6.25x10 ⁻⁶
Water Absorption ⁵ , % max	10.0	10.0	10.0
Compression Strength, psi nominal	1500	500 - 900	500 - 900
Surface Water Absorption ⁵ , grams, nominal	< 1.0	< 1.0	< 1.0
Flame Spread, Smoke Developed (ASTM E 84)	15/0	15/0	15/0
UL Classification	UL 1256, ULC S-126, UL Class A (UL 790), ULC S-107	UL 1256, ULC S-126, UL Class A (UL 790), ULC S-107	UL 1256, ULC S-126, Class A (UL 790), ULC S-107
FM Approvals <i>see Roof Nav for wind uplifts, www.roofnav.com</i>	FM CLASS 1 (FM 4450)	FM Class 1 (FM 4450)	FM Class 1 (FM 4450)
Mold Resistance ⁶	Mold resistant	Mold resistant	Mold resistant
Bending Radius	8'	12'	16'

1. Tested in accordance with ASTM C 473.

2. Tested in accordance with ASTM E 661 (400 lb. conc. load only for 1/2" and 5/8").

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

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

5. ASTM C 1177 minimums.

6. When tested, as manufactured in accordance with ASTM D 3273.

Roof System Application Recommendations

Roofing System	DensDeck® Roof Boards	DensDeck Prime® Roof Boards	DensDeck DuraGuard® Roof Boards
Single Ply Mech Attached	Recommended , has all the properties needed to perform well and maintains long term fire performance*	Acceptable , as an alternative to DensDeck roof boards and maintains long term fire protection	Not recommended , may create a “double vapor retarder” situation
Single Ply Adhered (solvent)	Acceptable , may require more adhesive and may result in uneven drying	Recommended , controlled absorption and breathable surface resists adhesive blisters	Acceptable , but certain adhesives may not dry quickly and may cause solvent vapor blisters
Single Ply Adhered (water based)	Acceptable , excess adhesive use and absorption may cause uneven drying	Recommended , controlled absorption and ability to dry to the inside	Acceptable , adhesives may take longer to dry through the low perm coating
Mod Bit Torched	Acceptable , but the glass facer may carbonize and turn to a powder, creating a bond breaker	Recommended , works very well without having to field prime***	Acceptable , has been used successfully; coating may blister under extended direct flame
Mod Bit Cold	Acceptable , field primer may be required to control the absorption***	Recommended , controlled absorption and drying of mastic	Acceptable , solvents in mastic may take longer to dry through the low perm coating
Mod Bit Mopped	Acceptable , has a long history, can work but may require field priming and some application temperature guidelines may have to be followed	Recommended , some application temperature guidelines and procedures may have to be followed	Acceptable , the gypsum is isolated from the hot asphalt by the low perm coating minimizing the effects of substrate frothing**
BUR Ply Sheets	Acceptable , has a long history of performing well by following application temperature guidelines	Recommended , can work well by following application temperature guidelines	Acceptable , the gypsum is isolated from the hot asphalt by the low perm coating minimizing the effects of substrate frothing**
BUR Hybrid	Acceptable , has a long history of performing well by following application temperature guidelines	Recommended , can work well by following application temperature guidelines	Acceptable , the gypsum is isolated from the hot asphalt by the low perm coating minimizing the effects of substrate frothing**
Self Adhered	Acceptable , must be field primed prior to installation of membrane	Acceptable , field priming recommended prior to installation of membrane	Recommended , high strength surface and integral coating, does not require field priming***
Spray Foam	Acceptable , can work well but excess absorption of foam may be an issue; may require field priming	Recommended , dark surface increases foam yield and controlled absorption	Acceptable , darker surface increases foam yield
Thermal Barrier	Recommended , has a long history, if bonded vapor retarder is installed choose DensDeck Prime or DensDeck DuraGuard roof board for self adhesive	Acceptable , works well if bonded vapor retarder is used	Acceptable , works well if bonded vapor retarder is used; do not use if vapor retarder is not desired
Fluid Applied	Acceptable , works well but may absorb more of coating, rough surface “grabs” coating for high applied coating peel strength	Acceptable , works well and controls absorption of fluid applied applied coating	Recommended , controlled absorption and high strength surface

* NRCA and MRCA Fire Testing of Membrane Roof Systems, Tech Bulletin January 2006

** Acceptable for adhering to insulation by ribbon or spot mopping or for DensDeck DuraGuard roof board in mechanically attached systems.

*** Confirm with membrane manufacturer

System Manufacturers Approvals/Warranties

Check the current *FM Approval Guide* for FM Approvals and UL Roofing Materials and Systems Directory for further joint listings from these roofing systems manufacturers.

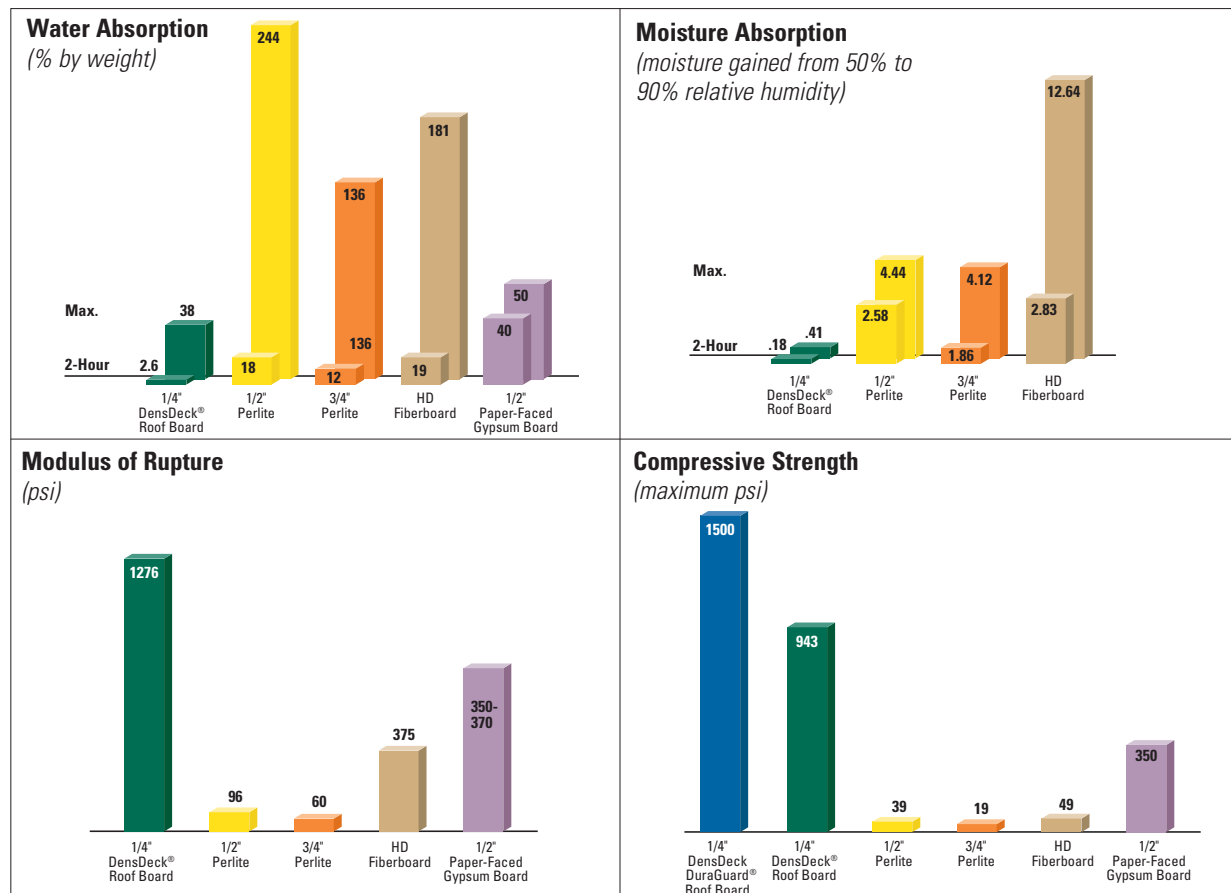
AFM Corp.
Atlas Roofing Corp.
BASF Corp.
Bitec Inc.
Black Warrior Roofing
Bluestone Inc.
Bondcote Corp.
Burkline Roofing Systems
Carlisle SynTec Inc.
Celotex Corp.
Centimark Corp.
Certainteed Corp.

Commercial Innovations
Conklin Co. Inc.
Cooley Roofing Systems
Custom Seal Inc.
Duro-Last Roofing Inc.
Ecology Roof Systems
Environmental Roofing Systems
ER Systems
E S Products Inc.
Eurocoats
Fields Corp.
Firestone Building Products Co.
Flex Membrane International
Flexible Products
GAF Materials Corp.
Garland Co. Inc.
GenFlex Roofing Systems
GS Roofing Products
Haartz-Mason Inc.
Henry Co.

Hydro Stop Inc.
Hyload Inc.
IB Roof Systems
Imperial Adhesives
Intec/Permaglas
Johns Manville
Koppers Industries Inc.
Lexcan Industrial Supply Ltd.
Liquid Plastic
Magnum Systems
Malarkey Roofing Co.
Monsey Bakor
Mule-Hide Products
NOVA Chemicals Inc.
Performance Roof Systems
Pittsburgh Corning Corp.
Polythane Systems Inc.
Polyglass USA
Republic Powdered Metals
Sarnafil Inc.

Seaman Corp. Building Systems
Siplast Inc.
Soprema Inc.
SPI Inc.
Stafast Roofing Products
Stevens Roofing Systems
Styro Chem Int. Inc.
2001 Inc.
Tamko Roofing
Tenneco
The Garland Co.
Thermo Mfg. Co.
Tremco Inc.
Tri Ply
US Intec Inc.
US Ply
Versico Inc.
WP Hickman Systems Inc.

Competitive Roof Substrate Comparisons*



*Actual test results from stock materials. Average or minimum values may differ.

Flute Spanability (ASTM E 661)

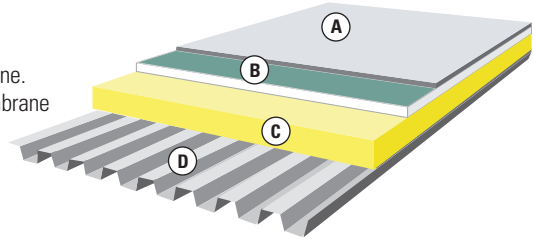
Thickness	Span
1/4"	2-5/8"
1/2"	5"
5/8"	8"



Applications

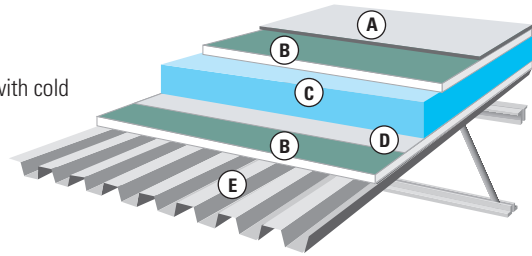
Cover Board – DensDeck Prime® roof board preferred for adhered system.

- A. Membrane
- B. Minimum 1/4" DensDeck roof boards placed directly below the roofing membrane.
In this application the product provides the primary support for the roofing membrane and protects insulation. DensDeck roof board may help achieve a class A, B, or C fire rating in conjunction with various membranes.
- C. Rigid Foam Insulation
- D. Structural Deck



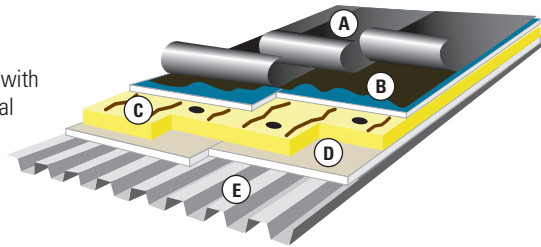
Substrate for Vapor Retarders – DensDeck Prime roof board preferred.

- A. Membrane
- B. Minimum 1/4" DensDeck roof boards fastened to deck. Membrane attached with cold mastics, hot asphalt or adhesives.
- C. Rigid Foam Insulation
- D. Vapor Retarder
- E. Metal Deck



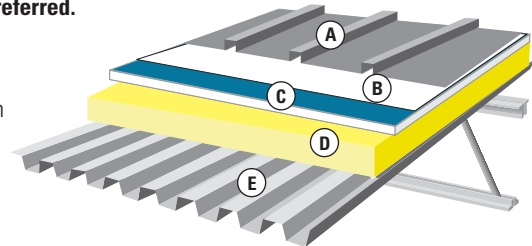
Ribbon/Spot Mopping – DensDeck DuraGuard™ roof board preferred.

- A. Asphaltic Membrane
- B. Minimum 1/4" DensDeck roof boards may be mechanically fastened, bonded with mastic or adhesives or partially hot mopped to foam insulation. Asphalt or coal tar built up roofing systems may then be mopped directly to the DensDeck roof boards. Ribbon or spot mopping is the recommended application.
- C. Rigid Insulation
- D. Minimum 1/4" DensDeck roof board
- E. Structural Deck



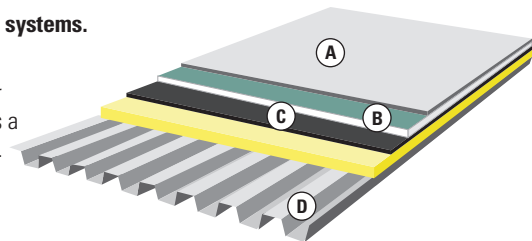
Metal or Tile Roof Thermal Barrier – DensDeck DuraGuard roof board preferred.

- A. Standing Seam Metal Roof
- B. Secondary Water Barrier
- C. Minimum 1/4" DensDeck roof boards provides a thermal barrier in conjunction with a standing-seam metal or tile roofing system while providing support for hail resistance and noise reduction.
- D. Insulation (optional)
- E. Metal Deck



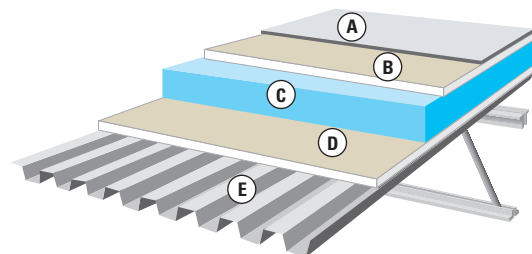
Roof Recover Board – DensDeck Prime roof board preferred for adhered systems.

- A. Membrane (various)
- B. Minimum 1/4" DensDeck roof boards utilized as a roof recover board. Recover boards are placed over the existing membrane surface where they function as a separator and support layer between the old roof and a new roofing membrane.
- C. Existing Roof Assembly
- D. Structural Deck



Thermal Barrier

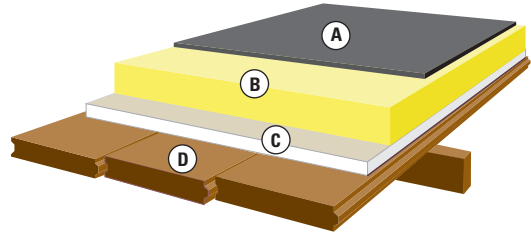
- A. Membrane
- B. Minimum 1/4" DensDeck roof board (optional)
- C. Polystyrene Insulation
- D. Minimum 1/4" DensDeck, DensDeck Prime or DensDeck DuraGuard roof board provide a thermal barrier installed directly to metal deck for both expanded and extruded polystyrene insulation.
- E. Metal Deck



Applications

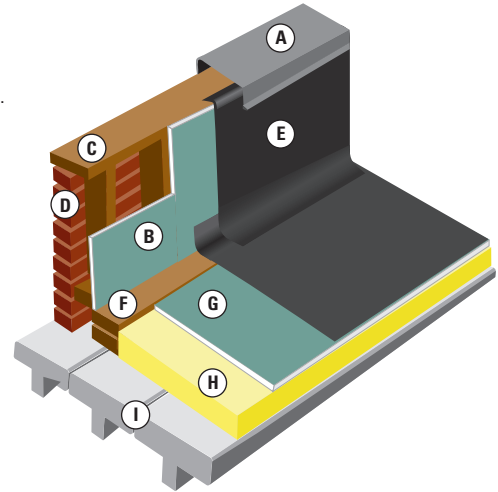
Fire Barrier Underlayment

- A. Classified Membrane
- B. Rigid Foam Insulation (optional)
- C. Minimum 1/4" DensDeck or DensDeck Prime roof board used as a barrier board underlayment below optional rigid foam insulation on a combustible deck (wood) to achieve a Class A, B or C fire rating.
- D. Wood Deck



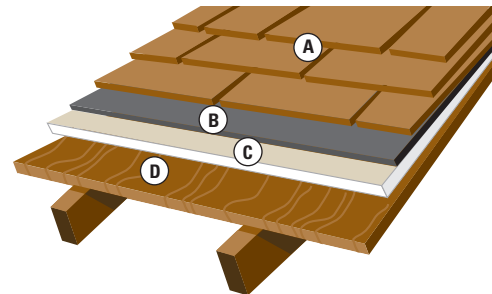
Parapet Wall Substrate – DensDeck Prime roof board preferred.

- A. Wall Cap
- B. Minimum 1/2" DensDeck Prime roof board fastened 8" o.c. to wood or metal framing. (16" o.c. = 1/2"; 24" o.c. = 5/8")
- C. Parapet Wall Framing
- D. Exterior Finish
- E. Adhered Flashing Membrane
- F. Nailers
- G. DensDeck or DensDeck Prime roof board
- H. Rigid Foam Insulation
- I. Structural Deck



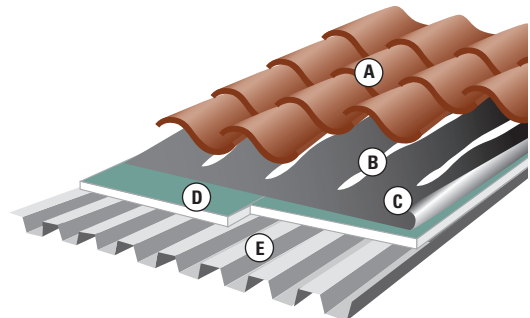
Wood Shake/Metal Shingle Underlayment

- A. Wood Shake/Shingles
- B. Organic Felt
- C. Minimum 1/4" DensDeck roof board as a wood shake/shingle underlayment on a combustible deck assembly to achieve a UL Class A fire rating.
- D. Combustible Deck



Foam Adhered Tile

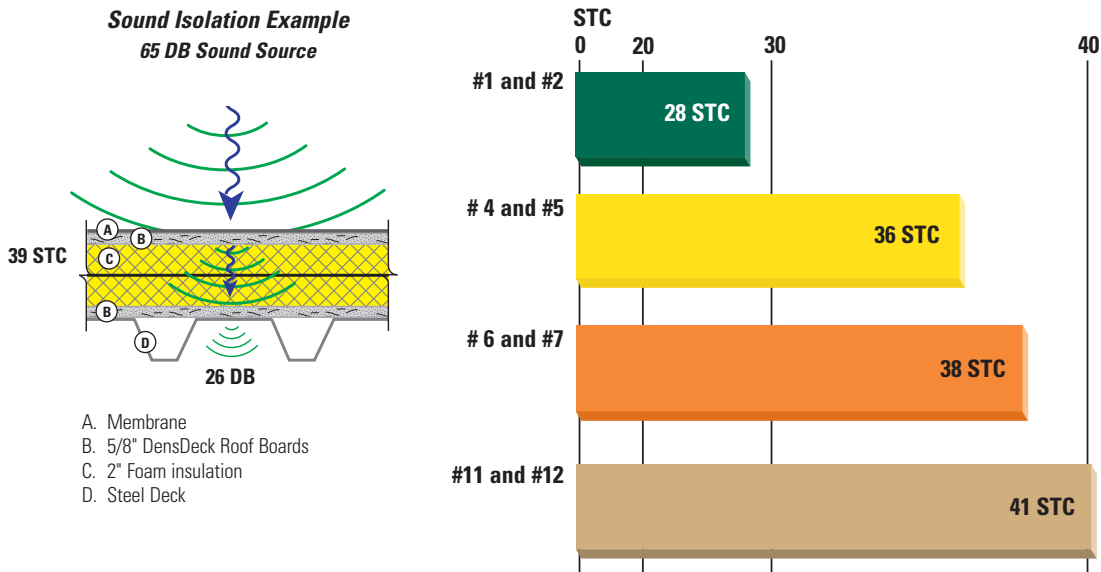
- A. Cement or Clay Tile
- B. Foam
- C. Self-Adhesive Secondary Water Barrier
- D. DensDeck DuraGuard
- E. Steel Deck



Sound Control

To block unwanted entry of sound through a roof assembly, multiple layers of DensDeck will efficiently keep outside sound outside. Whether around airports, in urban environments or to keep equipment noise from disrupting the occupants of a building, DensDeck can effectively contribute to sound isolation. The test results in the following charts allows the designer to select the appropriate assembly.

Sound Transmission Class (STC), measured in decibels, is the weighted average of the drop in sound intensity measured in a range of frequencies from 80 to 5,000 Hz across a barrier. The sound level outside is reduced by the STC number and if the result is close to or below the background, interior sound level, it will not be heard or will not be disruptive.



Sound Testing of Steel Deck Roof Assemblies Tested per ASTM E-90, Rated per E-413 for STC

	STC	Underlayment	Insulation	Coverboard	Membrane	System Attachment
1	28	None	6" ISO	None	None	Mechanical*
2	28	None	3" ISO	None	None	Mechanical
3	29-30	None	6" EPS (Extruded)	None	None	Mechanical
4	36	5/8" DensDeck Roof Board	3" ISO	1/2" DensDeck Prime Roof Board	EPDM	Mechanical/EPDM-Adh.
5	36	5/8" DensDeck Roof Board	3" ISO	1/4" DensDeck Prime Roof Board	EPDM	Mechanical/EPDM-Adh.
6	38	5/8" DensDeck Roof Board	3" ISO	1/4" DensDeck Prime Roof Board	EPDM	All components adhered**
7	38	5/8" DensDeck Roof Board	8" ISO	5/8" DensDeck Prime Roof Board	None	Mechanical
8	39	5/8" DensDeck Roof Board	8" ISO	5/8" DensDeck Prime Roof Board	None	All components
9	39	5/8" DensDeck Roof Board	4" ISO	5/8" DensDeck Prime Roof Board	SBS Mod Bit	Mechanical/ Mod Bit-Torched
10	41	5/8" DensDeck Roof Board	6" ISO	Two: 5/8" DensDeck Roof Board 5/8" DensDeck Prime Roof Board	None	Mechanical
11	41	5/8" DensDeck Roof Board	6" ISO 1/2" HD Fiberboard	One: 5/8" DensDeck Prime Roof Board	None	Mechanical
12	41	5/8" DensDeck Roof Board	6" EPS (Extruded)	Two: 5/8" DensDeck Roof Board 5/8" DensDeck Prime Roof Board	None	Mechanical

*Typically 9 fasteners: 3" round steel plates and screws

**Olybond 500 Adhesive: ISO down/EPDM Adhesive for Membrane

Long-Term Fire Protection

Long-term fire protection of roofing systems is a key concern of the design authority, code officials and building owner. DensDeck roof boards will maintain fire performance characteristics for the life of the roof. DensDeck roof boards can enhance the fire performance of a roofing assembly and can overcome limitations of the membrane or insulation.

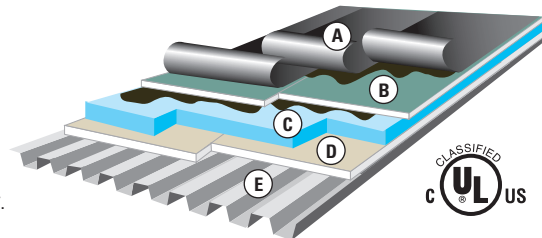
When using a low-slope membrane roof system, designers should include in their designs a suitable cover board that is consistent with an appropriate listing or approval from a code-approved testing agency. This recommendation is consistent with the guidelines already contained in *The NCRA Roofing and Waterproofing Manual, Fifth Edition*. Furthermore, for mechanically attached single-ply membrane roof systems, designers of newly installed roof systems are now recommended to include a noncombustible cover board that is consistent with an appropriate listing or approval from a code-accepted testing agency. Examples of noncombustible cover boards include **glass-mat faced gypsum boards and gypsum roof boards**.*

*Reference January 2006 NRCA/MRCA Technical Bulletin

UL Assemblies

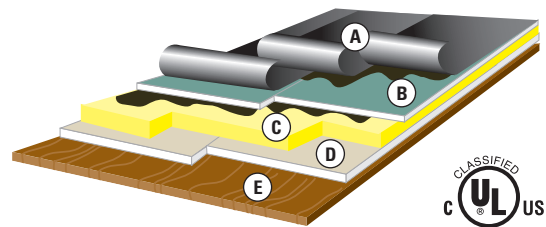
UL 1256 Fire Barrier Board Classification

- A. UL Classified Roof Covering
- B. Min. 1/4" DensDeck Roof Board Cover Board (optional)
- C. UL Classified (EPS) Insulation
- D. Minimum 1/4" DensDeck roof board serving as an insulation thermal barrier underlayment and an acceptable code alternative to a thermal barrier.
- E. Classified Steel Deck



UL 790 Class A Barrier Board on Combustible Decking

- A. UL Classified Roof Covering
- B. Min. 1/4" DensDeck Roof Board Cover Board (optional)
- C. UL Classified Insulation (optional)
- D. Minimum 1/4" DensDeck roof board serving as an insulation thermal barrier overlayment with all joints staggered a min. of 6" from the plywood joints.
- E. Classified Wood Deck



UL Notes:

Note 1: Classification (A, B or C) and maximum incline will be the same as that of the Classified Roofing System (TGFU) which otherwise is limited to use over noncombustible deck.

Note 2: The use of the DensDeck barrier board over the insulation permits the use of any Classified Roofing System (TGFU) which otherwise is limited to use over noncombustible deck.

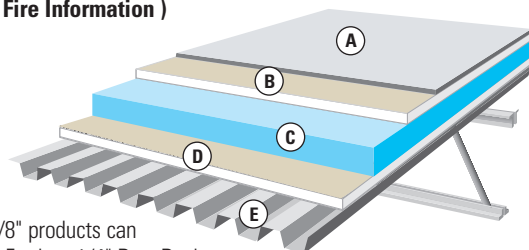
Note 3: The use of the DensDeck barrier board directly over the combustible deck permits the use of any classified Roofing System (TGFU) which otherwise is limited to use over noncombustible deck. When used, insulation must consist of one of the types specified.

The use of DensDeck roof board as an underlayment achieves a noncombustible classification on a combustible deck.

Factory Mutual Approvals

Typical Configuration of DensDeck Roof Boards (Factory Mutual Class 1 Fire Information)

- A. Membrane (various)
- B. Minimum 1/4" DensDeck Roof Boards Overlayment
- C. Rigid Foam Insulation (including EPS)
- D. Minimum 1/4" DensDeck Roof Boards Underlayment
- E. Metal Deck



Due to the superior fire resistance of DensDeck roof boards, the 1/4", 1/2" and 5/8" products can meet the calorimeter test requirements of Factory Mutual **with EPS insulation**. Further, 1/4" DensDeck roof boards are the only 1/4" gypsum-based products that meet the thermal barrier underlayment requirements in certain Class 1 assemblies of this stringent fire test.

See the current Factory Mutual Approval Guide for descriptions of numerous approved systems and assemblies incorporating DensDeck roof board for use in approved combinations.

DensDeck roof boards are typically utilized (see sketch) in these constructions as an insulation underlayment. In some assemblies it will be used as an insulation overlayment (1/4", 1/2" or 5/8"). In other assemblies it will serve both of these roles in the same system.



Wind Uplift Information

Wind uplift resistance of roofing assemblies is achieved by fastening and/or adhering the roofing components to the structural deck. Uplift resistance testing may be conducted by several independent laboratories, in accordance with FM 4470 or ANSI/UL 1897 test procedures. The test results show the ultimate (not design) pounds per square foot (PSF) uplift resistance which has been achieved.

It is the responsibility of the roofing design authority to comply with code requirements and follow the guidelines in ASCE-7 or FM 1-28 and 1-29 to establish the appropriate design uplift resistance and safety factor. In these documents, several factors are considered to determine the design pressure required, including but not limited to, height of the building, ground roughness, exposure and importance factor. Once the design pressure is determined, the roofing assembly which meets this pressure, with the appropriate safety factor, is selected by the design authority.

Static Uplift Testing: Minimum 1/4" DuraGuard – Foam Adhered Roof Tile to Membrane (All 22 gauge steel deck)

In response to a growing construction practice of adhesive application of roof tile on commercial roofs, G-P Gypsum conducted a series of critical static uplift testing in simulated roof tile assembly constructions incorporating our minimum 1/4" DensDeck DuraGuard® roof board. Those tests results and partial construction details are summarized in the below table:

Thermal Barrier: Substrate	Self-Adhered, Water-Shedding Underlayment	Foam Adhesive	Tile type	Average Ultimate Load (F bar, lbf).*	Attachment Resistant Expressed As a Moment (Mf) (ft-lbf)**
			Cement		
Minimum 1/4" DuraGuard mechanically attached	Protecto Wrap Rainproof 40	PolyFoam	Monier (S Type, High Profile)	149.8	81.3
Min. 1/4" DuraGuard	Protecto Wrap (R-40)	PolyFoam	Monier, Medium Profile	139.6	75.7
Min. 1/4" DuraGuard	Protecto Wrap (R-40)	PolyFoam	Monier, Medium Profile	172.2	94.3
Min. 1/4" DuraGuard	PolyGlass Polystick TU Plus	PolyFoam	Monier (S Type, High Profile)	166.7	90.9
Min. 1/4" DuraGuard	PolyGlass Polystick TU Plus	PolyFoam	Monier, Medium Profile	131.2	70.5
Min. 1/4" DuraGuard	PolyGlass Polystick TU Plus	PolyFoam	Monier, Low Flat Profile	205.8	113.7
Min. 1/4" DuraGuard	Protecto Wrap (R-40) Rainproof 40	PolyFoam	Hanson S Type (High Profile)	142.4	76.1
Min. 1/4" DuraGuard	Protecto Wrap (R-40)	PolyFoam	Hanson, Medium Profile	139.6	70.0
			Clay Tile		
Minimum 1/4" DuraGuard	Protecto Wrap (R-40)	PolyFoam	Altusa, Clay Tile S Type	110.1	66.9

*The maximum resistance load achieved expressed as an ultimate load.

** The attachment resistance expressed as a moment as provided by the adhesive bond between the tile and underlayment.

Elevated UL Wind Uplift Ratings with DensDeck® Roof Board Hot Mopped over Steel Decks

Uplift Resistance: 150 psf

Deck: 22 MSG (minimum)
 Insulation (optional): Any type, 2" maximum
 Barrier Board: DensDeck roof board, 5/8" thick minimum
 Fasteners: No. 15 steel screws (or equivalent) with 3" square No. 26 MSG formed galvanized steel plates. One fastener every 2 sq. ft.
 Insulation: Polyisocyanurate, minimum 1-1/2" thick, hot-mopped
 Barrier Board: DensDeck roof board, 1/2" thick minimum, hot-mopped
 Membrane: Hot-mopped ply/cap asphalt or modified bitumen membrane systems

Uplift Resistance: 190 psf

Deck: 22 MSG (minimum)
 Insulation: Polyisocyanurate, minimum 1" thick, loose laid
 Barrier Board: DensDeck roof board, 5/8" thick minimum, hot-mopped
 Fasteners: No. 15 steel screw (or equivalent) with 3" square No. 26 MSG formed galvanized steel plates. One fastener every 2 sq. ft.
 Membrane: Hot-mopped ply/cap asphalt or modified bitumen membrane systems

Uplift Resistance: 245 psf

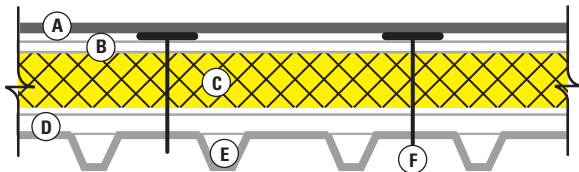
Deck: 22 MSG (minimum)
 Insulation: Polyisocyanurate, minimum 1" thick, loose laid
 Barrier Board: DensDeck roof board, 5/8" thick minimum, hot-mopped
 Fasteners: No. 15 steel screw (or equivalent) with 3" square No. 26 MSG formed galvanized steel plates. One fastener every 1.6 sq. ft.
 Membrane: Hot-mopped ply/cap asphalt or modified bitumen membrane systems

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 and E 108 (fire), E 90 (sound), E 136 and E 413 (non-combustibility), E 84 (flame spread), or as tested at FM Approvals.

Pressures Achieved by G-P Gypsum Testing

(Check membrane manufacturers' listing including FM and UL for hundreds of additional uplift assembly ratings with DensDeck products².)

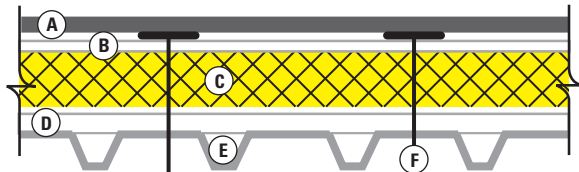
System Type and Description	Wind-Uplift PSF	Product ¹	# of fasteners ² (4' x 8' board)
Fully Adhered EPDM and Thermoplastic Membranes	FM 60	1/4" DensDeck	12
	FM 60	1/4" DensDeck Prime	12
	FM 60	1/2" DensDeck	10
	FM 60	1/2" DensDeck Prime	10
	FM 60	5/8" DensDeck	8
	FM 60	5/8" DensDeck Prime	8
	FM 90	1/4" DensDeck	15
	FM 90	1/4" DensDeck Prime	12
	FM 90	1/2" DensDeck	15
	FM 90	1/2" DensDeck Prime	12
	FM 90	5/8" DensDeck	8
	FM 90	5/8" DensDeck Prime	8
	FM 180*	5/8" DensDeck Prime	24
	FM 285**	1/2" DensDeck Prime	32



- A. Single-ply Membrane
- B. Min. 1/4" DensDeck Roof Board
- C. Insulation
- D. Min. 1/2" DensDeck Roof Board (optional)
- E. Classified Steel Deck
- F. Fastener (see chart)

Single-ply and EPDM will include both reinforced and nonreinforced.

Modified Bitumen/BUR



- A. BUR or Mod Bit Membrane
- B. Min. 1/4" DensDeck Roof Board
- C. Insulation
- D. Min. 1/2" DensDeck Roof Board (optional)
- E. Classified Steel Deck
- F. Fastener (see chart)

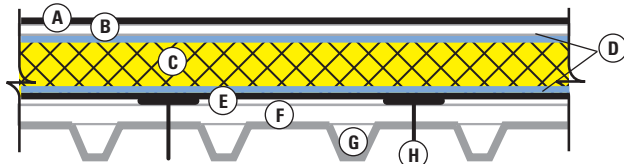
Modified bitumen without base sheet. Mod Bit is torched or set in hot asphalt. BUR is minimum 3-ply.

* Carlisle Reinforced 45 mil TPO was used to achieve an FM 180 rating.
** Carlisle FleeceBack was used to achieve an FM 285 rating.

FM 60	1/4" DensDeck	12
FM 60	1/4" DensDeck Prime	8
FM 60	1/2" DensDeck	9
FM 60	1/2" DensDeck Prime	8
FM 60	5/8" DensDeck	8
FM 60	5/8" DensDeck Prime	8
FM 90	1/4" DensDeck	12
FM 90	1/4" DensDeck Prime	8
FM 90	1/2" DensDeck	9
FM 90	1/2" DensDeck Prime	8
FM 90	5/8" DensDeck	8
FM-135*	1/2" DensDeck Prime	20
FM-225**	1/2" DensDeck Prime	24
FM-315**	1/2" DensDeck Prime	32
UL ³ 150 PSF	5/8" DensDeck or DD Prime	16
UL ³ 190 PSF	5/8" DensDeck or DD Prime	16
UL ³ 240 PSF	5/8" DensDeck or DD Prime	20

* Siplast SBS Mod Bit torched or set in hot asphalt was used to achieve the FM 135 rating.
** Three plies of glass felts were set in hot asphalt to achieve the FM 225 and 315 ratings.

Vapor Retarder Substrate

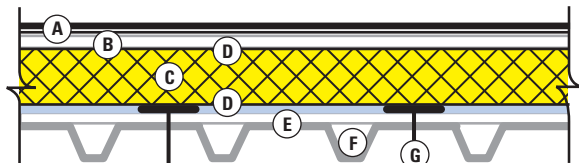


- A. Any Rated Adhered Membrane
- B. Min. 1/4" DensDeck Roof Board (optional)
- C. Insulation (optional)
- D. Adhesive
- E. Vapor Retarder
- F. Min. 5/8" DensDeck Roof Board
- G. Classified Steel Deck
- H. Fastener (see chart)

Components above vapor retarder bonded with cold mastics, hot asphalt, adhesives or Insta-Stick.

FM 60	5/8" DensDeck	8
FM 60	5/8" DensDeck Prime	8
FM 90	5/8" DensDeck	8
FM 90	5/8" DensDeck Prime	8

EPDM, BUR or Mod Bit with Insulation Adhered with Hot Asphalt



- A. EPDM, BUR or Mod Bit Membrane
- B. Min. 1/4" DensDeck Roof Board (optional)
- C. Rigid Foam Insulation
- D. Asphalt Adhesive
- E. Min. 1/2" DensDeck Roof Board
- F. Classified Steel Deck
- G. Fastener (see chart)

FM 60 (EPDM)	1/2" or 5/8" DensDeck or DensDeck Prime	8
DensDeck Roof Board (1/2" or 5/8") and fully adhered single-ply membranes FM-rated 60 PSF with insulation attached with asphalt adhesive.		
FM 90 (BUR or Mod Bit)	1/2" or 5/8" DensDeck or DensDeck Prime	8

DensDeck Roof Board (1/2" or 5/8") and BUR or modified bitumen membranes FM-rated 90 PSF with insulation attached with asphalt adhesive.

¹DensDeck DuraGuard fastener density where applicable to the membrane system type is identical to DD Prime up to FM 90 PSF.

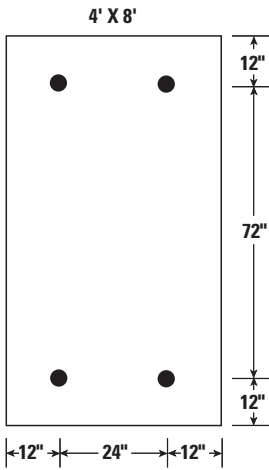
²Fastener rates shown are for the field of the roof. Additional fasteners are required for perimeter and corner areas and require either additional designer authority calculations or uplift testing. For further information, particularly about DensDeck wind uplift issues, please contact our Roofing Specialist on the Technical Hotline at 1-800-225-6119.

³Tested at Underwriters Laboratories. Refer to details elsewhere.

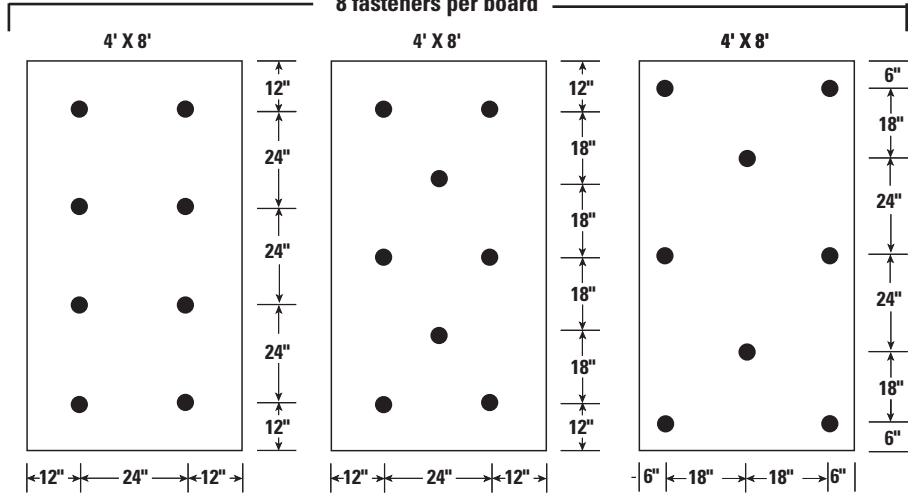
GP Fastener Patterns Tested

Other patterns are available from system manufacturers or testing agencies.

4 fasteners per board



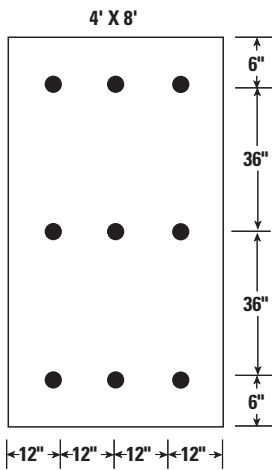
8 fasteners per board



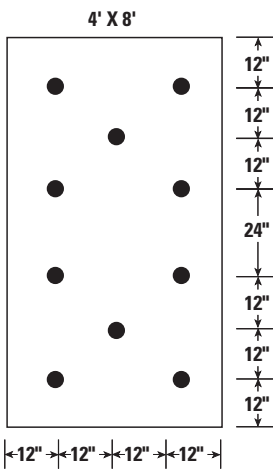
Note: Preliminary insulation or mechanically attached roof covering requires a minimum of 4 fasteners per 4' x 8' board in FM assemblies.

1/4" and 1/2" DensDeck Prime Roof Board (Mod Bit and BUR)
– Optional –

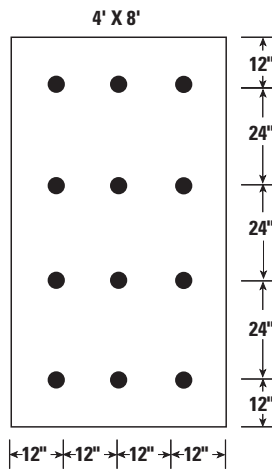
9 fasteners per board



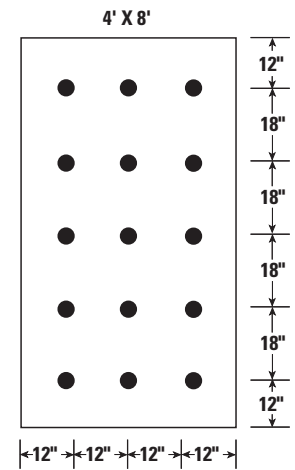
10 fasteners per board



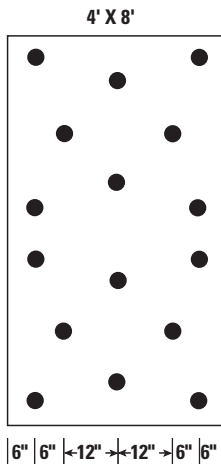
12 fasteners per board



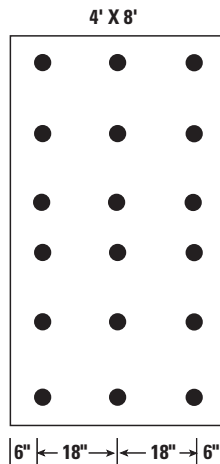
15 fasteners per board



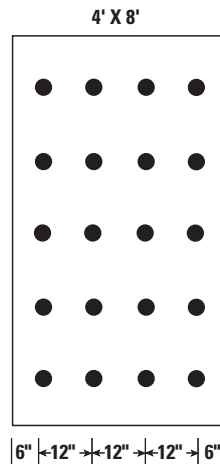
16 fasteners per board



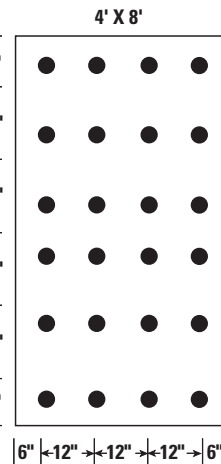
18 fasteners per board



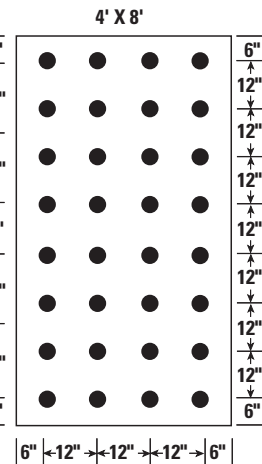
20 fasteners per board



24 fasteners per board



32 fasteners per board



Architectural Specifications

Part 1 – General

1.0 Description

- A. Work in this section includes, but is not limited to:
1. Thermal barrier.
 2. Roofing protection board.
 3. Roof insulation protection board.
 4. Re-cover board.
- B. Related work specified elsewhere:
1. Roof insulation.
 2. Roof membrane.

1.1 Submittals

- A. Product data: Submit manufacturer's descriptive literature indicating material composition, thickness, sizes and fire resistance.
- B. Shop drawings: Submit shop drawings indicating fastener and adhesive patterns for FM wind uplift resistance specified.
- C. Certification: Submit manufacturer's written certification that product meets specified fire-resistance requirements.

1.2 Delivery, Storage and Handling

- A. Deliver materials to the jobsite with manufacturer's identification intact. The protective plastic shipping covers used to wrap gypsum panel products for rail shipment are intended to provide temporary protection from moisture exposure during transit only and are not intended to provide protection during storage after delivery. Remove the plastic shipping covers immediately upon receipt of delivery. DensDeck roof boards 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.**
- B. Provide other suitable, breathable weather protection for storage to keep DensDeck products dry. Outside storage must be off the ground and protected by a breathable water-proof covering. Provide means for air circulation around and under stored bundles of DensDeck roof boards. DensDeck roof boards must be roofed the same day as installed. DensDeck roof boards must be kept dry before, during and after application. If boards have been exposed to elevated job site moisture, allow boards to dry before using.

Part 2 – Products

2.0 Gypsum Roof Boards

- A. **DensDeck® Roof Boards** –
1. Acceptable product: G-P Gypsum Corporation 1/4" DensDeck Roof Board, 1/2" DensDeck Roof Board and 5/8" DensDeck Type X Roof Board
 2. Composition: Nonstructural, glass mat faced gypsum panel with water-resistant core.
 3. Size: Nominal 4' x 8'. Edges: Square.
 4. Thickness: 1/4" and 1/2" DensDeck Roof Board and 5/8" DensDeck Roof Board (Type X).
 5. Fire Resistance:
 - a. Flame spread 0, smoke developed 0, when tested in accordance with ASTM E 84. Noncombustible when tested in accordance with ASTM E 136.
 - b. 5/8" DensDeck Type X Roof Board: UL-classified Type DD when tested in accordance with ASTM E 119.
 - c. Code alternate to 15 minute thermal barrier as tested to UL 1256.

B. **DensDeck Prime® Roof Boards** –

1. Acceptable product: G-P Gypsum Corporation 1/4" DensDeck Prime Roof Board, 1/2" DensDeck Prime Roof Board and 5/8" DensDeck Prime Roof Board (Type X).
2. Composition: Glass mat faced gypsum with nonasphaltic, highly filled proprietary heat-cured coating on one side.
3. Size: Nominal 4' x 8', 4' x 4'. Edges: Square.
4. Thickness: 1/4" and 1/2" DensDeck Prime Roof Board and 5/8" DensDeck Prime Roof Board (Type X).
5. Fire Resistance:
 - a. Flame spread 0, smoke developed 0, when tested in accordance with ASTM E 84. Noncombustible when tested in accordance with ASTM E 136.
 - b. 5/8" DensDeck Prime Roof Board: (Type X) UL-classified.
 - c. Code alternate to 15 minute thermal barrier as tested to UL 1256.

C. **DensDeck DuraGuard® Roof Boards** –

1. Acceptable product: G-P Gypsum Corporation 1/4" DensDeck DuraGuard Roof Board, 1/2" DensDeck DuraGuard Roof Board and 5/8" DensDeck DuraGuard Roof Board (Type X).
2. Composition: Glass mat faced gypsum panel with blue low-perm, durable, integrated-coating on one side and coated glass mat on the back.

3. Size: Nominal 4' x 8', special order 4' x 4'. Edges: Square.
4. Thickness: 1/4" and 1/2" DensDeck DuraGuard and 5/8" DensDeck DuraGuard.
5. Fire Resistance:
 - a. Flame spread 15, smoke developed 0, when tested in accordance with ASTM E 84. Noncombustible when tested in accordance with ASTM E 136.
 - b. Class A when tested to UL 790. (UL classified)
 - c. Code alternate to 15 minute thermal barrier as tested to UL 1256.

2.1 Miscellaneous Materials

- A. FM or UL approved flat bottom plates and fasteners: Provide size and type in accordance with FM or UL requirements and roof membrane manufacturer's written recommendations.
- B. Adhesives: As recommended by roof system manufacturer or as required by tested assembly.

Part 3 – Execution

3.0 General

- A. Provide DensDeck roof boards where indicated on drawings using fastening system specified.
- B. Use maximum lengths possible to minimize number of joints. Support edge joints with deck ribs. Stagger end joints of adjacent lengths of DensDeck roof boards. Ends and edges are typically butted.
- C. Use appropriate corrosion-resistant fasteners.

3.1 Roof Board Installation

- A. Adhered or Mechanically attached: As recommended by roof system and/or adhesive manufacturer or as required by FM or UL guidelines for wind uplift resistance.

3.2 Parapet (Wall) Framing and Fastening

- A. Maximum parapet framing space for 1/2" DensDeck products is 16" o.c. Maximum framing for 5/8" DensDeck products is 24" o.c.
- B. Fasten a maximum 8" o.c. around the perimeter and 8" o.c. on framing members in the field of the panel.

Standards and Code Compliance

- DensDeck roof boards in 1/4", 1/2" and 5/8": ASTM C 1177. Also DensDeck, DensDeck Prime and DensDeck DuraGuard roof boards meet Factory Mutual 4450 criteria for Class 1 insulated steel roof decks.
- 5/8" DensDeck roof board (Type X) is a classified gypsum board by Underwriters Laboratories and can be used in many UL "P" and ULC "R" and S-101 assemblies.
- 1/4" DensDeck, DensDeck Prime and DuraGuard roof boards: UL 790 Class A listing as a barrier board overlayment and UL 1256 as a thermal barrier underlayment over steel decks.
- FM and UL tested for uplift resistance. See wind uplift information.
- Florida Building Code #1250.
- 1/4", 1/2" and 5/8" DensDeck, DensDeck Prime and DensDeck DuraGuard roof boards. Miami-Dade County, Florida NOA 04-1223.01.
- 1/4" DensDeck, DensDeck Prime and DensDeck DuraGuard roof boards as an overlayment qualify in FM Class 1 assemblies.

Limitations

- DensDeck roof boards are designed to act with a properly designed roof system following good roofing practices. The actual use of DensDeck roof boards as a roofing component is the responsibility of the roofing system's designing authority. G-P Gypsum does not offer roofing system design services.
- Conditions beyond the control of G-P Gypsum, such as weather conditions, dew, application temperatures and techniques, may cause adverse effects with adhered roofing systems. Always consult roofing system manufacturers for their specific instructions on applying their products to DensDeck roof boards.
- DensDeck roof board products may have temporary factory-applied packaging (plastic wrap) that must be removed upon receipt to prevent accumulation or entrapment of condensation or moisture which may cause application problems. Provide other suitable breathable weather protection for storage to keep DensDeck products dry.
- Panels must be kept dry before, during and after installation. Avoid moisture accumulation through entrapped condensation. Apply only as many DensDeck roof boards as can be covered by a roof membrane system in the same day.
- Board edges and ends should be butted in typical installations. However long, uninterrupted runs of 1/4" DensDeck Prime roof board may require slight gapping due to higher surface temperature gain.

- Accumulation of water due to leaks or condensation in or on DensDeck roof boards must be avoided during and after construction. Avoid overuse of non-vented, direct-fired heaters during winter months. Avoid application of DensDeck roof boards during rains, heavy fogs and any other conditions that may deposit moisture on the surface.
- The need for a separator sheet between the DensDeck roof boards and the roofing membrane must be determined by the roof membrane manufacturer or roofing systems designer.
- When applying solvent-based adhesives or primers, allow sufficient time for the solvent to flash off to avoid damage to roofing components.
- Maximum flute span is 2-5/8" for 1/4" DensDeck products; 5" for 1/2" DensDeck products; and 8" for 5/8" DensDeck Type X products.
- DensDeck, DensDeck Prime and DensDeck DuraGuard roof boards should not be subjected to abnormal or excessive loads or foot traffic such as on plaza decks or under steel wheeled equipment that may fracture or damage the panels. Provide suitable roofing system protection when required.
- 1/4" DensDeck products are not recommended for vertical framed parapet applications. Use 1/2" DensDeck products for 16" o.c. and 5/8" DensDeck products for 24" o.c. with fasteners spaced 8" o.c.
- Independent evaluations have demonstrated that hot mopping to DensDeck products is an acceptable method of bonding membranes. Assure product is dry prior to commencing installation of hot asphalt application.
 - When using DensDeck or DensDeck Prime roof boards, G-P Gypsum recommends maximum asphalt application temperatures for Type III asphalt of 425° to 450°F. Application temperatures above these recommended temperatures may adversely affect roof system performance. Consult and follow roofing system manufacturer's specifications for full mopping applications and temperature requirements.
 - Follow accepted roofing industry guidelines for full mopping applications such as EVT temperature guidelines, brooming and proper applications rates of asphalt.
 - For application temperatures in excess of 450°F and for mopping of type IV asphalt, ribbon or spot mopping or the installation of a perforated base sheet are acceptable methods of bonding asphalt in lieu of full mopping.
- For hot mopping asphalt or coal tar directly to DensDeck DuraGuard roof board, follow the manufacturer's recommended system application temperature guidelines and good roofing practices.
- DensDeck Prime roof board is the preferred substrate for torch application.* Assure product is dry prior to commencing installation of torch application.
 - Ensure proper torching technique.
 - Limit the heat to the DensDeck Prime roof board.
 - Maintain a majority of the torch flame directly on the roll.
 - When using DensDeck roof board in lieu of DensDeck Prime roof board, prime the surface of the DensDeck roof board and allow to dry thoroughly.*
 - When torching to DensDeck DuraGuard roof board, maintain the majority of the torch flame on the Mod Bit roll rather than on the surface of the board. Field priming should not be required.
- The effect and positioning of DensDeck DuraGuard roof board's low-perm coating must be considered in the design of the roofing assembly.
- Confirm any priming requirements of DensDeck DuraGuard roof board with membrane manufacturer. Field priming is not expected to be needed with a number of systems.
- These recommendations and guidelines are given to help assure satisfactory product performance, they do not constitute specifications or instructions. In case of conflicting recommendations, system manufacturer's should prevail.
- If questions arise about the use of DensDeck, DensDeck Prime or DensDeck DuraGuard roof boards before, during or after the product installation and/or system application, contact the roof system manufacturer or the G-P Gypsum Technical Hotline at 1-800-225-6119.

** Independent testing has shown that field priming of standard DensDeck roof board results in higher peel strength than unprimed DensDeck roof board.*

DensArmor Plus™ Paperless Interior Drywall

DensArmor Plus is a new generation paperless drywall designed as a replacement for paper-faced drywall for building interiors. DensArmor Plus drywall incorporates glass mats on the surfaces of the drywall panel instead of paper facings found on traditional drywall. The combination of paperless surfaces and a moisture resistant core provides superior moisture- and mold-resistance when compared to traditional paper-faced drywall. G-P Gypsum offers a **three-month in-place exposure warranty** which means DensArmor Plus can be hung before installing doors and windows. DensArmor Plus installs using the same steps as traditional drywall.

DensGlass Gold® Exterior Sheathing

DensGlass Gold exterior sheathing is a moisture-resistant gypsum panel that can be used for exterior walls, ceilings and soffits. Its paperless, glass-mat facings and moisture-resistant core resist the effects of surface water exposure while providing resistance to mold. With a long established track record, DensGlass Gold sheathing is so weather resistant that it is backed with a **six-month in-place exposure warranty**. DensGlass Gold is the preferred sheathing for use under brick, stone, stucco and EIFS siding materials. DensGlass Gold sheathing is so widely used that its bright GOLD™ color is recognized throughout the industry.

DensShield® Tile Backer

DensShield tile backer is a patented substrate for floor, wall and ceiling ceramic tile installations. Designed with a built-in moisture barrier, DensShield protects tile installations and the wall cavity from the effects of moisture in damp areas such as bathrooms and kitchens. Incorporating glass-mat facings and a moisture resistant core, DensShield is lighter and easier to install than heavy, hard-to-work-with cement board tile backers. The combination of moisture and mold resistance, along with potential labor savings, makes DensShield the superior substrate for ceramic tile in the industry. Georgia-Pacific backs DensShield tile backer with a **lifetime limited warranty when used in residential tile installations**. In addition, DensShield offers a **20 year limited warranty** for its use in commercial applications.

DensGlass Ultra™ Shaftliner

DensGlass Ultra Shaftliner is the ideal component for gypsum board shaft wall/stairwell and area separation wall systems when a fire rating is required. DensGlass Ultra Shaftliner incorporates a moisture and mold resistant, non-combustible gypsum core with paperless glass-mat facings to resist exposure to the elements during the early stages of the construction cycle. Backed by a **six-month in-place exposure warranty**, DensGlass Ultra Shaftliner is the perfect substitute for heavy, expensive masonry construction. It also offers superior moisture and mold resistance compared to traditional paper-faced shaftliner wallboard products.

DensDeck® Roof Board

Versatile DensDeck roof board is utilized in a wide variety of roofing systems for new and re-roofing applications as cover boards, overlays, underlayments and separator boards. Featuring a combination of fire resistance, strength, moisture resistance and dimensional stability, DensDeck roof board enhances the overall performance of most roofing assemblies and is widely respected and specified by leading roofing system manufacturers. DensDeck roof board, with its paperless glass-mat facings, has been shown to withstand delamination, deterioration, warping and job site damage far more effectively than paper-faced gypsum board or other conventional roofing products, such as wood fiberboard and perlite.

DensDeck Prime® Roof Board

DensDeck Prime roof board from G-P Gypsum combines the superior features of DensDeck roof board, including fire resistance, strength, moisture resistance and dimensional stability, with an enhanced surface treatment. The coated surface of DensDeck Prime provides an ideal substrate for a wide variety of adhered roofing systems by allowing a uniform spread of adhesives, which results in a strong, consistent bond. DensDeck Prime can be used in cold mastic, torch applied modified bitumen as well as fully-adhered, single-ply systems.

DensDeck DuraGuard® Roof Board

DensDeck DuraGuard roof board from G-P Gypsum combines the superior features of DensDeck roof boards, including fire resistance, strength, moisture resistance and dimensional stability, with a durable, low perm, integrated coating. This coating provides an ideal substrate for a wide variety of adhered roofing systems, including self-adhered, hot-mopped membranes, and torched asphaltic systems. The coating assures more uniform spreading of adhesives, an excellent coverage rate, and it enhances the bond strength of membrane system-to-board without the need for field priming with a number of systems.



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**

G-P Gypsum Technical Hotline: U.S.A. and Canada: **1-800-225-6119**

TRADEMARKS DENS, DENSARMOR PLUS, DENSDECK, DENSDECK DURAGUARD, DENSDECK PRIME, DENSGLOSS GOLD, DENSGLOSS ULTRA, DENSSHIELD, FIREGUARD, TOUGHROCK and the color GOLD are trademarks of Georgia-Pacific Corporation or one of its subsidiaries.

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LIMITATION OF REMEDIES AND DAMAGES Unless otherwise stated in our written limited 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 days after discovery.

SAFETY CAUTION: Some products contain fiberglass. Fibers and dust may be released from these products during normal handling and may result in skin, eye and respiratory irritation. Avoid breathing dust and contact with the skin and eyes. Follow these standard work practices: Wear a loose-fitting, long-sleeved shirt and long pants, protective gloves and eye protection (goggles or safety glasses with side shields). Wear a dust mask when sanding. Additional protection may be needed when very dusty. Do not use a power saw. For Material Safety Data Sheet or additional information, call 1-800-225-6119 or visit our website.



Some of our products have been certified by Scientific Certification Systems (SCS). SCS is an internationally recognized third-party evaluation, testing and certification organization. Its program spans a wide cross-section of the economy, including manufacturing and retailing, consumer products, the energy industry, and the home improvement and construction sectors. For details on specific G-P Gypsum products and plants, please contact our Technical Hotline at 800-225-6119.