

TECH TALK *from* Georgia-Pacific Gypsum

Technical Insight from the Roof Board Experts

UNDERCOVER: The Fact About Roof Cover Boards

Georgia-Pacific's lunch and learn seminars offer an overview of roofing cover board technology.

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There are many design options for single-ply membrane roofs—and Georgia-Pacific learning seminars can help you keep up with them.

Roof cover boards have been a part of good roof design for a number of years to prepare the substrate and protect the insulation. A separating board has been required for many years for built-up roofing over ISO insulation and more recently, the NRCA (National Roofing Contractors Association) has recommended the use of cover boards over ISO under all roofing systems.

The information contained in this summary is a result of information gathered from manufacturer's literature, in-house and independent testing and published magazine articles.

What is a Cover Board?

A cover board is a relatively thin, semi-rigid board installed between the insulation and the roofing membrane.

Cover boards provide protection, separation and support for the membrane.

There are several commonly used types of cover boards.

- Asphaltic board
- Perlite
- Plywood/OSB
- Paper faced gypsum
- Mineral fiber board
- Glass-mat gypsum
- Wood fiber board

Why do I need a Cover Board?

National Roofing Contractors Association recommends use of cover boards with isocyanurate insulation to minimize problems with:

- Facer-sheet delamination
- Cavitation at the edges of the sheet
- Cupping or bowing of the sheet
- Shrinkage
- Crushing or powdering

Cover boards can improve roofing assemblies by enhancing:

- *Fire resistance.* The entire roof assembly must provide fire resistance, not just individual components. Cover boards can enhance or reduce fire resistance of the entire assembly.
- *Moisture resistance.* Moisture in roof systems can come from leaks, condensation and rain, or be introduced during construction.
- *Strength.* Roofs must withstand loads from construction traffic, maintenance traffic, hail impact, wind uplift loads and snow loads.

How do Cover Boards compare?

Cover boards vary widely in their performance characteristics. Fire resistance, moisture resistance and strength are three key parameters for comparing cover board performance.

Asphaltic board

- *Description.* Fiberglass faced asphalt board in a variety of thicknesses.
- *Fire resistance.* This material can be used in fire-rated systems, but by itself it does not provide a fire barrier.
- *Moisture resistance.* Asphaltic barrier gives very good moisture resistance.
- *Strength.* Thin and brittle, but provides some wind uplift resistance and helps minimize frothing in high-temperature applications.
- If the board is being installed in a saturated wet environment and water resistance is the main requirement, this would be the best choice.

Mineral fiberboard

- *Description.* Lightweight, semi-rigid rock wool or fiberglass board.
- *Fire resistance.* This material can be used in fire-rated systems, but by itself it does not provide a fire barrier.
- *Moisture resistance.* Permeable to moisture, but not affected by it. Does not support mold growth.
- *Strength.* Soft, with little impact resistance. More flexibility than most boards.
- For hot mopped installations over very rough or uneven substrates, this would be a good board.

Plywood/OSB

- *Description.* Plywood: thin sheets of veneer in layers. OSB: cross-laminated layers of oriented, resin-bonded wood strands.
- *Fire resistance.* Combustible, but can be used in fire-rated systems with other appropriate components.
- *Moisture resistance.* Absorbs water and loses strength when wet.
- *Strength.* Good strength and support for foot traffic and hail impact.
- If extreme foot traffic and abuse resistance are the main considerations, this would be the ideal board.

Wood fiberboard

- *Description.* Organic fibers bonded with resins. Lightweight.
- *Fire resistance.* Combustible, but can be used in fire-rated systems with other appropriate components. Can't be used in torched applications.
- *Moisture resistance.* Absorbs water and loses strength when wet. Can be treated for partial moisture resistance.
- *Strength.* Provides some foot traffic and hail protection if dry, but crumbles when wet.
- If a low cost utility board is required and moisture resistance is not an issue, this would be a good choice.

Perlite

- **Description.** Mineral aggregate board with cellulose binders and sizing agents. Lightweight.
- **Fire resistance.** Enhances fire performance of the roof assembly. Can be used as a fire barrier.
- **Moisture resistance.** Low moisture resistance. May fall apart when wet.
- **Strength.** Low strength. Crushed by foot traffic.
- For BUR applications where moisture resistance is not an issue, this board may work well.

Paper faced gypsum

- **Description.** Gypsum core with paper facers on both sides.
- **Fire resistance.** Typically chosen for its fire performance. Enhances roof fire classification.
- **Moisture resistance.** Paper facers will wick moisture and may delaminate when wet.
- **Strength.** Moderate resistance to hail impact and foot traffic.
- If low cost fire resistance with no moisture resistance is all that is required, this board can work well.

Glass-mat gypsum (DensDeck® Roof Board)

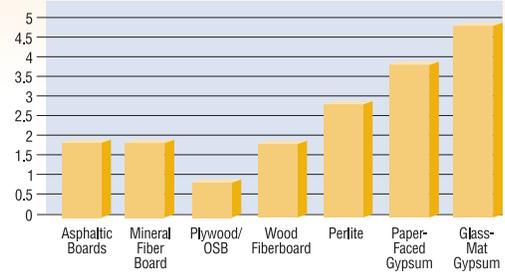
- **Description.** Treated, high-density gypsum core with fiberglass mats embedded on both sides.
- **Fire resistance.** Non-combustible. Zero flame spread and zero smoke enhanced fire ratings. ¼" layer converts combustible deck to non-combustible. Can be torched.
- **Moisture resistance.** Will not wick moisture. Will not delaminate with exposure to water. Inorganic facers do not support mold growth.
- **Strength.** Excellent compressive strength to resist foot traffic and hail impact. ¼" layer delivers better performance than most ½" cover boards.
- The ideal board where strength, fire resistance and moisture resistance are critical.

What is my best choice for a Cover Board?

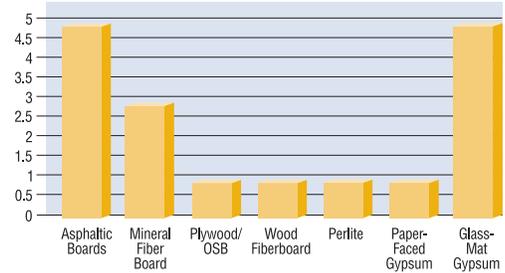
Cover board performance summary

The charts at right summarize the performance of the most common cover board materials in the critical areas of fire resistance, moisture resistance and strength.

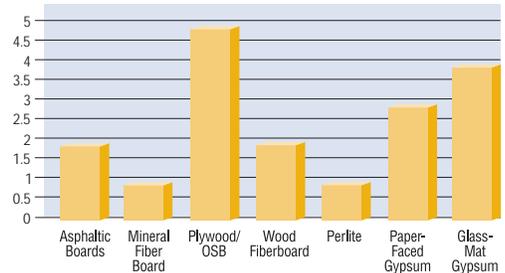
Fire Resistance (On a Scale of 1-5)



Moisture Resistance (On a Scale of 1-5)



Strength (On a Scale of 1-5)



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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Unless otherwise stated in our written warranty for these products, our sole liability for any product claim shall be limited to reimbursement of the cost of repair or replacement of the affected product, up to a maximum amount of two times the original purchase price for the affected product. We shall not be responsible under any circumstances for lost profits, damage to a structure or its

contents, or indirect, incidental, special or consequential damages. Claims shall be deemed waived if they are not submitted to us in writing within ten (10) days after discovery of a product defect/circumstance giving rise to a claim

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

HANDLING AND USE

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

For additional product fire, safety and use information go to www.gp.com/safetyinfo or call 1-800-225-6119.

FIRE SAFETY CAUTION

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