



BuildGreen SIPs

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Magnesium Oxide (MGO) Structural Insulated Panel (MGO SIPS)

Frequently Asked Question

1. What are the major difference between MGO and OSB SIP panel products?

There are two important differences between MGO panels and OSB SIP panels.

I. R-Value Both the MGO skin and EPS foam core have very high thermal insulating values. In other words, the MGO panel skin is a very effective and fire resistant insulating material on its own, and paired with EPS foam makes a very versatile and high R-Value insulated building panel product. If you relate this test information to that of a cold winter day, the cold temperature needs to penetrate the MGO skin prior to passing through the EPS foam core.

II. Fire resistance MGO panel skin when applied directly with a 1100C torch flame for 45 minutes will not burn, while limiting the heat transferred. One side of the panel will be 1100C while the opposite side will only reach a max of 134C over 45 minutes. We would not recommend a similar torch flame test with OSB for obvious reasons.

2. How are MGO SIP panels priced?

MGO panel pricing is dependent on several variables. As part of the design process we will assist you in determining:

- Proper panel thickness
- Suitable panel sizes
- Internal panel structural requirements
- Below grade/above grade considerations.

Site planning and foundation considerations. For a complete price quote contact your authorized dealer for a project quote.

3. Where are MGO panels currently being used?

MGO panels are used in building projects around the world. Currently we are active in 6 countries

USA:

- Panama
- Dominican Republic
- Czechoslovakia
- Russia

4. Where can MGO panel performance data be reviewed?

All MGO panel performance data is available for review at www.buildgreensips.net.

5 Can MGO panels be built to different local building code requirements?

MGO panels have been produced for a wide variety of building requirements. We can contact your local building authority to confirm codes and building requirements.

6. What approvals does the MGO panel have?

RESCOM is the only Magnesium Oxide Board available in the USA with JAS/ANZ CODEMARK Conformity Certifications in place.

7. What are the MGO panels' fire ratings?

RESCOM is Certified and Listed and exceeds the requirements of CAN/ULC S101-07 One Hour Fire Test, with a structural load rating of 3500 lbs per lineal foot.
RESCOM has a Two Hour Non Combustible Assembly available
RESCOM has a Four Hour Assembly available

8. Can MGO panels be built to customized configurations and sizes?

Yes, customized panel sizes are available. We have the ability to produce a variety of panel configurations, thickness, and types. For an overview of our design process and computerized manufacturing processes please contact us to for more information.

9. How are panels connected and joined during construction?

There are several joint options for connecting panels. In most cases a wooden spline is the preferred method for joining panels. The type, size and frequency of splines is an engineering design consideration and can be customized for particular applications, environments, and load bearing requirements. The most common spline configurations are 2" x 6" on 24" centers. Double splines 2x (2" x 6") enable equivalent load capacity to that of single splines on 48" centers. Generally, toe-nailing fastening (fasteners installed at angles) is not a preferred method of joining panels. Engineers prefer a more controlled and consistent method of panel installation, as well as a method that can be confirmed and inspected on site.

10. Are alternatives to wooden splines available?

Yes. In some cases the wooden splines are replaced with EPS splines. However, this reduces the load capacity of the wall, and may require structural elements to be engineered into the design. It is best to discuss with engineer for suitable alternatives.

11. Are blower test results available for a MGO panel based building?

Yes, detailed blower tests results are available upon requests. In general SIP buildings are designed to be very air-tight and the MGO panels help maintain a building's air-tight envelope. Test results are more of a reflection of the overall buildings air-seal. By themselves MGO panels are airtight.

12. How can water saturation effect MGO panels?

When building with MGO panels it is recommended to use coated fasteners on specific increments, as well as using protective measures to eliminate water penetration. In Asia MGO products are a very popular building material but are renowned for the corrosive effects caused by the MgCl₂ that may leech out over time due to moisture. The exposure to resulting MgCl₂ may corrode any untreated metal fasteners. There is also evidence to support corrosive effects when moisture is present creating a "saturated effect" and there can be issues if non-coated fasteners are used.

13. Can MGO panels be used as part of a flooring system?

Yes, MGO panels can be used as part of a flooring system. MGO panels are typically used for lowest floor in a building project. Typically, TJI floor systems are used for the internal floor systems, and MGO panels for the basement, or ground floor.

14. Can MGO panels be used for roofing?

MGO panels have a number of features that make them very suitable for roof application: -
Water-resistant -Fire resistant -Naturally mold resistant -Support a high load strength -Can be applied in a number of different formats (flat, pitch, other).

15. What is the roof load rating for a MGO panel?

Specific roof load ratings are calculated for each job by our MGO engineers. The Deadload is Ten Pounds per square foot and the Live Load is relative to the Geographical Location of the Build. A detailed engineering specification doc will be made available by our engineers.

16. Can MGO panels be used for rooftop patios?

Yes, MGO panels can be used for rooftop patios. Specific roof loads can be accommodated via roof panels and engineered support structures.

17. Can the panels support a green roof system?

Yes, MGO panels can support a green roof system. A green roof can be supported with proper engineered support structure and appropriate roof skin membranes.

18. Can MGO panels be used for interior walls?

Due to the extra cost of the MGO Panel, Interior walls are typically built WITH OUR Rescom wall board in traditional fashions. (Using Metal or Wood Studs) But where they are used for interior walls, MGO panels add functionality to any building including:

- Added thermal building mass for slower internal temp change
- Noise reduction
- Slowed fire spread

Note: MGO Panels are available upon request with tapered edges.

19. What is the maximum depth an MGO panel below grade wall can be?

MGO panels have several features that make them very suitable for below-grade application:

- Naturally water resistant
- Provide high insulating values
- High load bearing
- Fire resistant
- Mold resistant
- Are available in a number of sizes
- Can be setup during cold weather conditions
- Quick and easy to setup in remote location
- No curbing required
- No curing time
- No waterproofing Like more traditional concrete below ground walls, the deeper the panel wall is, the more reinforcing elements and wall thickness will be required. MGO panels have been approved for depths up to 15 feet. Overall, MGO panels will outperform standard concrete in similar below panel applications.

Additional information can be reviewed on our online site:

www.buildgreensips.net

20. Anchoring a garage slab to a MGO frost-wall.

Designing a garage with MGO panel frost walls and a concrete slab floor is no different than if the walls were concrete frost walls. The slab gets poured inside the walls and becomes a floating slab. Some soil conditions may require Piles Overall, MGO panels can speed up construction when used as a frost-wall because they can be back-filled immediately with no need to wait for concrete to cure and curbing to be removed.

21. How are exteriors like Parging and Hardie plank installed on MGO panel walls?

Parging like exterior finishes can be installed on a MGO panel in a similar manner as installing parging on a concrete wall. Hardie plank can be installed on MGO panel walls in a similar manner as installing against a standard OSB or plywood wall. The major difference between installing Hardie plank on MGO vs. OSB is that the fastener used will have extra holding capacity with the MGO panel, and that treated fasteners need to be used.

22. Can MGO panels be finished with Miracote?

Yes, Miracote would be a very effective finishing material.

23 .What is the maximum length of panel that can be fabricated and safely handled?

MGO Panels can be created and cut out in a variety of sizes and specs. The standard sizes have a maximum length of 10ft and custom sizes can be up to 28ft long.

24. What is the resistance to impact for an industrial application?

MGO is designed to be impact resistant. The panel is constructed of two layers of fiber mesh that sandwich the MGO core giving it a impact resistant characteristic. MGO panels have similar impact resistance to that of Concrete Board. Please view this video for impact resistance demonstrations. (VIDEO)

25. Is there any risk of washing MGO panels with a high-pressure washer?

MGO panels are very durable and water resistant; they are easily and safely cleaned off with high-pressure washing equipment. Commercial car washes are one of the many uses for MGO panels because of their insulating properties and natural resistance to mold, water and impacts.

26. If MGO panels do get damaged, how can they be repaired?

If an MGO panel does get damaged the best practice for repair is to use a fiberglass Reinforced Automotive Body-fill product or a cementitious Filling Compound.

27. Provide details of the surface profile on interior and exterior.

MGO panels are finished with a paint grade smooth finish on both sides. Panels will require a high grade of primer or paint to coat the sheet. Lower paint grades will not provide a complete cover and small pin size holes will appear after a single coat of paint. Skim fillers or additional coatings of paint will cover any pin holes. For more information on coating BuildGreen SIPS

28. What are the insulating R-values of the different sized panels?

With Type I Expanded Polystyrene Foam

		Panel Thickness (inches)			
		4.5	6.5	8.25	10.25
Mean	25	18	27	34	43
Temp.	40	17	26	33	41
(°F)*	75	16	24	31	38

With Type IX Expanded Polystyrene Foam

		Panel Thickness (inches)			
		4.5	6.5	8.25	10.25
Mean	25	20	30	39	49
Temp.	40	19	29	37	47
(°F)*	75	18	27	34	43

*Note: The mean temperature is the average of the indoor and outdoor temperatures, with a 50 degree differential between the two. For winters in New York, the R values at a mean temperature of 40 °F are most applicable.

29. What are the sq/ft weights of the different thickness panels?

2 the weights for: OSB weighs approximately 1.5 pounds per square foot (7/16" thickness). MGO weighs approximately 2.7 pounds per square foot (12 mm thickness).

- **32. Can custom edge profiles be ordered for the MGO panels?**

MGO panels are smooth sheet with squared edges. Tapered edges are available upon request.

- **30. How flammable are MGO panels?**

MGO fiber sheets are themselves fire resistant and protect the SIP EPS foam cores. These cores are manufactured with EPS foam not Polyurethane foam. While Polyurethane will burn when exposed to flame, EPS foam will only melt when exposed to flame as it manufactured with fire retardant additives.

- **31. Are the ends and the tops of the MGO Sip panels capped?**

MGO panels do not include end or top caps. Caps are available for an additional cost.

- **32. How are the MGO panels fastened to other panels and steel structures?**

MGO panels are a fixed using coated steel fasteners. Each fastener is designed with a 210lbs pullout capacity. There are currently over one-hundred engineered connection details available for review.

- **33. Can MGO panels be part of a pocketed steel tab frame design?**

Yes, MGO panels can be sized to fit into any number of steel framed building systems. Typically, they would fit within a channel pocket and fitted into permanent position with coated fasteners or with welded or bent tabs.

- **34. What is the maximum length for an unsupported 36" panel standing vertically before it wants to buckle or bend?**

It depends.... MGO SIP panels are very rigid and can support a lot of lateral weight. Depending on the usage and engineering requirements, the number and type of internal splines can be modified. For more specific information regarding Buckling and supporting forces with MGO SIP panels please contact BuildGreen SIPS

- **35. How are MGO panels cut and notched for on-site modifications and fittings?**

- **39. Will the SIP foam wick moisture to higher sections if the bottom section is exposed to water?**

No, moisture will not wick up the internal SIP panel through the foam. The MGO SIP foam is closed cell EPS which does not wick moisture.

- **36. Can the SIP panels be ordered in specific colors?**

Yes, SIP panels can be ordered in specific colors.

- **37. Do you have a sound absorption coating or covering we could consider for some of the interior side surfaces?**

Yes, higher than normal STC ratings can be achieved with coatings. For more information and options please contact one of our sales technicians.

- **38. The #1 asked Question. "If this product is so great, why have I not heard of it before?"**

Good question. Although MGO products are available around the world, SIP building technology is just coming into its' commercial maturity in North America, as consumers become more aware of the many advantages of SIP over traditional stick frame building technology. MGO technology is also relatively new for North America, but a familiar "go-to" solution in the rest of the world. As prices for traditional North American building materials level-off with materials from the rest of the world, and consumers here become more aware of better options, we will be seeing more MGO SIP technology being applied here.

- **39. What is the Definition of R-Value?**

R-value is the measure of how resistant a material is to heat flow. If heat flows quickly through a material it has a very low resistance, and therefore a low R-Value; material that resists heat flow has a very high R-value.

Real MGO Example: An MGO panel when directly applied with a 1100C torch flame for 45 minutes will not burn, while limiting the heat transferred. One side of the panel will be 1100C while the opposite side will only reach a max of 134C over 45 minutes.

Eg. The heat resistance to heat flow through the MGO is very high, and therefore has a high R-Value rating.