Overview of Products

Over 20 Years of DensDeck® Roof Boards – Proven Performance

With billions of square feet installed in a complete range of roofing systems and climate extremes, DensDeck roof boards have proven their toughness and versatility. The 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, rot, and hail resistant
- Holds up well under normal foot traffic while stiffening and stabilizing roof decks
- Easy to install in all types of roof systems
- Ideal product for direct membrane application

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

DensDeck Prime® combines all the features of standard DensDeck with an enhanced surface treatment. The green surface coating allows uniform spreading 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 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.* Also, DensDeck DuraGuard can be used as a substrate under commercial metal and roof tile applications as a substrate for self adhesive secondary water barriers.

* Consult with membrane manufacturer for actual priming requirements

Georgia-Pacific Gypsum Products and LEED®

Many of our products may qualify to contribute to earning LEED credits through the USGBC’s Green Building Rating System for New Construction & Major Renovations Version 2.2 (LEED-NC 2.2) and other current LEED building standards. With 12 manufacturing plants in the United States and Canada, in many instances we are able to support regional materials credits. To determine the Georgia-Pacific Gypsum plant source, call the GP Technical Hotline at 800-225-6119, and you may qualify for points in the following LEED categories:

Materials and Resources
- Recycled Content Credits 4.1 and 4.2
- Regional Materials Credits 5.1 and 5.2

Innovation in Design Credit
- When tested, as manufactured, product resists growth of mold pursuant to the test method ASTM D 3273

CAUTION: For product fire, safety and use information, go to gp.com/safetyinfo.
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 insulated steel decks including EPS and XEPS products. DensDeck panels are an excellent fire barrier in built-up, modified bitumen and single-ply roofing systems.

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 (ASTM E 108) 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.”
• UL of Canada R210, R217, R221, R222, R223, R224, R225, R702, R703, R804, R805, R806.
• ANSI/UL 1256 Steiner Tunnel “Fire Classified Construction,” a code accepted alternative to a 15 minute thermal barrier for roof assemblies utilizing a minimum 1/4” DensDeck Roof Board (see page 11 for illustration).
# Properties, Standards and Classifications

## DensDeck® Roof Boards

<table>
<thead>
<tr>
<th>Properties</th>
<th>1/4&quot;</th>
<th>1/2&quot;</th>
<th>5/8&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness, nominal</td>
<td>1/4&quot; ± 1/16&quot;</td>
<td>1/2&quot; ± 1/32&quot;</td>
<td>5/8&quot; ± 1/32&quot;</td>
</tr>
<tr>
<td>Width, standard</td>
<td>4&quot; ± 1/8&quot;</td>
<td>4&quot; ± 1/8&quot;</td>
<td>4&quot; ± 1/8&quot;</td>
</tr>
<tr>
<td>Length, standard</td>
<td>4&quot; and 8' ± 1/4&quot;</td>
<td>4&quot; and 8' ± 1/4&quot;</td>
<td>4&quot; and 8' ± 1/4&quot;</td>
</tr>
<tr>
<td>Weight, lbs./sq. ft., nominal</td>
<td>1.1</td>
<td>1.95</td>
<td>2.5</td>
</tr>
<tr>
<td>Surfacing</td>
<td>Fiberglass mat</td>
<td>Fiberglass mat</td>
<td>Fiberglass mat</td>
</tr>
<tr>
<td>Flexural Strength&lt;sup&gt;1&lt;/sup&gt;, parallel, lbs. min.</td>
<td>40</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Flute Spanability&lt;sup&gt;1&lt;/sup&gt;</td>
<td>2-5/8&quot;</td>
<td>5&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>Permeance&lt;sup&gt;2&lt;/sup&gt;, Perms</td>
<td>50</td>
<td>35</td>
<td>32</td>
</tr>
<tr>
<td>&quot;R&quot; Value&lt;sup&gt;2&lt;/sup&gt;</td>
<td>28</td>
<td>56</td>
<td>67</td>
</tr>
<tr>
<td>Linear Variation with Change in Temp., in/in °F</td>
<td>8.5x10^{-4}</td>
<td>8.5x10^{-6}</td>
<td>8.5x10^{-4}</td>
</tr>
<tr>
<td>Linear Variation with Change in Moisture, in/in %RH</td>
<td>6.25x10^{-6}</td>
<td>6.25x10^{-8}</td>
<td>6.25x10^{-8}</td>
</tr>
<tr>
<td>Water Absorption&lt;sup&gt;3&lt;/sup&gt;, % max</td>
<td>10.0</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Compressive Strength, psi nominal</td>
<td>500 - 900</td>
<td>500 - 900</td>
<td>500 - 900</td>
</tr>
<tr>
<td>Surface Water Absorption&lt;sup&gt;4&lt;/sup&gt;, grams, nominal</td>
<td>≤2.5</td>
<td>≤2.5</td>
<td>≤2.5</td>
</tr>
<tr>
<td>Flame Spread, Smoke Developed (ASTM E 84)</td>
<td>0/0</td>
<td>0/0</td>
<td>0/0</td>
</tr>
<tr>
<td>Fire Classification</td>
<td>FM CLASS 1 (as overlayment)</td>
<td>FM Class 1 (FM 4450)</td>
<td>FM Class 1 (FM 4450)</td>
</tr>
<tr>
<td>Mold Resistance per ASTM D 3273&lt;sup&gt;5&lt;/sup&gt;</td>
<td>Mold resistant</td>
<td>Mold resistant</td>
<td>Mold resistant</td>
</tr>
<tr>
<td>ASTM Standard</td>
<td>C 1177</td>
<td>C 1177</td>
<td>C 1177</td>
</tr>
<tr>
<td>Uplift Standards and Testing&lt;sup&gt;7&lt;/sup&gt;</td>
<td>ANSI/UL 1897</td>
<td>ANSI/UL 1897</td>
<td>ANSI/UL 1897</td>
</tr>
<tr>
<td></td>
<td>ASCE 7</td>
<td>ASCE 7</td>
<td>ASCE 7</td>
</tr>
<tr>
<td></td>
<td>FM 4470</td>
<td>FM 4470</td>
<td>FM 4470</td>
</tr>
</tbody>
</table>

## DensDeck Prime® Roof Boards

<table>
<thead>
<tr>
<th>Properties</th>
<th>1/4&quot;</th>
<th>1/2&quot;</th>
<th>5/8&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness, nominal</td>
<td>1/4&quot; ± 1/16&quot;</td>
<td>1/2&quot; ± 1/32&quot;</td>
<td>5/8&quot; ± 1/32&quot;</td>
</tr>
<tr>
<td>Width, standard</td>
<td>4&quot; ± 1/8&quot;</td>
<td>4&quot; ± 1/8&quot;</td>
<td>4&quot; ± 1/8&quot;</td>
</tr>
<tr>
<td>Length, standard</td>
<td>4&quot; and 8' ± 1/4&quot;</td>
<td>4&quot; and 8' ± 1/4&quot;</td>
<td>4&quot; and 8' ± 1/4&quot;</td>
</tr>
<tr>
<td>Weight, lbs./sq. ft., nominal</td>
<td>1.15</td>
<td>1.975</td>
<td>2.55</td>
</tr>
<tr>
<td>Surfacing</td>
<td>Fiberglass mat with non-asphaltic coating</td>
<td>Fiberglass mat with non-asphaltic coating</td>
<td>Fiberglass mat with non-asphaltic coating</td>
</tr>
<tr>
<td>Flexural Strength&lt;sup&gt;1&lt;/sup&gt;, parallel, lbs. min.</td>
<td>40</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Flute Spanability&lt;sup&gt;1&lt;/sup&gt;</td>
<td>2-5/8&quot;</td>
<td>5&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>Permeance&lt;sup&gt;2&lt;/sup&gt;, Perms</td>
<td>50</td>
<td>35</td>
<td>32</td>
</tr>
<tr>
<td>&quot;R&quot; Value&lt;sup&gt;2&lt;/sup&gt;</td>
<td>28</td>
<td>56</td>
<td>67</td>
</tr>
<tr>
<td>Linear Variation with Change in Temp., in/in °F</td>
<td>8.5x10^{-4}</td>
<td>8.5x10^{-6}</td>
<td>8.5x10^{-4}</td>
</tr>
<tr>
<td>Linear Variation with Change in Moisture, in/in %RH</td>
<td>6.25x10^{-6}</td>
<td>6.25x10^{-8}</td>
<td>6.25x10^{-8}</td>
</tr>
<tr>
<td>Water Absorption&lt;sup&gt;3&lt;/sup&gt;, % max</td>
<td>10.0</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Compressive Strength, psi nominal</td>
<td>500 - 900</td>
<td>500 - 900</td>
<td>500 - 900</td>
</tr>
<tr>
<td>Surface Water Absorption&lt;sup&gt;4&lt;/sup&gt;, grams, nominal</td>
<td>≤2.0</td>
<td>≤2.0</td>
<td>≤2.0</td>
</tr>
<tr>
<td>Flame Spread, Smoke Developed (ASTM E 84)</td>
<td>0/0</td>
<td>0/0</td>
<td>0/0</td>
</tr>
<tr>
<td>Fire Classification</td>
<td>FM CLASS 1 (as overlayment)</td>
<td>FM Class 1 (FM 4450)</td>
<td>FM Class 1 (FM 4450)</td>
</tr>
<tr>
<td>Mold Resistance per ASTM D 3273&lt;sup&gt;5&lt;/sup&gt;</td>
<td>Mold resistant</td>
<td>Mold resistant</td>
<td>Mold resistant</td>
</tr>
<tr>
<td>ASTM Standard</td>
<td>C 1177</td>
<td>C 1177</td>
<td>C 1177</td>
</tr>
<tr>
<td>Uplift Standards and Testing&lt;sup&gt;7&lt;/sup&gt;</td>
<td>ANSI/UL 1897</td>
<td>ANSI/UL 1897</td>
<td>ANSI/UL 1897</td>
</tr>
<tr>
<td></td>
<td>ASCE 7</td>
<td>ASCE 7</td>
<td>ASCE 7</td>
</tr>
<tr>
<td></td>
<td>FM 4470</td>
<td>FM 4470</td>
<td>FM 4470</td>
</tr>
</tbody>
</table>

## Bending Radius
- DensDeck® Roof Boards: 5' and 8' and 12'
- DensDeck Prime® Roof Boards: 5' and 8' and 12'

---

**CAUTION:** For product fire, safety and use information, go to gp.com/safetyinfo.
## Properties, Standards and Classifications

### DensDeck DuraGuard® Roof Boards

<table>
<thead>
<tr>
<th>Properties</th>
<th>1/4&quot;</th>
<th>1/2&quot;</th>
<th>5/8&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness, nominal</td>
<td>1/4&quot; + 1/16&quot;</td>
<td>1/2&quot; ± 1/32&quot;</td>
<td>5/8&quot; ± 1/32&quot;</td>
</tr>
<tr>
<td>Width, standard</td>
<td>4' ± 1/8&quot;</td>
<td>4' ± 1/8&quot;</td>
<td>4' ± 1/8&quot;</td>
</tr>
<tr>
<td>Length, standard</td>
<td>4' and 8' ± 1/4&quot;</td>
<td>4' and 8' ± 1/4&quot;</td>
<td>4' and 8' ± 1/4&quot;</td>
</tr>
<tr>
<td>Weight, lbs./sq. ft., nominal</td>
<td>1.5</td>
<td>2.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Surfacing</td>
<td>Fiberglass mat</td>
<td>Fiberglass mat</td>
<td>Fiberglass mat</td>
</tr>
<tr>
<td></td>
<td>Durable, low perm coating</td>
<td>Durable, low perm coating</td>
<td>Durable, low perm coating</td>
</tr>
<tr>
<td>Flexural Strength¹, parallel, lbs. min.</td>
<td>40</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Flute Spanability²</td>
<td>2-5/8&quot;</td>
<td>5&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>Permeance³, Perms</td>
<td>≤2</td>
<td>≤2</td>
<td>≤2</td>
</tr>
<tr>
<td>&quot;R&quot; Value⁴</td>
<td>.28</td>
<td>.56</td>
<td>.67</td>
</tr>
<tr>
<td>Linear Variation with Change in Temp., in/in °F</td>
<td>8.5x10⁻⁶</td>
<td>8.5x10⁻⁶</td>
<td>8.5x10⁻⁶</td>
</tr>
<tr>
<td>Linear Variation with Change in Moisture, in/in %RH</td>
<td>6.25x10⁻⁴</td>
<td>6.25x10⁻⁴</td>
<td>6.25x10⁻⁴</td>
</tr>
<tr>
<td>Water Absorption⁵, % max</td>
<td>10.0</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Compressive Strength, psi nominal</td>
<td>1500</td>
<td>500 - 900</td>
<td>500 - 900</td>
</tr>
<tr>
<td>Surface Water Absorption⁶, grams, nominal</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
</tr>
<tr>
<td>Flame Spread, Smoke Developed (ASTM E 84)</td>
<td>15/0</td>
<td>15/0</td>
<td>15/0</td>
</tr>
<tr>
<td>Fire Classification</td>
<td>UL 1256, ULC S-126, UL Class A (UL 790)</td>
<td>UL 1256, ULC S-126, UL Class A (UL 790)</td>
<td>UL 1256, ULC S-126, Class A (UL 790)</td>
</tr>
<tr>
<td>Mold Resistance per ASTM D 3273⁷</td>
<td>ANSI/UL 1897, ASCE 7, FM 4470</td>
<td>ANSI/UL 1897, ASCE 7, FM 4470</td>
<td>ANSI/UL 1897, ASCE 7, FM 4470</td>
</tr>
<tr>
<td>Bending Radius</td>
<td>8&quot;</td>
<td>12&quot;</td>
<td>16&quot;</td>
</tr>
<tr>
<td>ASTM Standard</td>
<td>C 1177</td>
<td>C 1177</td>
<td>C 1177</td>
</tr>
<tr>
<td>Uplift Standards and Testing⁷</td>
<td>ANSI/UL 1897, ASCE 7, FM 4470</td>
<td>ANSI/UL 1897, ASCE 7, FM 4470</td>
<td>ANSI/UL 1897, ASCE 7, FM 4470</td>
</tr>
</tbody>
</table>

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.
7. See pages 13 and 14 for uplift pressures achieved.

The mold resistance of DensDeck® roof boards have 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 roof boards provide increased mold resistance.

### Commonly Used Metric Conversions

<table>
<thead>
<tr>
<th>Gypsum Panel Thickness</th>
<th>Framing Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 in. – 6.4 mm</td>
<td>16 in. – 406 mm</td>
</tr>
<tr>
<td>1/2 in. – 12.7 mm</td>
<td>24 in. – 610 mm</td>
</tr>
<tr>
<td>5/8 in. – 15.9 mm</td>
<td>20 in. – 508 mm</td>
</tr>
<tr>
<td>1 in. – 25.4 mm</td>
<td>24 in. – 610 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gypsum Panel Width</th>
<th>Fastener Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ft. – 610 mm</td>
<td>2 in. – 51 mm</td>
</tr>
<tr>
<td>4 ft. – 1219 mm</td>
<td>2.5 in. – 64 mm</td>
</tr>
<tr>
<td>8 ft. – 2438 mm</td>
<td>7 in. – 178 mm</td>
</tr>
<tr>
<td>10 ft. – 3048 mm</td>
<td>8 in. – 203 mm</td>
</tr>
<tr>
<td>12 ft. – 3658 mm</td>
<td>12 in. – 305 mm</td>
</tr>
<tr>
<td>16 ft. – 4064 mm</td>
<td>16 in. – 406 mm</td>
</tr>
<tr>
<td>18 ft. – 4572 mm</td>
<td>24 in. – 610 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gypsum Panel Length</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 ft. – 1219 mm</td>
<td>40°F – 5°C</td>
</tr>
<tr>
<td>5 ft. – 1524 mm</td>
<td>50°F – 10°C</td>
</tr>
<tr>
<td>6 ft. – 1829 mm</td>
<td>125°F – 52°C</td>
</tr>
<tr>
<td>8 ft. – 2438 mm</td>
<td></td>
</tr>
<tr>
<td>9 ft. – 2743 mm</td>
<td></td>
</tr>
<tr>
<td>10 ft. – 3048 mm</td>
<td></td>
</tr>
<tr>
<td>12 ft. – 3658 mm</td>
<td></td>
</tr>
</tbody>
</table>

CAUTION: For product fire, safety and use information, go to gp.com/safetyinfo.

5 • For latest information and updates: Technical Service Hotline 1.800.228.6119 or www.densdeck.com
## Roof System Application Recommendations

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

* 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

This is not intended to be a comprehensive list of companies that approve the use of DensDeck®

AFM Corp.
Atlas Roofing Corp.
BASF Corp.
Bitec Inc.
Black Warrior Roofing
Bluestone Inc.
Bondcote Corp.
Burkeline Roofing Systems
Carlisle SynTec Inc.
Celotex Corp.
Centmark Corp.
Certainteed Corp.
Commercial Innovations
Conklin Co. Inc.
Cooley Roofing Systems
Custom Seal Inc.
Dow Chemical
Durolast Roofing Inc.
Ecological Roof Systems
Environmental Roofing Systems
ER Systems
ES Products Inc.
Eurecoats
Fields Corp.
Firestone Building Products Co.
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.
Lexcant Industrial Supply Ltd.
Liquid Plastic
Magnum Systems
Malarkey Roofing Co.
Mule-Hide Products
Performance Roof Systems
Pittsburgh Corning Corp.
Polyether Systems Inc.
Polyglass USA
Republic Powdered Metals
Sika-Sarnafil Inc.
Seaman Corp. Building Systems
Siplast Inc.
Suprema Inc.
SPI Inc.
Stafast Roofing Products
Stevens Roofing Systems
Styro Chem Inc.
2001 Inc.
Tamko Roofing
Tenneco
The Garland Co.
Thermo Mfg. Co.
Tremco Inc.
Tri Ply
US Ply
Versico Inc.
WP Hickman Systems Inc.

CAUTION: For product fire, safety and use information, go to gp.com/safetyinfo.
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 Isolation Example

(assembly 9)

<table>
<thead>
<tr>
<th>STC</th>
<th>Underlayment</th>
<th>Insulation</th>
<th>Coverboard</th>
<th>Membrane</th>
<th>System Attachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>None</td>
<td>6” ISO</td>
<td>None</td>
<td>None</td>
<td>Mechanical</td>
</tr>
<tr>
<td>39</td>
<td>5/8” DensDeck Roof Board</td>
<td>8” ISO</td>
<td>5/8” DensDeck Prime Roof Board</td>
<td>None</td>
<td>Mechanical</td>
</tr>
<tr>
<td>39</td>
<td>5/8” DensDeck Roof Board</td>
<td>8” ISO</td>
<td>5/8” DensDeck Prime Roof Board</td>
<td>None</td>
<td>All components adhered</td>
</tr>
<tr>
<td>41</td>
<td>5/8” DensDeck Roof Board</td>
<td>4” ISO</td>
<td>5/8” DensDeck Prime Roof Board</td>
<td>SBS Mod Bit</td>
<td>Mechanical/Mod Bit-Torched</td>
</tr>
<tr>
<td>41</td>
<td>5/8” DensDeck Roof Board</td>
<td>6” ISO</td>
<td>Two: 5/8” DensDeck Roof Board</td>
<td>None</td>
<td>Mechanical</td>
</tr>
<tr>
<td>41</td>
<td>5/8” DensDeck Roof Board</td>
<td>6” ISO</td>
<td>One: 5/8” DensDeck Prime Roof Board</td>
<td>None</td>
<td>Mechanical</td>
</tr>
<tr>
<td>41</td>
<td>5/8” DensDeck Roof Board</td>
<td>6” EPS [Extruded]</td>
<td>Two: 5/8” DensDeck Roof Board</td>
<td>None</td>
<td>Mechanical</td>
</tr>
</tbody>
</table>

The data relating to sound-tested assemblies is based on the characteristics, properties and performance of materials and systems obtained under controlled test conditions as set forth under ASTM E 90 and E 413.
Applications

Cover Board – DensDeck Prime® preferred for adhered membrane.
DensDeck preferred for mechanically attached membrane.

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 (UL 790) fire rating in conjunction with various membranes.
C. Rigid Foam Insulation
D. Any Structural Deck

Substrate for Vapor Retarders – DensDeck Prime 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 Prime 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. Any Structural Deck

Metal Roof Thermal Barrier – DensDeck DuraGuard® 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 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. Any Structural Deck

Thermal Barrier

A. Membrane
B. Minimum 1/4” DensDeck cover board
C. Polystyrene Insulation
D. Minimum 1/4” DensDeck roof boards provide a thermal barrier installed directly to metal deck for both expanded and extruded polystyrene insulation.
E. Metal Deck

CAUTION: For product fire, safety and use information, go to gp.com/safetyinfo.
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 (UL 790).
D. Wood Deck

A. Wall Cap
B. Minimum 1/2” DensDeck Prime roof boards fastened 8” o.c. to wood or metal framing.
1/4” DensDeck roof boards may be used for fully supported or adhered applications.
(16” o.c. = 1/2”; 24” o.c. = 5/8”)
C. Parapet Wall Framing
D. Exterior Finish
E. Adhered Flashing Membrane
F. Nailer
G. DensDeck or DensDeck Prime roof board
H. Rigid Foam Insulation
I. Any Structural Deck

Vegetative “Green” Roof
A. Growing Medium
B. Moisture Retention Mat
C. Drainage Board
D. Protection Fabric
E. Membrane
F. Minimum 1/2” DensDeck Prime
G. Insulation
H. Any Structural Deck

Photovoltaic Roofing System
A. PV Panels
B. Roofing Membrane
C. Minimum 1/4” DensDeck Prime
D. Insulation
E. DensDeck (optional)
F. Any Structural Deck

CAUTION: For product fire, safety and use information, go to gp.com/safetyinfo.
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 contribute to the fire resistance characteristics of roof assemblies over time.* DensDeck roof boards can enhance the fire resistance of a roof 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 NRCA 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-approved testing agency. Examples of noncombustible cover boards include fiberglass mat faced gypsum boards and gypsum roof boards” (January 2006 NRCA/MRCA Technical Bulletin, at page 3).


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.

Factory Mutual/FM 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.

DensDeck roof boards are typically utilized (see diagram) 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.

See Roof Nav for descriptions of numerous approved systems and assemblies incorporating DensDeck roof board for use in approved combinations.

CAUTION: For product fire, safety and use information, go to gp.com/safetyinfo.
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, Georgia-Pacific Gypsum sponsored 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:

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

*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.
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.

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
### Uplift Resistance Pressures Achieved With DensDeck® Through Independent Testing

(Up to 19 uplift assembly ratings have been achieved with DensDeck products.)

#### System Type and Description

<table>
<thead>
<tr>
<th>Wind-Uplift PSF</th>
<th>Product</th>
<th># of fasteners' (4' x 8' board)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FM 60 1/4&quot; DensDeck</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>FM 60/75 1/4&quot; DensDeck</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>FM 60 1/2&quot; DensDeck</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>FM 60/75 1/2&quot; DensDeck</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>FM 90 1/4&quot; DensDeck</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>FM 90 1/2&quot; DensDeck</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>FM 90 5/8&quot; DensDeck</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>FM 90 5/8&quot; DensDeck Prime</td>
<td>32</td>
<td></td>
</tr>
</tbody>
</table>

#### Fully Adhered EPDM and Thermoplastic Membranes

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

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

#### Vapor Retarder Substrate

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

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

#### 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)

For latest information and updates: Technical Service Hotline 1.800.225.6119 or www.densdeck.com

CAUTION: For product fire, safety and use information, go to gp.com/safetyinfo.
### GP Fastener Patterns Tested

Other patterns are available from system manufacturers or testing agencies.

<table>
<thead>
<tr>
<th>Pattern Description</th>
<th>Illustration</th>
<th>Fasteners per Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 fasteners per board</td>
<td><img src="image1" alt="Pattern Illustration" /></td>
<td>4' x 8'</td>
</tr>
<tr>
<td>8 fasteners per board</td>
<td><img src="image2" alt="Pattern Illustration" /></td>
<td>4' x 8'</td>
</tr>
<tr>
<td>9 fasteners per board</td>
<td><img src="image3" alt="Pattern Illustration" /></td>
<td>4' x 8'</td>
</tr>
<tr>
<td>10 fasteners per board</td>
<td><img src="image4" alt="Pattern Illustration" /></td>
<td>4' x 8'</td>
</tr>
<tr>
<td>12 fasteners per board</td>
<td><img src="image5" alt="Pattern Illustration" /></td>
<td>4' x 8'</td>
</tr>
<tr>
<td>15 fasteners per board</td>
<td><img src="image6" alt="Pattern Illustration" /></td>
<td>4' x 8'</td>
</tr>
<tr>
<td>16 fasteners per board</td>
<td><img src="image7" alt="Pattern Illustration" /></td>
<td>4' x 8'</td>
</tr>
<tr>
<td>18 fasteners per board</td>
<td><img src="image8" alt="Pattern Illustration" /></td>
<td>4' x 8'</td>
</tr>
<tr>
<td>20 fasteners per board</td>
<td><img src="image9" alt="Pattern Illustration" /></td>
<td>4' x 8'</td>
</tr>
<tr>
<td>24 fasteners per board</td>
<td><img src="image10" alt="Pattern Illustration" /></td>
<td>4' x 8'</td>
</tr>
<tr>
<td>32 fasteners per board</td>
<td><img src="image11" alt="Pattern Illustration" /></td>
<td>4' x 8'</td>
</tr>
</tbody>
</table>

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

---

*CAUTION: For product fire, safety and use information, go to gp.com/safetyinfo.*

For latest information and updates: Technical Service Hotline 1.800.225.6119 or www.densdeck.com
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.
   3. Roof assembly design.

1.1 Submittals
A. Product data: Submit manufacturer’s descriptive literature indicating material composition, thickness, sizes and fire resistance.
B. Submittals: Indicate fastener and adhesive patterns for wind uplift resistance specified.

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-shedding 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 inadvertently 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: Georgia-Pacific Gypsum 1/4” DensDeck Roof Board, 1/2” DensDeck Roof Board and 5/8” DensDeck Type X Roof Board
   2. Composition: Nonstructural, fiberglass mat faced gypsum panel with water-resistant core.
   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 as described and 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. Class A when tested to UL 790. (UL classified)
      d. Code alternate to 15 minute thermal barrier as tested to UL 1256.
B. DensDeck Prime® Roof Boards
   2. Composition: Fiberglass mat faced gypsum with nonasphaltic, highly filled proprietary heat-cured coating on one side.
   4. Thickness: 1/4” and 1/2” DensDeck Prime Roof Board and 5/8” DensDeck Prime Roof Board (Type X).

CAUTION: For product fire, safety and use information, go to gp.com/safetyinfo.
For latest information and updates: Technical Service Hotline 1.800.225.6119 or www.densdeck.com
5. Fire Resistance:
   a. Flame spread 0, smoke developed 0, as described and tested in accordance with ASTM E 84. Noncombustible as described and tested in accordance with ASTM E 136.
   b. 5/8” DensDeck Prime Roof Board: (Type X) UL-classified.
   c. Class A when tested to UL 790. (UL classified)
   d. Code alternate to 15 minute thermal barrier as tested to UL 1256.

C. DensDeck DuraGuard® Roof Boards
   1. Acceptable product: Georgia-Pacific Gypsum 1/4” DensDeck DuraGuard Roof Board, 1/2” DensDeck DuraGuard Roof Board and 5/8” DensDeck DuraGuard Roof Board (Type X).
   2. Composition: Fiberglass mat faced gypsum panel with blue low-perm, durable, integrated-coating on one side and coated fiberglass mat on the back.
   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 as described and 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.
- 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 DensDeck DuraGuard roof boards: UL 790 Class A listing as a barrier board and UL 1256 as a thermal barrier underlayment over steel decks.
- FM, UL or other certified labs 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 NDA 07-0124.02.
- 1/4” DensDeck, DensDeck Prime and DensDeck DuraGuard roof boards can qualify in specific FM Class 1 assemblies.

CAUTION: For product fire, safety and use information, go to gp.com/safetyinfo.
Limitations/Recommendations

- 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. Georgia-Pacific Gypsum does not offer roofing system design services.

- Conditions beyond the control of Georgia-Pacific Gypsum, such as weather conditions, dew, application temperatures and techniques, may cause adverse effects with 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 roof boards; 5” for 1/2” DensDeck roof boards; 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 but not limited to use on plaza decks or under steel wheeled equipment that may fracture or damage the panels. Provide suitable roofing system protection when required.

- Independent evaluations have demonstrated that hot mopping to DensDeck products is an acceptable method of bonding membranes. Insure product is dry prior to commencing installation of hot asphalt application.
  - When using DensDeck or DensDeck Prime roof boards, Georgia-Pacific 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.* Insure 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.

* Independent testing has shown that field priming of standard DensDeck roof board results in higher peel strength than unprimed DensDeck roof board.
• 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 and/or design authority’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 Georgia-Pacific 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.
**Build Paperless with Dens™ Brand gypsum products from Georgia-Pacific Gypsum**

**DensArmor Plus® Paperless Interior Drywall**
DensArmor Plus is the first fiberglass mat drywall panel designed as a replacement for paper faced panels in commercial building interiors. DensArmor Plus has fiberglass mats and a moisture-resistant core which provides superior moisture and mold resistance when compared to traditional paper faced drywall. Georgia-Pacific Gypsum offers both GREENGUARD and GREENGUARD Children & SchoolsSM Certifications for low emitting products.

**DensArmor Plus® Abuse Guard® Paperless Interior**
DensArmor Plus Abuse Guard is the first abuse resistant panel designed as a replacement for paper faced panels in commercial building interiors. DensArmor Plus Abuse Guard has fiberglass mats and a moisture-resistant core, providing superior moisture and mold resistance when compared to traditional paper faced drywall and is formulated for high traffic areas such as corridors in hospitals, schools and other public buildings. DensArmor Plus Abuse Guard comes with a six-month in-place weather exposure warranty and has received both GREENGUARD and GREENGUARD Children & SchoolsSM Certifications for low emitting products.

**DensGlass Gold® Exterior Sheathing**
DensGlass Gold exterior sheathing is a moisture-resistant gypsum panel used for building envelopes,_categories and soffits. Its paperless, fiberglass mats and moisture-resistant core resist the effects of surface water exposure during and after construction, and has superior resistance to mold compared to competitive products. With a 20-year track record, DensGlass Gold sheathing is so weather resistant it’s backed with a 12-month in-place weather exposure warranty. DensGlass Gold is the preferred sheathing for use under brick, stone, stucco, and EIFS siding materials and is recognized throughout the industry by its COLOR GOLD®.

**DensShield® Tile Backer**
DensShield tile backer is the superior moisture and mold-resistant substrate for tile. DensShield manages moisture better with a built-in moisture barrier and highly water-resistant core; manages fire better with 5/8” DensShield having a Type X core; and manages costs better since it’s easier to use and specify than cement based tile backers — no vapor barrier needed in wet areas or mineral wool for a fire rating. Georgia-Pacific Gypsum backs DensShield tile backer with a 20 year limited warranty when used in commercial applications.

**DensGlass Ultra® Shaftliner**
DensGlass Ultra Shaftliner is the ideal component for gypsum board shaft wall, stairwell and area separation wall/fire wall systems when a fire rating is required. DensGlass Ultra Shaftliner incorporates a moisture- and mold-resistant, noncombustible (as described and tested in accordance to ASTM E 138) gypsum core with paperless fiberglass mats to resist exposure to the elements during the early stages of the construction cycle and is backed by a 12-month in-place weather exposure warranty. It’s the perfect substitute for heavy, expensive masonry construction and provides a sound rating of 60 as part of an insulated stud wall assembly.

**DensDeck® Roof Board**
DensDeck® roof board is designed to address four persistent challenges inherent in commercial roofing assemblies: fire resistance, moisture resistance, strength and dimensional stability. With over 20 years of performance, DensDeck has proven its toughness and versatility and is used in a wide variety of systems as a coverboard, fire barrier overlayment, thermal barrier underlayment, vapor barrier substrate, and in re-roof and re-cover board applications. Fiberglass mat gypsum board like DensDeck is recommended as a coverboard in low-slope membrane roof systems by the National Roofing Contractors Association (NRCA) and the Midwest Roofing Contractors Association (MRCA).

**DensDeck Prime® Roof Board**
DensDeck Prime roof board 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 DurarGuard® Roof Board**
DensDeck DurarGuard roof board combines the superior features of DensDeck roof board, 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 a 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.

**TRADEMARKS**
The Georgia-Pacific logo and all trademarks are owned by or licensed to Georgia-Pacific Gypsum LLC. The GREENGUARD INDOOR AIR QUALITY CERTIFIED Mark is a registered certification mark used under license through the GREENGUARD Environmental Institute. LEED is a trademark of the U.S. Green Building Council. 

**UPDATES AND CURRENT INFORMATION**
The information in this document may change without notice. Visit our website at www.gpgypsum.com for updates and current information.

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

**CAUTION:** For product fire, safety and use information, go to gp.com/safetyinfo.

**HANDLING AND USE**
To avoid respiratory irritation, do not sand, cut or drill this product. 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.

**LIMITATION OF REMEDIES AND DAMAGES**
If the affected product. We shall not be responsible under any circumstances for lost profits, damage to a structure or its contents, or indirect, incidental, special or consequential damages. Claims shall be deemed waived if they are not submitted to us in writing within ten (10) days after discovery.

**CAUTION:** For product fire, safety and use information, go to gp.com/safetyinfo.

**HANDLING AND USE**
To avoid respiratory irritation, do not sand, cut or drill this product. 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.

**LIMITATION OF REMEDIES AND DAMAGES**
If the affected product.