







Fire Resistance

Aquamag® Complies with ASTM E84 /UL723 / ULC S102 BS EN 13501-1:2007+A1:2009 BS 476 Part 20 and 22

Introduction

Aquamag® Magnesium Oxide Board is an ideal substrate for exterior wall, internal partition, tile backer for wet areas, floor underlayment, vanity, fire rated door, facade renovation, exterior ceiling, exposed soffits and insulation finish system EIFS/ETICS.

Aquamag® has been designed to replace time consuming multi-layer drywall assemblies with a single layer, outperforming the competition in terms of its resistance to fire, impact and water, acoustical performance and quality of finish.

Manufactured in a strict quality controlled environment, Aquamag® is made from 100% inorganic inputs, this means no rot, mold or mildew, when subjected to humid or damp conditions.

Aquamag®, A1 non combustible magnesium oxide board reinforced by fiberglass mesh used for multiple exterior and interior wall partition applications. An all round product that can withstand extreme heat, dry, humid and cold weather conditions.

Aquamag® boards can be easily cut, nailed or screwed. It can be directly painted with regular paint like acrylic or oil and laminated with different designs for interior and exterior finishes.

"Aquamag" Board Does It All."

Aquamag® is a magnesium based, non-toxic, and environmental friendly sheathing material which boast superior fire, thermal, acoustic as well as being stronger and lighter than alternatives such as calcium silicate and cement boards. High compressive strength and impact resistance allows it to be used for almost any construction or renovation project.

Features







Sound Insulation



Water Resistance



High Strength



Moisture Resistance



Eco Friendly



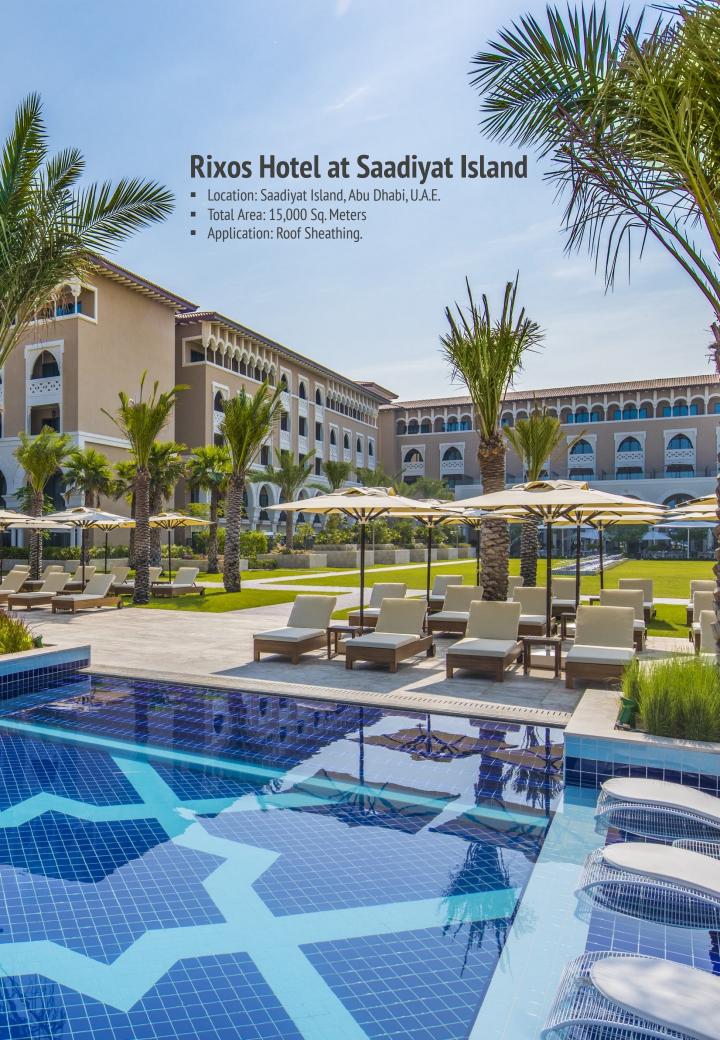


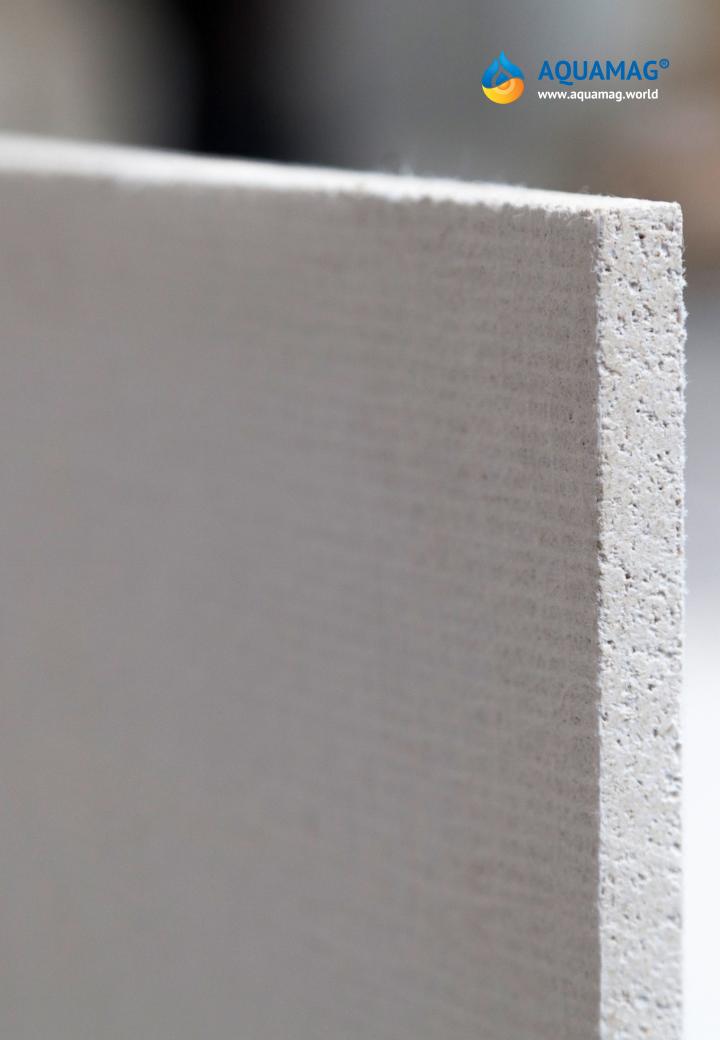










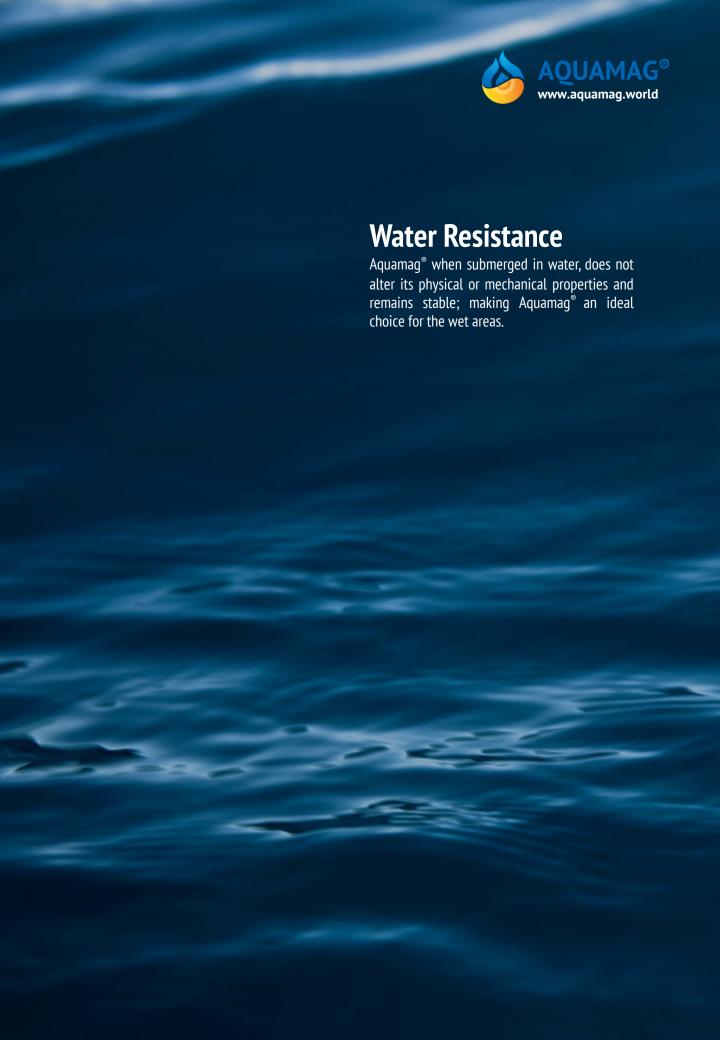


Technical Performance Sheet

| Property | Testing Standard | Result |
|---|------------------------------------|---|
| Reaction to fire | EN 13501-1 | Class A1 (Non-Combustible) |
| Dimensions (L x W x T) | | 1200mm x 2400mm x 12mm |
| Tolerance on length and width | EN 12467:2012 | Complied with Level I |
| Tolerance on thickness | EN 12467:2012 | Tolerance: 0.04mm |
| Straightness of edges | EN 12467:2012 | Complied with Level I |
| Squareness of edges | EN 12467:2012 | Complied with Level I |
| Apparent density | EN 12467:2012 | 935 kg/m3 |
| Moisture movement | EN 12467:2012 | Length direction: 0.11% Width direction: 0.13% |
| Bending strength (MOR) | EN 12467:2012 | Average 16.8 MPa Min. 15.5 Mpa |
| Water impermeability | EN 12467:2012 | No formation of drops of water |
| Water vapour permeability | EN ISO 12572, Condition C | Water vapour resistance value μ: 19.8 |
| Freeze-thaw (100 Cycles) | EN 12467:2012 | Category A, Ratio RL: 0.31 |
| Heat-rain (50 Cycles) | EN 12467:2012 | Category A, No visible cracks. |
| Warm water | EN 12467:2012 | Category A, Ratio RL: 0.32 |
| Soak-dry | EN 12467:2012 | Category A, Ratio RL: 0.29 |
| Release of dangerous substances | EN 12467:2012 | Asbestos content: Negative |
| Total water absorption | EN 520:2004+A1:2009 section 5.9.2 | 10.9% |
| Tensile strength perpendicular to the board | EN 319 | 0.61 N/mm2 |
| Bending radius | EN 12647 | 2.2 m |
| Water vapour diffusion coefficient | EN ISO 12572 | 51 μ |
| Average Nail head pull-out | ASTM D1037 | 0.9 kN |
| Average Screw pull out | BS EN 14566: 2008 & A1: 2009 | 1580 N |
| Average Screw pull through | BS EN 14566: 2008 & A1: 2009 | 2173 N |
| Moisture content (at 90±2°C) | EN 318 / ASTM C 1185 Section 10 | 8.5 % |
| Chloride ion determination | ASTM C 871-11 | 0.019% |
| Smoke development index (SDI) | ASTM E84-18, UL 723-10 | 25 (CLASS A) |
| Flame development index (FDI) | ASTM E84-18, UL 723-10 | 0 (CLASS A) |
| Crying test – BBA | BS EN T164176 | Pass (170 days at Temp 30°C Humidity 94%) |
| Mould growth | MOAT 33 | Zero growth in 42 days incubation |
| | | |









Applications

| Application Area/ Type | Recommended Thickness | | | | |
|--------------------------------|-----------------------|--------------|--------------|--------------|--------------|
| | 6mm | 9mm | 12mm | 15mm | 18mm |
| Exterior Wall Cladding | | | \checkmark | \checkmark | \checkmark |
| Interior Partitions and Lining | \checkmark | \checkmark | \checkmark | | |
| Suspended Ceiling | \checkmark | \checkmark | \checkmark | | |
| Wall Substrate | | \checkmark | \checkmark | \checkmark | |
| Wet Area Backer Board | | \checkmark | \checkmark | | |
| Balcony Soffit | \checkmark | \checkmark | \checkmark | | |
| Fire Rated Door | \checkmark | \checkmark | \checkmark | \checkmark | |
| Flooring and Staircase Decking | | | | \checkmark | \checkmark |
| Acoustic Underlayment | \checkmark | \checkmark | \checkmark | | |
| Prefabricated Buildings | \checkmark | \checkmark | \checkmark | | \checkmark |
| Vanity and Counter Tops | | | \checkmark | \checkmark | |
| Portacabins | \checkmark | \checkmark | | | \checkmark |
| Bathroom Pods | | \checkmark | \checkmark | | \checkmark |



Comparison

| Attributes | AQUAMAG° | Gypsum | Plywood | Fiber Cement Board |
|----------------------------------|--|------------------------------------|-------------------------------------|--|
| Fire Resistant/ Non-Combustible | Superior rating | Low rating (Contains paper) | No fire rating (Wood burns) | Average rating |
| Water / Moisture Resistant | Excellent resistance, less water absorption | No resistance (Dampness issue) | No resistance (Swelling issue) | Low resistance, high water absorption |
| Mold / Mildew / Insects Free | 100% Resistance | Attracts after dampness | Attracts all time | 100% Resistance |
| Screwing | Possible | Possible | Possible | Possible |
| Nailing | Easy | Not advised | Easy | Not advised |
| Cutting | Easy to cut, no special tools required | Easy cutting | Cutting saw required | Sawing only with diamond tip blades |
| Wallpaper | Can be glued with smooth finish | Can be glued with smooth finish | Can be glued with smooth finish | Not recommended |
| Tile Backer | Best option due to high water resistance | Not recommended | Not recommended | Can be used |
| Exterior Wall Cladding/Partition | Ideal choice due to weather resistance | Not recommended | Not recommended | Can be used |
| Heat Insulation | High | Average | Very low | High |
| Non-Toxic | 100% Non-Toxic | Gypsum dust is harmful | Contains formaldehyde | Contains silica |
| Strength and Flexibility | High strength and high flexibility | Low strength and low flexibility | Low strength and high flexibility | High strength and low flexibility |
| Light Weight (Easy installation) | 15% lesser weight than cement boards | Lighter than rest | Similar as Aquamag® board | Heaviest than rest. |
| Environmentally Friendly | 100% Recyclable and earth friendly | Partially recyclable | Non-eco-friendly (Cutting trees) | Non recyclable, low on energy efficiency |
| Value and shelf life | High return on value due longer shelf life and low maintenance | Least value, high maintenance cost | Average value, high maintenance | Average value and low maintenance |







High Strength

Aquamag® board is a non-combustible Class A building material with compressive strength of 2500 PSI (pounds per square inch), its impact resistance can act as a structural diaphragm to walls, floor and roofs.





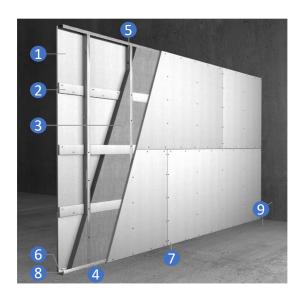
Standard Sizes

| | Thickness | Width | Length |
|----------|---|--|--|
| Metric | 06 mm 08 mm 09 mm 10 mm 12 mm 15 mm 16 mm 18 mm 19 mm 20 mm 22 mm | 600 mm 900 mm 1200 mm 1220 mm | 2400 mm 2440 mm 2700 mm 2745 mm 3000 mm 3050 mm |
| Imperial | 1/4" (inches) 3/8" (inches) 1/2" (inches) 3/4" (inches) | 2' (foot) 4' (foot) | 8' (foot) 9' (foot) 10' (foot) |



Wall Systems

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Aquamag® Standard Wall Partition

- **1.** Aquamag® Boards each side 12mm thickness square edge 1220 x 2440mm. Boards are either butt jointed or flush jointed.
- **2.** Aquamag® Boards coverstrips 75mm wide x 12mm thick each side at horizontal board joints. Fastened using M4 x 16mm self-tapping screws at nominal 300mm centres on both sides of joint.
- **3.** Stone wool insulation 50mm thickness 40kg/m3 density. (may vary based on consultant recommendation.)
- **4.** Stone wool seal or intumescent sealant.
- **5.** Steel Stud, 48mm x 32/34mm x 0.5mm at maximum 610mm centres.
- **6.** Ceiling and floor steel channel, 50mm x 25mm x 0.5mm.
- **7.** M4 x 25mm self-tapping screws at nominal 300mm centres.
- **8.** M6 steel anchor bolt at nominal 600mm centres.
- 9. Concrete floor slab.

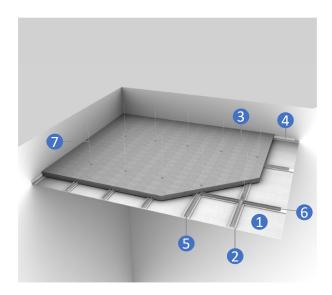
Note: The above partition is recommended for heights up to 3meter using framing members as detailed.

Aquamag® Shaft Wall

- **1.** Aquamag® Board 12mm thick. Boards tightly fitted between studs and held in place with steel securing channels. Horizontal board joints backed by Aquamag® Board cover strips.
- **2.** Steel channels 85mm x 40mm x 1.2mm fixed back to back at maximum 300mm centres with M5 self-tapping screws to form "I" section and located at maximum 610mm centres.
- **3.** Steel channels 85mm x 40mm 1.2mm fixed at edge of shaft wall partition at maximum 600mm centres with M6 steel anchor belt.
- **4.** Steel channels, 88mm x 40mm x 1.2mm bottom track fixed at maximum 600mm centres with M6 steel anchor bolt. All perimeter channels to be bedded on stone wool.
- **5.** Steel channels, 88mm x 70mm x 1.2mm head track fixed at maximum 600mm centres.
- **6.** Securing channel 72mm x 25mm x 0.7mm fixed to steel web with M5 steel self-tapping screws at 300mm centres.
- **7.** Aquamag® Boards coverstrips 100mm wide x 12mm thick at horizontal board joints. Fastened using M4 x 16mm self-tapping screws at nominal 200mm centres on both sides of joint.
- **8.** Stone wool minimum 75mm thick x 45 kg/m3.
- **9.** Aquamag® fillet 18mm thick x100mm wide fixed to steel channels. 12mm thick Aquamag® Board fixed to stud using M4 x 38mm screws.







Aquamag® Standard Suspended Ceilings

- **1.** Aquamag[®] Board 9mm thick square edge 1220 x 2440mm.
- **2.** Aquamag[®] Strips 50mm wide, 12mm thick.
- **3.** Stone wool insulation 50mm thickness 50kg/m3 density. (may vary based on consultant recommendation.)
- **4.** Perimeter steel angles minimum 50mm x 50mm x 0.7mm thickness fastened using M4 x 32 mm steel self tapping screws into non-combustible plugs or equivalent at nominal 400mm centres to the concrete or masonry surrounding structure.
- **5.** Fire rates concealed channel system ceiling channel section minimum 60mm wide x 27mm deep x 0.5mm steel thickness. Primary channels at board joints and connected to primary channels using inter locking steel connectors.
- **6.** Fillet fixed to underside of primary and cross channels and perimeter angle with M4 x 25mm steel self tapping screws at any convenient centres. Aquamag® boards fixed through fillets to channels and perimeter angle with M4 x 32mm steel self tapping screws at nominal 300mm centres
- **7.** Hanger rod at 1000mm centres, tensile stress on hander should not exceed 15 N/mm2.

Aquamag® Self Supporting Ceilings

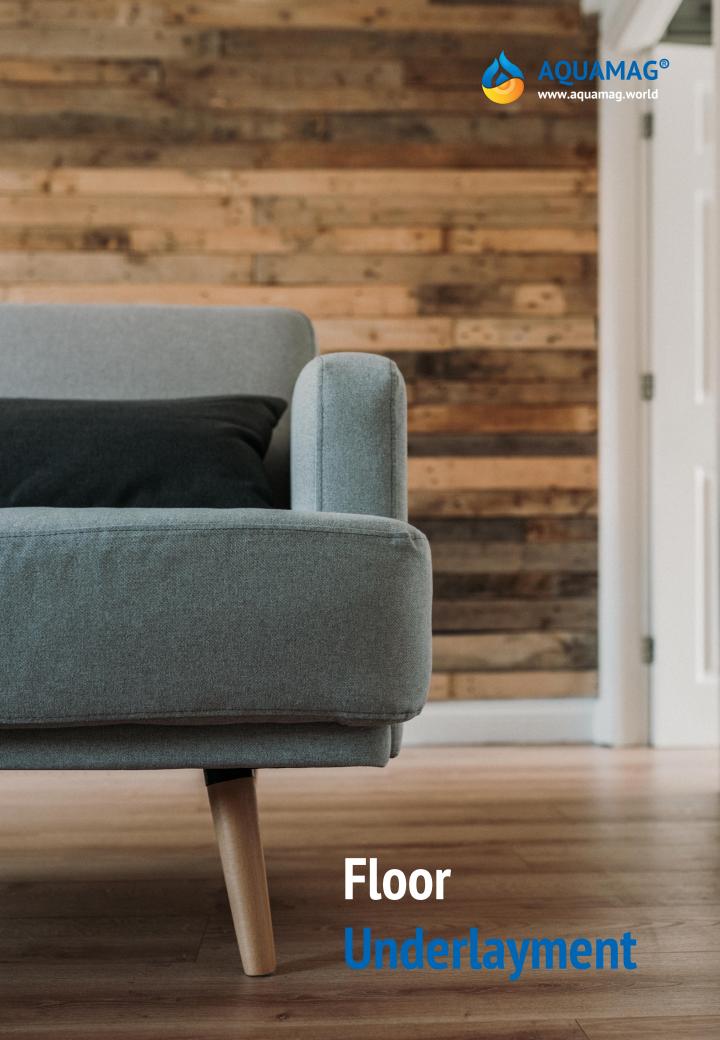
- **1.** Aquamag[®] board 9mm thickness square edged 1220mm x 2440mm.
- **2.** Aquamag® strips 50mm x 12mm thickness. The thickness of Aquamag strips on underside of the perimeter angles may be reduced by 3mm to maintain an even surface for the main ceiling boards. Lateral board joints backed by Aquamag® strips fastened using M4 x 25mm long self-tapping screws at nominal 200mm centres on both sides of the joint.
- **3.** C-channel purlins positioned at maximum 610mm centres. Expansion gap is left at both ends of the *C*-channels.
- **4.** Perimeter steel angle, nominally 75mm x 50mm, fastened to wall around perimeter of ceiling, through 50mm leg, with minimum M6 x 50mm steel fixing anchors at 300mm nominal centres.
- **5.** M4 x 38mm self-tapping screws fixed at 200mm centres on facing board and M4 x 25mm self-tapping screws at 500mm centres on cover strip to purlins.
- **6.** M6 x 50mm steel expansion bolts at 300mm centres.
- **7.** Concrete or brick wall.
- **8.** Stone wool minimum 50mm thickness, 50kg/m³ density. (may vary based on consultant recommendation.)













Aquamag® Floor Board Installation

(Interior Application Only)

We recommend minimum 15mm thickness Aquamag[®] board for floor applications.

1. Ensure subfloor is structurally sound

On existing structures:

- Ensure subfloor is not damaged.
- Replace any loose, warped, uneven or damaged sections of floor.
- Make certain subfloor is a clean and flat surface.

For all floors:

- Use minimum 15mm exterior grade plywood or 23/32 OSB with Exposure 1 classification or better, complying with local building codes and ANSI A108.11.
- Joist spacing not to exceed 600mm on center.
- The floor must be engineered not to exceed the L/360 deflection criteria (L/720 for natural stone), including live and dead design loads, for the specific joist spacing used.

2. Determine layout of Aquamag® board

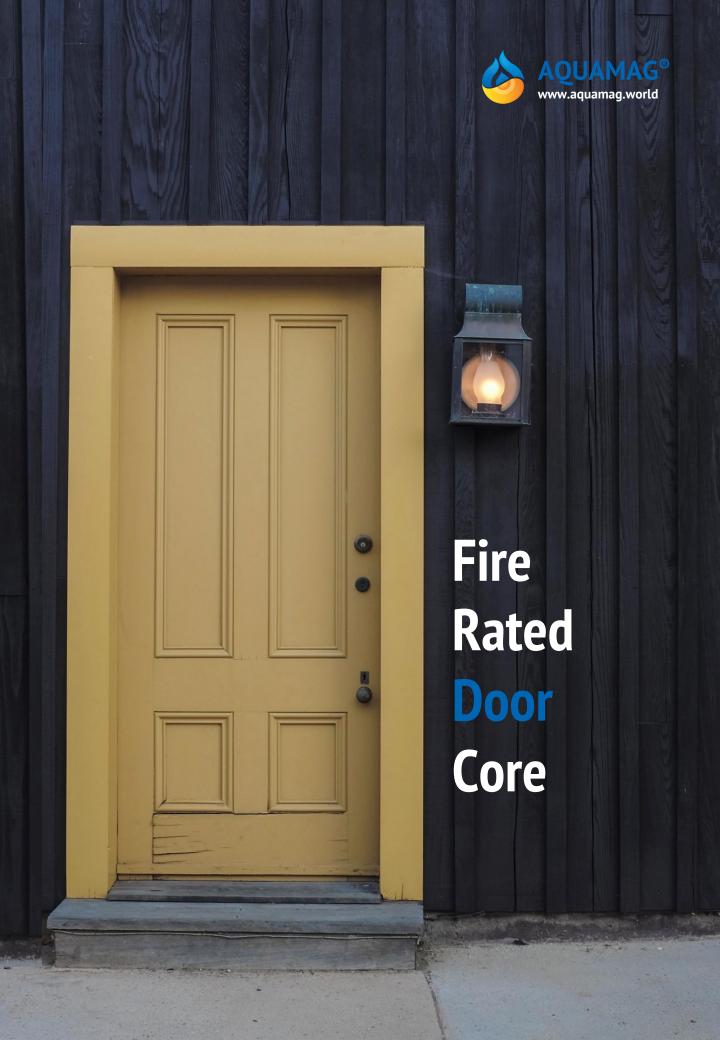
- Stagger all Aquamag® board joints. Do not align with subfloor joints.
- Never allow all four corners of boards to meet at one point.
- We recommend an 3mm gap between board edges.
- Keep sheet edges 3mm back from walls and cabinet bases.
- Score and snap boards to required sizes and make necessary cutouts.

3. Attach Aquamag® board to subfloor

- Apply a supporting bed of mortar or modified thinset to subfloor using a 6mm square-notched trowel.
- Embed Aquamag® board firmly and evenly in the wet mortar.
- Use the fastener pattern as a guide. Fasten Aquamag® board with specified nails or screws every 200mm over the entire surface. Keep fasteners between 10mm and 20mm from board edges and 50mm from board corners.
- Set fastener heads flush with the surface without overdriving.

4. Tape joints prior to tiling

- Prior to setting the tile, fill all joints with the same mortar used to set the tiles.
- Embed 50mm wide high-strength alkali-resistant glass fiber tape in the mortar and level.



Aquamag® Core Board

Description Two Latched Single Leaf Single

Acting Plain Wooden Door.

Layers 1. Lumber Edge

2. Style

3. Aquamag® Core Board

4. Cross Band

5. Veneer Face

Specification 5 Ply Construction

Thickness 1-3/4" Only

Temp Rise 30 Minutes, 250 Degrees

Maximum

Stiles/Rails: Laminated

Composite to Wood, Specific to

Rating

Veneers Plastic Laminate or 2 Ply

Fiberboard (HDF) Backer Wood

Veneers

Machining To Specification
Louvers To Specification

Core Aquamag® Magnesium Oxide

Board

Fire rating 2 hours complies to BS 476

Part 20 and 22

Fire doors are required to be self closing and positive

latching.

Door frame and hardware must also carry the appropriate fire

label.









Loading

Aguamag[®] boards are supplied on pallets suitable for fork lift unloading. If crane off-loading by slings is envisaged. care should be taken to avoid damaging edges of the boards. All pallets and crates can be safely handled by using a fork lift or hoisting equipment and straps. Steel cables should not be used as it will damage both the pallet and the boards. Where crates are removed from a box container, care should be taken not to subject crates and pallets to any impact shock, as this could result in damaging the boards. Always drive the delivery vehicle as close as possible to where the boards are to be used. When transporting the boards it is essential to firmly secure the pallets to prevent sliding. If the boards are subsequently moved around the site, the boards should be placed on a rigid base suitable for lifting by the forklift tines. Aquamag® boards should always be stored on a rigid base.

Storage

Aquamag® Boards are supplied with protective plastic sheet wrapped around timber pallets. In general all pallets are supplied with a top protective layer and cardboard cover protection. The top protective board is clearly marked as such and must not be used as part of any system installation. This protection should not be removed until the boards are ready for use. In general, the following steps should be taken to ensure that the boards remain in good condition during storage. Aquamag® boards should be stored in covered shade on dry level ground, away from the working area or mechanical plant. Not more than 3 Pallets should to be stacked on top of each other.

- The boards must protected from inclement weather.
- The boards must be stored under cover.

Handling

The following recommendations must be always taken into account when handling the boards.

Wherever possible, always lift boards from the stack below rather than slide board on board. This will prevent damage or scratches occurring to the lower boards. Always carry the boards from the edges with both hands and not with one hand, also never stack the boards on the edges.

Cutting

Aquamag® boards can be worked with conventional woodworking equipment although the use of hand saws with hardened teeth is recommended. Boards can be easily cut using a power circular saw with a tungsten carbide tipped blade, or a jigsaw. It is recommended that all cutting be carried out in well ventilated space, using dust extraction facilities. Operators should wear protective face masks at all times. There are a wide variety of applications and fixing methods possible with Aquamag® boards. The method to be used dependent on a number of factors, including:

- The shape of boards, be they square, rectangular circular etc.
- The location where the work is to be carried out, be it industrial, commercial, on or off site etc.
- The quality of workmanship required.

Aquamag® boards can be cut on site fairly easily. However, if a large amount of boards are to be cut, it is recommended that cutting is carried out off site under controlled conditions as much as possible, to ensure good quality of finished edges etc. Cutting with diamond tipped blade is recommended. Cutting with diamond tipped blade is carried out using high speed electric motor (2500-300 rpm) depending on the diameter of the blade. The saw support can be equipped with several saws for multi cutting in a single pass of the blades over the boards. The boards should be cleaned after cutting to avoid leaving any dust on the surface. Diamond tipped blades can be used to cut more than one board at a time depending on the diameter of the saw table.



Screw Fixing

We recommend using a 316 stainless material for all fasteners. However, since all projects and project locations are different, we strongly recommend you always consult with a local fastener expert to ensure you are using the fastener material appropriate for your project. Fastening to metal with screws:

Utilize a flat head screw with nibs under the head for countersinking into the board, and a self drilling point for penetrating the light gauge metal.

Fastening profiles:

- Install fasteners no closer than 100mm from corners.
- Perimeter fasteners should be placed 150mm apart.
- Center fasteners should be placed 300mm apart.
- Install fasteners approximately 15mm from the board edge.

Jointing

Jointing is applicable to most partition and ceiling constructions. However, in some instances it may be also applicable to external wall constructions. Generally installations of concealed framed partition systems require crack-free seamless joints. The method of constructing joints depends very much on the skills and know-how of the installer, as well as the stability and type of the supporting structure. Following are some guidelines for joint finishing that will help achieve the required appearance.

Aquamag® boards come with a square edged finish and it is important a gap between the boards is maintained to ensure good jointing. When the boards are ready for joint treatments, follow the steps below to obtain the required finish.

- A gap between boards of approximately 3mm should be maintained.
- After the installation of the boards, wait until the boards acclimatized with the surrounding conditions.
 This would normally take approximately 24 to 48 hours to achieve.
- Clean the surface of the joint and surrounding area (approximately 300mm in width each side of joint).
- Always work with clean tools and containers.

- The work should be carried out in an environment with ambient air temperature.
- Prepare the joint filler as per instructions prescribed by the filler manufacturer.
- Always use clean water.
- Fill the joint with sufficient joint filler.
- Apply a layer of reinforcing fiber mesh tape over the filler and with a spatula cover the complete surface of the tape with an excessive amount of well-embedded joint filler.
- Let dry completely and sand the surface slightly with fine grade sandpaper.
- Apply a second layer of joint filler with wide trowel.
- Wait until it is completely cured and sand the surface again slightly with same grade of sandpaper.

Tiling

Aquamag[®] boards can be tiled, provided due consideration is given to the installation of the boards and the requirements for additional framing prior to applying the tiles. It should be carefully noted that Aguamag® boards system is used for its fire resistance properties, Therefore placing additional weight on the system, such as ceramic marble tiling for instance, can have a significant effect on the overall performance of the system. It is for this reason that sometimes additional framing is required for partition systems etc. which are to bear the weight of tiles and still maintain their fire performance. Whilst tiling Aquamag® boards can be successfully achieved, care needs to be taken in sealing the boards thoroughly before applying any tile adhesive. This is due to the very high suction loads on the boards, which in-turn accelerates the setting time of the tile adhesive.

Painting

All coatings should be supplied by a reputable manufacturer and their recommendations regarding surface preparation. Aquamag® boards have an attractive, smooth finish but if required can be painted with emulsion or oil based paints. With water-based paints, a diluted first coat should be used. For oil-based paints use a universal primer.



Company

State of the art manufacturing technology is used to create arguably the only truly environmentally and people friendly magnesium board available today, and is quickly defining a new benchmark for the green and sustainable building products.

We are continuously researching, improving and developing new MgO products and product lines. Aquamag® represent a quantum shift in building technology and thinking. The company is heavily involved in the research and development of state-of-the-art proprietary structural insulated panels. We maintain an active research and development program to ensure that we remain at the top of our game and lead the way in green building technology.

Founded with the core values of quality, reliability and integrity had yield company to serve as a constructor to help increase the quality of people's lives directly.

The company's passion on improving the way of building, has lead the company to make continuous research of new technology - cutting edge products. To monitor the construction world closely, the company decided to expand in construction market by exporting high quality products to provide better solutions and implement new approaches to the complex and most demanding projects.

Aquamag® has entered the market with an innovative perspective and introduced its magnesium oxide boards to construction sector. The demand of the market to the board clearly stated that the product was the future construction material to change the way of how we built.

'Providing a Practical & Sustainable Product'.

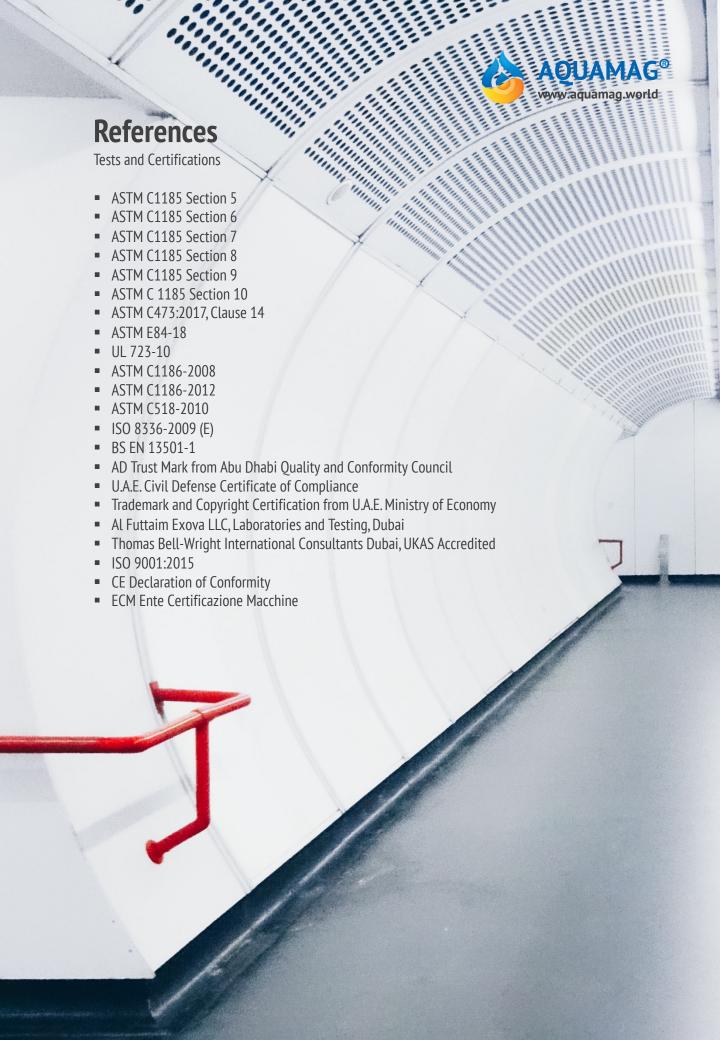
The firm is guided by its ongoing responsibility for achieving and surpassing our customers' goals. Listening, understanding, reinventing and creating are the foundations that drive our thinking. Reinventing the concept behind spaces based on our customers' goals is a task we embrace with passion, efficiency and dedication.

Production Facility

- Fully automatic production line with major upgrades in 2018 in batch mixers, conveyors and material handling.
- Capacity: 3.5 Million Square Meter Annual
- Accreditation: ISO 9001:2015, ISC 14001:2015, ECM, CE Mark.



*Remember that not all MgO products available are the same. Only specify and use independently tested and certified compliant magnesium boards at all times.







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