

TECH TALK *from* Georgia-Pacific Gypsum

Technical Insight from the Roof Board Experts

Working with Metal Roofing? Beef it up with DensDeck® Roof Board

Enhance performance of metal roofing applications with Dens™ Brand Technology.

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Metal roofing has been in use since biblical times and has always been considered a high end solution for keeping the elements out. Today, it is one of the fastest growing segments of the commercial and residential roofing industries because of its high performance and aesthetics. The Roof Consultants Institute is now offering training courses in metal roof design and specification.

Many choices are available for the metal panels, including lead, copper, tern, aluminum, stainless steel, carbon steel, zinc and even titanium. Cost, performance, environmental exposure and available technicians need to be considered when choosing a system.

Metal roofing shows up in new construction and in retrofits over existing membrane roofs, in steep slopes to almost flat. You may also encounter aging metal roofs that need covering. In almost every case, you can enhance the performance of the system by using the appropriate DensDeck® Roof Board.

Metal has to slope to shed water.

Because standing water can cause problems, metal roofs are normally sloped for drainage. Although drainage slopes can be as low as $\frac{1}{8}$ " per 12", metal roofing typically drops 3" to 4" in 12". With steeper slopes, water runs off very quickly and ice and snow also slide off, requiring consideration for snow retention and water collection. With a sloping roof, the panels are typically visible from the ground so color and texture can be used for architectural design.

The majority of metal in commercial roofing is standing-seam design, where the edges of the panels are raised and joined with screws, clips or rails. In most cases, the metal panels are attached to the structural system with sliding clips to allow for expansion and contraction.

DensDeck can enhance metal roofing systems in several ways, including fire ratings, strength, sound isolation, and resistance to mold and mildew.

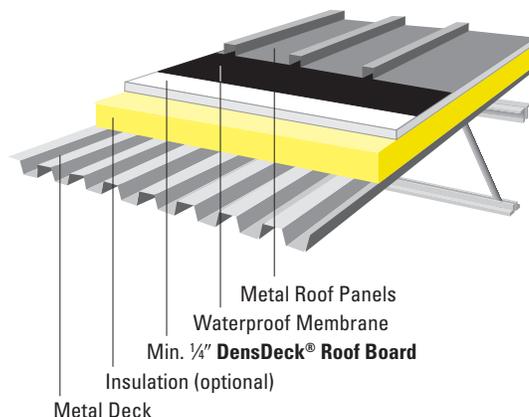
DensDeck enhances fire ratings.

Although metal is noncombustible and typically has a "0" flame spread, it does not provide fire separation. A layer of $\frac{5}{8}$ " DensDeck in the assembly underneath the metal panels can provide hourly fire ratings.

Thin metal panels need added strength.

Another way DensDeck contributes to metal roof performance is strength. The metal panels are typically very thin: 24 gauge down to 29 gauge. They're supported by cross members—purlins—spaced at intervals.

A supporting surface between the metal panels and purlins helps to distribute loads and protect the panels. Forces acting on the panels include wind loading,



Substrate for Metal Roofing Panels

Minimum $\frac{1}{4}$ " DensDeck Roof Board provides a fire barrier in conjunction with a standing-seam metal roofing system.

vibration and foot traffic. Hail may dent—or even destroy—unsupported metal roofing. DensDeck under the metal adds strength and stiffens the whole assembly.

Sound isolation makes buildings quieter.

DensDeck in metal roof assemblies also enhances sound insulation. When rain hits the surface of a metal panel, the sound is transferred to the inside of the building. Traffic sounds and other noises also go through the metal panel very easily. DensDeck provides a sound reduction, making the building quieter and more livable. By using multiple layers of DensDeck Roof Board, it is possible to achieve STC ratings of up to 41.

Look for resistance to mold and mildew.

Like low-slope membrane roofing, in cold weather metal roofing fosters condensation and moisture accumulation from the building's humidity and vapor drive. Typically an ice and water shield or membrane is put down under the metal panels. These membranes need a supporting surface to which they can be bonded. DensDeck® DuraGuard is the ideal board for this application.

Because moisture is present, the support material should also resist the growth of mold. Plywood adds organic material that may support mold growth within the roof assembly. DensDeck has been shown to be resistant to mold growth per ASTM 3273. DensDeck®Prime also works well as a strong substrate that gives excellent adhesive bonding.

Retrofitting metal to a low-slope roof? Panels need $\frac{1}{4}$ " DensDeck overlayment.

Metal roofing is also used as a retrofit to provide a weather barrier over low-slope roofs that need extensive repair. A light-gauge metal truss system under the metal roof provides slope for drainage. The metal panels also need support to span the gaps between the trusses, and DensDeck works well as an underlayment in this application. The panels are clipped or attached through the DensDeck to the support below.

DensDeck® supports membranes covering old metal roofing.

We're at a point now where many existing metal roofs are in need of renovation. But removing existing metal panels and replacing them with new ones means you're taking the roof off a building and leaving occupants completely exposed to the elements. Installing a retrofit metal panel system can be prohibitively expensive. Coating the existing panels to restore the finish is an option if they are structurally sound. Another viable option is to leave the existing metal roof in place and cover it with a light-weight membrane.

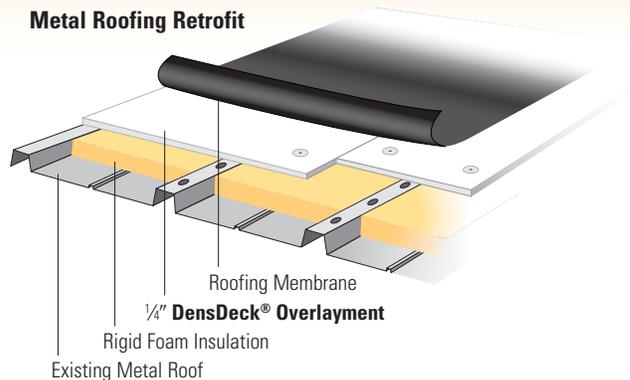
An economical way to do this is to fill in between the ribs of the metal panels with insulation slightly higher than the ribs. Lay 1/4" DensDeck® across the entire roof area. DensDeck easily spans the gaps in the insulation where the ribs are. Then any light-weight roofing membrane can be attached to the DensDeck.

With the adhesives now on the market, no fasteners need to penetrate the thin metal roofing panels. The insulation strips are glued in place, the

DensDeck is glued to the strips, and the roofing membrane is glued to the DensDeck. In essence it's building a new deck to support a new roofing system. DensDeck® Prime is the preferred material because it gives a superior bond with less adhesive. (Structural and code limitations need to be investigated for this option.)

Another benefit to covering metal with insulation and DensDeck is that it makes the existing roof stiffer and more resistant to vibration. If the original metal roof were insulated only with fiberglass bats, the new covering can quiet the interior of the building dramatically. Some building owners say it was like a whole new building when they covered a thinly insulated metal roof.

Metal Roofing Retrofit



You may be putting DensDeck under metal roofing panels to support them, or over an aging metal roof that's being covered. Whatever the application, DensDeck can enhance the overall performance of the entire roof assembly with strength, sound isolation, mold resistance and enhanced fire ratings. Spec it in your next metal roof job.



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

TECHNICAL INFORMATION

Georgia-Pacific Gypsum Technical Hotline
U.S.A. and Canada: 1-800-225-6119
www.gpgypsum.com

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

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CAUTION: This product contains fiberglass facings which may cause skin irritation. Dust and fibers produced during the handling and installation of the product may cause skin, eye and respiratory tract irritation. Avoid breathing dust and minimize contact with skin and eyes. Wear long sleeve shirts, long pants and eye protection. Always maintain adequate ventilation. Use a dust mask or NIOSH/MSHA approved respirator as appropriate in dusty or poorly ventilated areas. For additional product fire,

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