

The Complete Guide to

MAGPANEL[®]

MgO



MAGPANEL®

an  ambient™ brand

Ambient Building Products

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MAGPANEL[®] ← **MgO**
fireproof • eco-friendly • versatile

What is MagPanel?

**Inside, Outside, Floors, Ceilings, Walls...
MagPanel is today's superior building material.**

MagPanel is a magnesium oxide-based building panel that's incombustible, lightweight, sound-insulating, moisture-resistant, non-toxic, and completely recyclable.

Our magnesium oxide wallboards (MgO boards) are factory-produced, non-insulating sheathing products used for construction applications such as wall panels, subflooring, and much more.

What makes up MagPanel?

MgO board is made from magnesium oxide. Magnesium oxide is a type of mineral cement that contains magnesium (Mg) and oxygen (O).

This product is similar to drywall or cement board, but is more durable, has a higher mold/mildew resistance, and is 100% incombustible.





The Benefits of MagPanel

INCOMBUSTIBLE

Our MgO board is a fire resistant building material for commercial and residential construction and has an A-1 fire rating.

WATER-RESISTANT

It maintains its structural stability when slightly bent and will not warp, swell, or delaminate when exposed to moisture for short periods of time. Long-period exposure not recommended.

HEALTH-SAFE

MagPanel is safe for everyone, even those who suffer from allergies, asthma, or chemical sensitivities. It contains no fly ash, formaldehyde, crystalline silica, or other toxins.

PEST-PROOF

Our product is not a food source for termites, carpenter ants, or other boring insects. It is completely inorganic and contains zero foodstuff.

ENVIRONMENTALLY-SAFE

Sustainable, fire resistant building material for commercial and residential construction. A-1 fire rating.

FREEZE-THAW TESTED

MagPanel is freeze-thaw tested for 36 months and can be used to build at any time of year.

FUNGUS-RESISTANT

Our MgO board's antimicrobial characteristics make it resistant to mold, mildew, fungus, and rot.

BUILDER-FRIENDLY

MagPanel is stronger and more durable than comparable building products and finishes beautifully.





MagPanel vs. Other Building Panels

USES COMPARISON

Magnesium oxide board is different than other building materials because it is highly resistant to fire, insects, fungus, mold, mildew, and chemicals. It is an environmentally-friendly and non-toxic product.

Use the charts below to compare the applications and features of MagPanel with other common building panels. You will find that our magnesium oxide board offers superior performance in every category!

	MAGPANEL MGO BOARD	ORIENTED STRAND BOARD (OSB)	EXTERIOR GYPSUM SHEATHING	TRADITIONAL DRYWALL	CEMENT SIDING
FIRE-RESISTANT WALLS	✓	✗	✗	✗	✗
AS A PART OF SIPS	✓	✓	✗	✗	✗
SOFFITS	✓	✓	✓	✗	✓
SUBFLOORING	✓	✓	✗	✗	✗
STRUCTURAL SHEATHING	✓	✓	✗	✗	✗

FEATURES COMPARISON

Ambient's MagPanel is a technologically-advanced, high-performance, fully-recyclable board used in place of gypsum drywall, fiber cement wallboards, OSB, or plywood. The board's resistance to mold, mildew, fungus, and extreme environmental exposure makes it the perfect building material for health-conscious builders and families.



MagPanel vs. Other Building Panels

Our magnesium oxide board is extremely environmentally-friendly and uses less than 1/3 of the energy to produce versus similarly used portland cement-based building materials. It is also incombustible, which helps to protect homeowners, tenants, and building occupants while mitigating damage and loss.

	MAGPANEL MGO BOARD	ORIENTED STRAND BOARD (OSB)	PLYWOOD	CEMENT BOARD
ECO-FRIENDLY				
FIRE RESISTANCE				
FREEZE-THAW RESISTANCE				
IMPACT RESISTANCE				
MOLD/MILDEW RESISTANCE				
INSECT RESISTANCE				
WATER RESISTANCE				

MagPanel gains its strength and resistance from very strong bonds between magnesium and oxygen atoms that form magnesium oxide crystals. It is a mineral-based green building material that will not warp, swell, or rot when exposed to water or other elements.

Because it is resistant to extreme cold or heat, construction can take place in virtually any environment, at any time, in any season.



MagPanel Applications

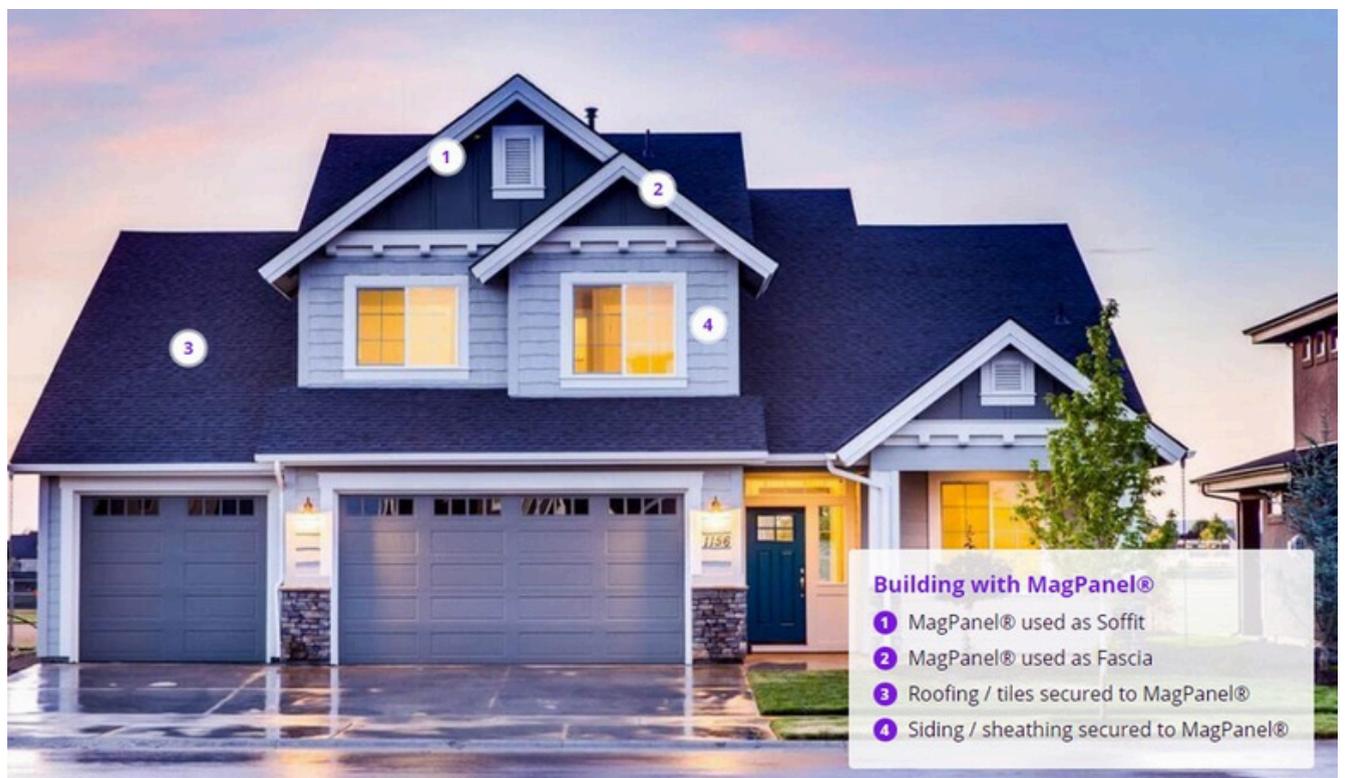
One Board...A Variety of Uses

MagPanel eliminates many challenges consumers, architects, builders, contractors, and engineers face with residential, commercial, and industrial construction.

It comes in many different densities and strengths, making it suitable for different applications. It is a sustainable and strong alternative to building materials including pressed board, gypsum wallboard, OSB, plywood, and cement board.

Exterior Applications of MagPanel MgO Board

Our product is ideal for a variety of applications, especially in high-traffic/abuse-prone infrastructures such as multifamily units with stairways, entries and common areas, school classrooms, corridors, gyms, college dorms, hospitals, and healthcare facilities.





MagPanel Applications

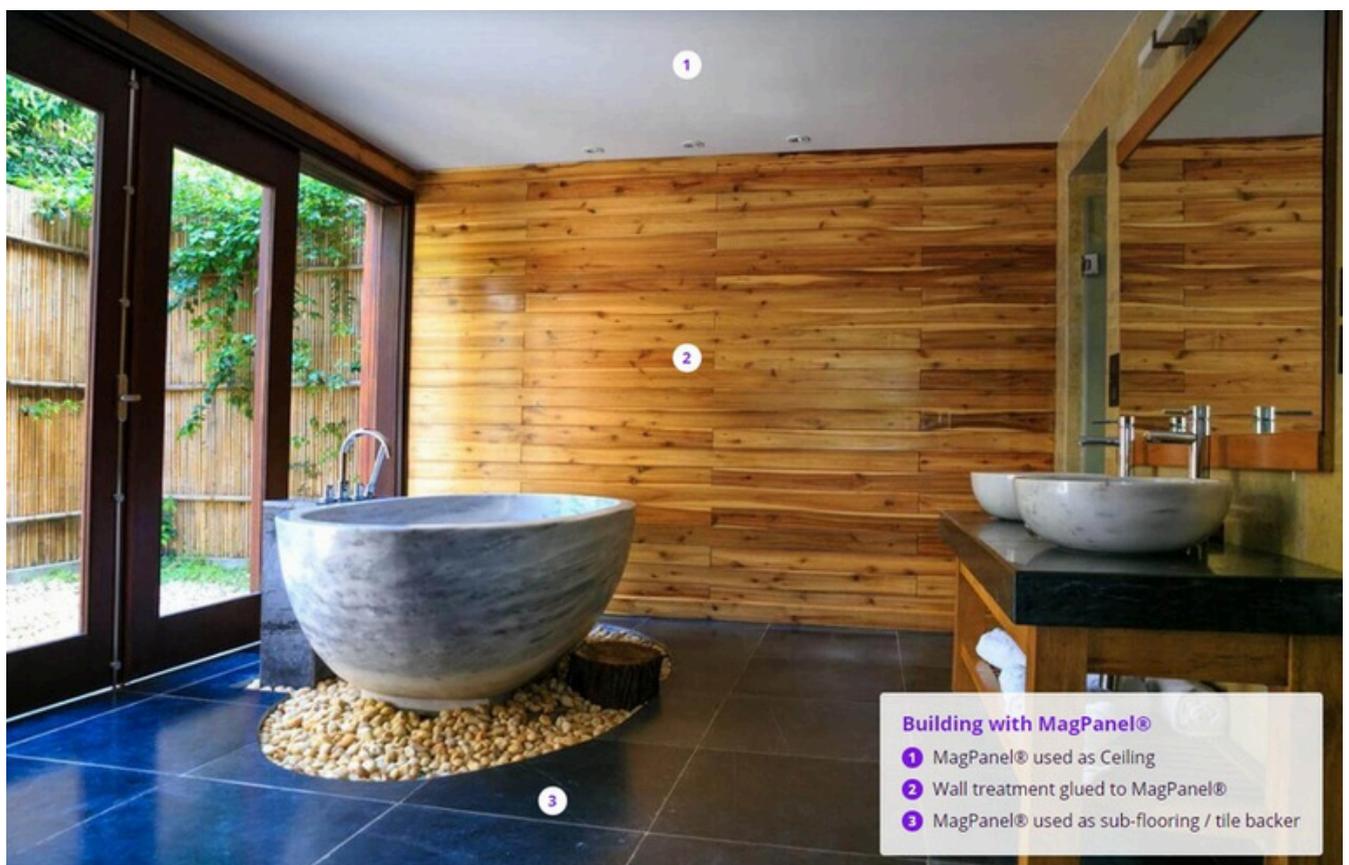
Easy to Install & Use

The magnesium oxide boards can be sawn, drilled, and fastened to wood or steel framing. The back surface is sanded for easy application as tile backer. One side of the board is finished smooth for paint-ready applications while the other side is rough textured for optimal cohesion of adhesive-based installations.

For building construction, MagPanel is available in a variety of thicknesses. Unlike other board or panel building material, our product is not paper-faced. Ambient's MagPanel is the highest-grade MgSO₄ composition board.

MagPanel typically comes in white but can be painted any color desired.

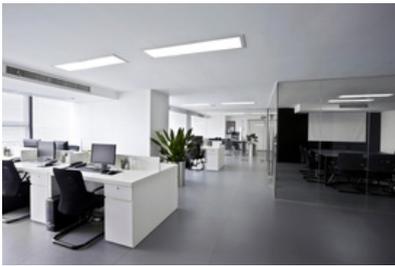
Interior Applications of MagPanel MgO Board





MagPanel Applications

Our MgO board is ideal for many different applications, including residential homes and a variety of commercial spaces.



OFFICES



CONFERENCE ROOMS



CLASSROOMS



DATACENTERS



HEALTHCARE FACILITIES



CONTROL ROOMS



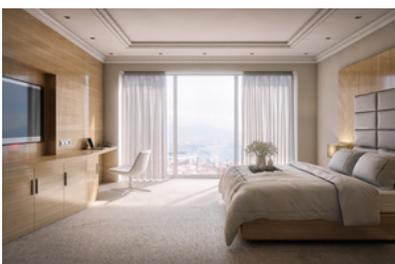
CONDOMINIUMS



EQUIPMENT SHELTERS



THEATERS & VENUES



HOTEL ROOMS



LIBRARIES



COMMERCIAL BATHROOMS



MagPanel Specifications

MagPanel is available from Ambient® in the following dimensions:



1/8 in MagPanel MgO Magnesium Oxide Board

Panel Dimensions: 1/8" (3mm) x 4 ft x 8 ft
Common Uses: Walls & Ceilings
Item Number: 808857982612



1/4 in MagPanel MgO Magnesium Oxide Board

Panel Dimensions: 1/4" (6mm) x 4 ft x 8 ft
Common Uses: Walls & Ceilings
Item Number: 691324728529



1/2 in MagPanel MgO Magnesium Oxide Board

Panel Dimensions: 1/2" (12mm) x 4 ft x 8 ft
Common Uses: Walls & Ceilings
Item Number: 691324728536



11/32 in MagPanel MgO Magnesium Oxide Board

Panel Dimensions: 11/32" (9mm) x 4 ft x 8 ft
Common Uses: Walls & Ceilings
Item Number: 691324728690



13/32 in MagPanel MgO Magnesium Oxide Board

Panel Dimensions: 13/32" (10mm) x 4 ft x 8 ft
Common Uses: Walls & Ceilings
Item Number: 691324728697



5/8 in MagPanel MgO Magnesium Oxide Board

Panel Dimensions: 5/8" (16mm) x 4 ft x 8 ft
Common Uses: Walls, Ceilings & Subfloor
Item Number: 808857987419



3/4 in MagPanel MgO Magnesium Oxide Board

Panel Dimensions: 3/4" (20mm) x 4 ft x 8 ft
Common Uses: Sub-flooring
Item Number: 691324728543



11/16 in MagPanel MgO Magnesium Oxide Board

Panel Dimensions: 11/16" (10mm) x 4 ft x 8 ft
Common Uses: Walls & Ceilings
Item Number: 691324728703

FREQUENTLY ASKED QUESTIONS

What is MagPanel®?

MagPanel, a special type of magnesium oxide board (also known as magnesium sulfate boards) is a strong, high quality, incombustible, mineral-based building material used to replace plywood, fiber cement panels, OSB and gypsum wallboards. It is an extremely versatile product for use in both interior and exterior construction. It is made from bonding certain elements (including magnesium and oxygen) which results in an extremely strong, cement-like material.

Where does magnesium oxide come from?

Expansive deposits of magnesium oxide can be found in China, Europe, and Canada. The White Mountains in China have so much natural MgO, in fact, that it is estimated there is enough to last another 800 years at today's rate of consumption.

How has MgO been used as a building material throughout history?

Because magnesium oxide boards are so moisture-resistant, they can last a very long time. Magnesium oxide cements have been used for construction purposes for centuries in such world-famous sites such as the Great Wall of China, Rome's Pantheon, and extensively throughout one of the world's tallest buildings, Taipei 101.

Is MagPanel® eco-friendly?

Yes! MagPanel is a green building material that contains no ammonia, formaldehyde, benzene, silica, or asbestos, and is completely safe for humans. It's a natural product that is 100% recyclable, so it leaves a very small carbon footprint and has no negative impact on landfills.

What are the various applications of MagPanel®?

It can be used in place of drywall, and some of the many applications include subflooring and tile backer, ceilings, walls, exteriors, soffits, sheathing, shaft-liner, bathtub enclosures, and exterior siding. When used for exterior projects it must be coated or protected from the elements.

Primary Uses of MagPanel:

EXTERIOR

Wall sheathing
Fascia Soffit
Trim Lap siding

INTERIOR

Wall panels
Ceiling board
Tile backer
Drop ceiling tiles
Fire wall system

SPECIALTY

Office cubicles
Room dividers
Structural Insulated
Panels (SIPs)



FREQUENTLY ASKED QUESTIONS (continued)

Why choose MagPanel®?

MagPanel is a unique, cost-effective building material available across the U.S. Our product has been engineered to resolve some of the toughest building challenges faced by architects, contractors, installers, builders and consumers. These include resistance to fire, moisture, mold, mildew, fungus and insects.

What dimensions does MagPanel® come in?

Our boards are sold in standard 4 × 8 ft. sheets and in multiple thicknesses, from 3mm to 25mm.

Is MagPanel® a safe product?

Yes! MagPanel is safer than many comparable building products since it is a mineral based product made with non-toxic ingredients. It is completely recyclable and resistant to mold, mildew, fungus and allergens. It is ideal for people who suffer from allergies or asthma. It's also free of carcinogens and silicas.

Where can I purchase MagPanel®?

Purchase MagPanel directly through Ambient by visiting MagPanelMgO.com or calling (866) 710-7070. We ship directly to both residences and businesses.

Is MagPanel® waterproof?

It is not waterproof, but is extremely moisture resistant. During periods of extended exposure, moisture can affect it and it may experience hydrothermal expansion. When used outdoors, MagPanel should be covered or coated to protect it from the elements.

How does MagPanel® perform with temperature fluctuations such as heat, thaw, freeze and humidity?

The possibility of expansion for our MgO board is low. However, there is some hydrothermal movement. You can leave smaller gaps to accommodate for the potential (minimal) expansion or shrinking. MagPanel is highly resistant to extreme outdoor environmental exposure such as rain and strong winds as long as it is properly coated.

What is MagPanel made of? What is the chloride content of MagPanel®?

Most MGO boards and Magpanel are made by combining the carbon out of magnesium carbonate; commonly called "MgO" due to its chemical composition of magnesium (chemical symbol Mg) and oxygen (chemical symbol O). When oxygen is combined with magnesium under heat and pressure, it can produce a stone-like material: MgO. It is ground up into a powder, which is then combined with water to make a cement-like (adhesive) material. MagPanel® also contains other components but MgO is the primary component.

Pure magnesium, in its raw form, burns. MgO, however, is completely non-flammable and is used for fireproofing.

Magpanel differs from standard MGO boards in that the second primary component is magnesium sulfate, rather than magnesium chloride. Magnesium sulfate is resistant to moisture, thus Magpanel doesn't experience the "weeping boards" corrosion issue that typical magnesium oxide boards suffer. Magpanel's dissolvable (free) chloride ion content is 1% compared to 5% for regular MGO boards.

FREQUENTLY ASKED QUESTIONS (continued)

What are the benefits of MgO board?

Magnesium oxide board is harder and stronger than drywall, and it is resistant to fire, insects, mold, mildew, and rot. It is sound and impact resistant, and has great insulating characteristics. It's incombustible and nontoxic, has a receptive bonding surface. MagPanel can be sawn, drilled, router-shaped, nailed, and painted. It's many uses in the construction field include fireproof materials for ceilings and walls in every type of construction including apartment complexes, theaters, airports, hospitals, and much more.

How does MagPanel® compare in cost with other wall boards?

When comparing building material costs consider the benefits and features offered by each product. This includes the upfront costs but also the savings recognized during the life of the product. MagPanel provides a cheaper lifetime cost and a similar installation cost to most traditional building panels/wallboards when all the expenses are considered.

Our product offers many cost benefits. Because of its strength and durability, these panels increase the lifespan of structures like homes and buildings. The cost per sheet of MagPanel is greater than common gypsum boards, but the same or less than specialty types.

With our MgO board, you pay a small premium for a huge increase in versatility and applications. Additional cost savings are found in installation of our product, because the time to finish the boards can be much less and less product is needed in many applications.

Are any toxic or hazardous ingredients used in making MagPanel®?

Our MgO boards are made from natural minerals, magnesium oxide, and sulphate (otherwise known as epsom salts), along with wood dust (cellulose), perlite or vermiculite, and a glass fiber mesh. Caution: While the materials used are not harmful, it is strongly recommended everyone wear proper silica/concrete dust respirators when cutting and sanding MagPanel.

How do you store MagPanel®?

MagPanel should be stored inside in a cool, dry place as with any sheet building material. To protect the edges and corners, carry boards on their side. Stack boards flat on dunnage, loose wood, matting or other material and not directly on the ground. Do not allow the boards to bow. Do not stack any other materials on top of MagPanel. Before installing, acclimate the panels for 48 hours in the room where they will be installed.

How do I cut MagPanel®?

For optimal results cutting our MgO panels, use a circular saw or worm drive saw. Rout the edges using carbide tooling. MagPanel can be scored with a razor blade and snapped apart from the smooth side. This method does not provide as clean of an edge, however, and will require more finishing work. To prevent micro-cracking with cuts, glue all corners together.

What is the weight or density of MagPanel®?

The density of MagPanel is around 1 gram per cubic centimeter or just over 2.2 pounds per square foot for 12mm (1/2 inch) board. They are typically heavier than gypsum and lighter than ordinary cement boards.

FREQUENTLY ASKED QUESTIONS (continued)

What are my options for finishing MagPanel® MgO Panels?

Finishing MagPanel can be done with paint, stucco, synthetic stucco, wallpaper, plaster, stone, tile, brick, and much more. The strong adhesion properties of our MgO board also make it a perfect product for Structural Insulated Panels (SIPs), Exterior Insulated Finish Systems (EIFS) and interior wall systems using fabrics.

To finish MagPanel MgO Panels after installation, begin with a primer. This is required because the panels are alkaline in nature. We recommend using a primer that is suitable for concrete or masonry.

Acrylic stucco topcoats or polymer modified cement base coats can also be used and individually applied to the board.

Test the topcoats and paints prior to completing the entire project. To properly test the bonding capability of the topcoat, brush on or spray a small area of the MagPanel® with paint, let the board dry and cure.

Then make an X with a sharp razor knife, apply masking tape over the cut and press firmly and rip it off like a band-aid. If the paint stays on the board, this indicates the paint and board have a successful bond.

How do you fill the seams between Magpanel boards? Can you use the same fasteners/mud/tape as with regular drywall?

To fasten MagPanel® panels, use corrosion resistant fasteners. Add extra support by applying a barrier coat of epoxy, ceramic or a similar adhesive. Drywall screws that have a stainless steel or phosphoric coating also work well with MagPanel® panels.

For easiest installation, choose screws with self-counter boring heads. Alternatively, use gun nails when applying to both wood and light gauge steel framing with the appropriate pins or nails.

To finish MagPanel® joints, remember to leave gaps of 1/6" to 1/8" gap between Magpanel sheets to accommodate expansion and contraction. To fill gaps use a flexible filler, like Manus-Bond 75-AM, for the initial gap fill and a sandable joint compound for later coats.

Carefully fill the gaps between sheets with Manus-Bond 75-AM, making sure it's flush with the panel surface. If working in a cold climate, warm the product for better penetration.

Apply a minimum 6" wide fiberglass tape, fully embedded with RapidSet "Wunderfixx". Smooth the tape and feather the Wunderfixx out approximately 12-18" on each side of the seam. Sand lightly before the Wunderfixx has completely dried (once it has reached a "leather-like" state) for easier finishing.

Once the Wunderfixx is relatively smooth, apply a final coat of a durable finishing compound like Murco Wall M-100 or Westpac Materials "Red Dot." Feather this out 18-24" for a seamless finish.

Can you use MagPanel® as a subfloor?

Yes! MagPanel is ideal for use as a sub floor. Additionally, boards are available in the correct thickness and strength for use as structural sheathing.

Determining the proper board grade depends on the design of the floor, joist span, spacing and size, dead-load and live-loading factors.

FREQUENTLY ASKED QUESTIONS (continued)

What thickness of MagPanel® should I use for my project?

Ceilings: For ceilings where the board will be fastened by screw to light gauge steel or wood use 3mm or thicker. Use a thicker board if planning to countersink the screw head. For drop down ceilings using MgO as panels, use 3mm or 6mm.

Walls: For most walls, a board that is 3mm to 12mm can be used. For walls that have continuous backing, cement or rigid insulation, a thinner board can be used. This is important when weight is a concern. For applications where more strength is needed such as sports courts, or where sound reduction is needed, or for use to support bar countertops, use a thicker board at 20mm.

How do we stop the MagPanel® joints from micro-cracking?

A few things can cause micro cracking in magnesium oxide boards such as structure movement caused by force from wind or earthquake. Or the structure may expand caused by thermo graphic or hydrometric expansion. The frame used under the boards may change as wood will shrink when dried and metal expands when heated. MagPanel®s shrink during curing and drying to ambient humidity and will have some movement due to thermal or moisture changes. Micro cracking becomes a negligible issue because most interiors maintain relatively even temperatures.

To address and or prevent micro cracking follow a few precautionary steps. First, before installation, allow the boards to acclimatize in the structure where they will be used. Leave a small space between boards and apply a non-shrinking caulking followed by a primer coat of paint. Apply spackle or plaster to hide any imperfections. Finish by using a paint designed to prevent moisture absorption. Isolate joints from the structure by splicing with strips of scrap MgO Board or metal clips to keep the joints between studs.

