Magnesium oxide based building materials

Empowering • Sustainable • Living
Empowering sustainable living

In the wake of the last climate conference in Paris, we have all become aware that we must drastically reduce our CO2 emissions to limit the Earth’s temperature rise. One of the most important questions though is how can we achieve quick results?

In addition to the biggest sources of CO2 emissions, such as cars, aviation, (container) ships and coal-fired power stations, there are also less obvious ones, like the way we build, for example. Until today we have depended heavily on the use of concrete for constructing commercial and non-commercial buildings and structures, making concrete the most widely used building material in the world.

What many people don’t realise is that during the curing of concrete large amounts of CO2 are released. We can safely estimate that the cement and concrete industry is responsible for five per cent of global CO2 emissions!

On top of all the initiatives that have already been taken to make cement and concrete more environmentally friendly, we really must keep looking for alternatives and for other ways of innovating the building industry. This is particularly important when we take into account burgeoning urbanisation in emerging countries like India, where the government has been forced to develop rigorous plans to restructure 100 of its largest urban centres. These so-called Smart Cities are in desperate need of good and sustainable building materials and they can be seen as typical of the big building challenges that lay ahead.

This quest for sustainable innovation, coupled with my own passion for architecture and long-term association with the Indian subcontinent, have all led to the founding of Withindia Building Solutions, a company that delivers innovative, sustainable building solutions based on magnesium oxide products. These are solutions that contribute to faster and more flexible methods of constructing commercial and non-commercial buildings and, above all, significantly reducing our carbon footprint in the process.

It’s therefore my pleasure to invite you to see for yourself how our products can add value to your building projects. And if you’d like to receive more information, or perhaps share your own experiences, please don’t hesitate to contact us.

We’d love to hear from you!
Innovative solutions

SINH™ is the international quality brand under which Withindia Building Solutions offers unique and innovative building solutions for new-build, renovation or restoration purposes. Our high-performance products are based on magnesium oxide and have been ingeniously fabricated with detailed attention to quality, using special SINH™ technology. All this results in multipurpose construction- and non-construction MgO-board solutions that:

› contribute to faster and more flexible building methods
› ensure users can comply with the most stringent standards and building codes;
› significantly reduce total construction costs;
› positively impact sustainability and reduce CO2 footprint and water usage.

Unique product benefits

Our multi-purpose construction-board solutions offer unique product benefits. They are highly durable, incombustible (class: A1), lightweight, highly energy efficient, sound insulating, weatherproof and impact resistant. They are also non-toxic, mould- and asbestos-free and 100 per cent recyclable. And, above all, they are easy to handle and quick to install.

Due to their advanced technical features and benefits, SINH™ products can be considered as a better, “greener”, and affordable alternative to traditional fire-resistant board material, plywood, gypsum and fibre-cement-based products.

Limitless application purposes

SINH™ products can be used for limitless indoor and outdoor applications for both commercial and non-commercial building purposes. SINH™ products are easily utilized in the construction of:

› interior walls
› (false) ceilings
› column cladding
› roofing underlayment
› duct covers
› prefab construction
› interior design

Certification

All our products are tested to European quality standards. Our flagship product SINH™ board is currently undergoing CE Certification, assuring that our products have been thoroughly tested and meet all European directives that apply in the areas of safety, health and the environment.

Fire safety

SINH™ board products are incombustible (Class A1). When applied correctly, 9 mm SINH™ board can easily attain more than 60 minutes’ fire resistance (conforming with EN 1364-1: 2015). This enables building contractors to comply with the most stringent of fire-safety requirements.

Impact resistance

Thanks to its strength and durable characteristics, products fabricated from SINH™ are highly resistant to impact. This makes it ideal for building constructions that have to withstand high impact endurance, like partition walls in schools, hospitals and leisure or public buildings.

Thermal and acoustic insulation

SINH™ products have superior thermal and acoustic insulating qualities. This makes them highly energy efficient (Thermal conductivity value: 0.213 W/(m-K)), and compliant with acoustic performance standards. SHINH™ 9 mm board has an acoustic insulation value of 38dB.

Waterproof and damp-proof

SINH™ products are completely water resistant and dimensionally stable in high humidity conditions. In addition to this, SINH™ products do not bread down when immersed in water or exposed to freeze/thaw cycles.

Health

Products fabricated from SINH™ board are non-toxic and asbestos-free. And thanks to its open molecular structure and high permeability to vapour, SINH™ board does not stimulate the growth of mould or fungi, and does not support insect life. Therefore, SINH™ board underscores a healthy environment.

Easy to handle, quick to install

SINH™ products can be easily machined, trimmed, drilled or shaped using ordinary (power) tools. Because SINH™ products are lightweight they can also be handled and installed easily and quickly. And thanks to its smooth surface and excellent adhesion qualities, SINH™ facilitates easy finishing.

To learn more about how to use SINH™ go to: www.sinhbuild.com
SINH™ products

We offer three SINH™ product lines, which, along with SINH™ tools, represent a complete building construction solution.

SINH™ board
Innovative multipurpose non-constructive board

SINH™ board, our flagship product, is an innovative, multipurpose non-construction board based on magnesium oxide. SINH™ board is highly durable, incombustible (class A1), lightweight, waterproof, impact resistant, non-toxic and 100 per cent recyclable. It is the ideal product for the quick and flexible construction of (false) ceilings, interior walls, roofing underlayment, wall cladding and duct covers.

SINH™ laminate
High quality decorative board for interior and exterior application

SINH™ laminate is an innovative, decorative board material manufactured by the lamination of SINH™ board sheets, thereby combining all the advanced features of SINH™ board with attractive decorative finishing options. SINH™ laminate offers high-quality wood veneer finishes that are ideal for interior floor coverings and wall or (kitchen) furniture. By choosing plastic film PVC veneer finishing (which is UV resistant), SINH™ laminate can also be used for outdoor applications.

SINH™ panel
For quick, prefabricated load-bearing constructions

SINH™ panel is a fire-resistant, highly insulating, sandwich panel that is based on SINH™ board. It is manufactured by laminating two sheets of SINH™ board to an expanded polystyrene (EPS) foam core or SINH™ foam board. Thanks to the use of special bonding and vacuum technologies, SINH™ panels are ideally suited for high-strength (prefabricated) load-bearing constructions in buildings, bungalows and other housing applications.
Building with SINH™

1. False ceiling (9mm SINH™ board)
2. Roofing underlayment (12mm SINH™ board)
3. Duct cover design (18mm SINH™ board)
4. Column cladding (12mm SINH™ board)
5. Interior design (6mm SINH™ laminate)
6. Wall cladding (9mm SINH™ board)
**Interior walls**

SINH™ board is the ideal product for constructing non-load-bearing interior walls. SINH™ board is fire- and impact-resistant, lightweight, highly insulating and ideal for any kind of finishing. Even in the most humid of environments, SINH™ board will not break down or host fungi or insect life.

SINH™ board can easily be machined and mounted on wood-batten or metal-stud frames, using only ordinary power tools. Thanks to its lightweight construction, SINH™ board is much easier to handle than fibre-cement or gypsum products. It also adds excellent fire-safety, insulation and impact-resistance qualities to the equation. Add to all this the fact that SINH™ board is non-toxic and 100 per cent recyclable, and it’s clear that SINH™ board forms the basis of highly sustainable building solutions.

**Recommended SINH™ tools:**

- 4x40 corrosion-resistant drywall screws
- Magnesium finishing paste
- Joint finishing tape
- Joint finishing knife
- Compri sealing tape

---

**Details wood battens**

<table>
<thead>
<tr>
<th>Plan view section</th>
<th>Centre</th>
<th>Corner</th>
<th>Detail description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall application</td>
<td>1</td>
<td>2</td>
<td>9 mm SINH™ board</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>6</td>
<td>6 mm SINH™ board, 150 mm wide</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>50 mm stone wool</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>4</td>
<td>Wood batten or MgO batten</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>Outer, load-bearing wall</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>SINH™ tools corrosion-resistant drywall screw</td>
</tr>
</tbody>
</table>
SINH™ board products are incombustible (Class A1). When applied correctly, 9 mm SINH™ board can easily attain more than 60 minutes’ fire-resistance (conforming with EN 1364-1:2015). This enables building contractors to comply with the most stringent of fire safety requirements.

For construction (load-bearing) wall constructions we recommend using SINH™ panel.

Details metal stud

- **Plan view section**
- **Wall application**
- **Centre**
- **Corner**

**Detail description**

1. 9 mm SINH™ board
2. 6 mm SINH™ board, 150 mm wide
3. 50 mm stone wool
4. Metal stud line, U-profile
5. Outer, load-bearing wall
6. SINH™ tools corrosion-resistant drywall screw
7. SINH™ tools compri-tape
Ceilings

SINH™ board can also be used for constructing (false) ceilings. Thanks to its fire-resistant and non-toxic properties SINH™ board is a safe and healthy solution for constructing (false) ceilings. Additionally, SINH™ board is lightweight, highly impact resistant and easy to install.

Another big advantage of using SINH™ board instead of traditional gypsum products is its resistance to moisture. This is a great benefit if, for instance, air-conditioning systems are to be incorporated in the ceiling construction.

Recommended SINH™ tools:

- 4x40 corrosion-resistant drywall screws
- Magnesium finishing paste
- Joint finishing tape
- Joint finishing knife

Details

Front section view
Ceiling application

Corner wall/ceiling

Detail description

1. 9 mm SINH™ board
2. Optional wiring
3. 6 mm SINH™ board
4. Wood line
5. Original ceiling
6. SINH™ tools corrosion-resistant drywall screw
SINH™ board is the ideal product to make non-fire resistant materials fire resistant. Column cladding is the most common application, however SINH™ board is also eminently suited to the cladding of air-conditioning ducting.

Traditional ways of cladding, typically using plywood or gypsum, stimulate the growth of fungi and bacteria. SINH™ board, on the other hand, has proven to be completely resistant to disadvantages of this sort, thus providing both fire-safety and excellent insulation without the usual drawbacks.

Recommended SINH™ tools:
- 4x40 corrosion-resistant drywall screws
- Magnesium finishing paste
- Joint finishing tape
- Joint finishing knife

Details

<table>
<thead>
<tr>
<th>Section view</th>
<th>Corner strengthening</th>
<th>Detail description</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 mm application</td>
<td>18 mm SINH™ board</td>
<td>18 mm SINH™ board</td>
</tr>
<tr>
<td>Steel column</td>
<td>Steel column</td>
<td>Steel column</td>
</tr>
<tr>
<td>SINH™ tools corrosion-resistant drywall screw</td>
<td>SINH™ tools corrosion-resistant drywall screw</td>
<td>SINH™ tools corrosion-resistant drywall screw</td>
</tr>
<tr>
<td>Metal bracket if SINH™ board thinner than 18 mm is used</td>
<td>Metal bracket if SINH™ board thinner than 18 mm is used</td>
<td>Metal bracket if SINH™ board thinner than 18 mm is used</td>
</tr>
</tbody>
</table>
Roofing underlayment

The excellent insulating and flexural strength properties of SINH™ board make it perfectly suited to all types of roofing underlayment.

Compared to alternative products, such as fibre-cement board, SINH™ board offers a number of significant benefits. SINH™ board is strong, moisture resistant, has excellent insulation properties and is quick and easy to install. And because SINH™ board is so light it subjects roofing constructions to lower loads, thereby generating cost savings for load-bearing steel constructions.

Recommended SINH™ tools:
- 4x40 corrosion-resistant drywall screw
- Magnesium finishing paste
- Joint finishing tape
- Joint finishing knife
- Compri sealing tape

Details

Front section view
Beam application joint

Beam application top

Detail description
1. 9 mm SINH™ board
2. Roof finishing tiles
3. Insulation
4. Metal construction
5. SINH™ tools corrosion-resistant drywall screw
Duct covers designs

SINH™ board can be easily machined with computer numerically controlled (CNC) technology, making it the ideal product for decorative duct covers. And because sharp corners can also be machined in SINH™ board, the design options are endless. For a duct cover application, for example, an 18 mm board is recommended, treated with a primer to protect the duct cover design against the weather. Plaster, or a paint finishing, can easily be applied, to give the duct cover a distinct aesthetic appearance.

**Recommended SINH™ tools:**

- 4x40 corrosion-resistant drywall screws
- Magnesium finishing paste
- Joint finishing tape
- Joint finishing knife
- Compri sealing tape

**Examples**
SINH™ laminate

SINH™ laminate is an innovative, decorative board material manufactured by the lamination of SINH™ board sheets, thereby combining all the advanced features of SINH™ board with attractive decorative finishing options.

SINH™ laminate offers high-quality wood veneer finishes that are ideal for interior floor coverings and wall or (kitchen) furniture. By choosing plastic-film PVC veneer finishing (which is UV resistant), SINH™ laminate can also be used for outdoor applications.

Standard options of SINH™ laminate are: Ebony, Beech, Walnut and Ivory. However, bespoke laminate prints and colours can also be produced on request and client specification*.

Laminate options

*Please note that for bespoke laminate prints and colours, special conditions apply.
SINH™ panel

SINH™ panel is a fire-resistant, highly insulating, sandwich panel that is based on SINH™ board. It is manufactured by laminating two sheets of SINH™ board to an expanded polystyrene (EPS) foam core or SINH™ foam board.

Thanks to the use of special bonding and vacuum technologies, SINH™ panels are ideally suited for high-strength (prefabricated) load-bearing constructions in buildings, bungalows and other housing applications.

Dimensions and finishing are up to client specification, enabling quick and flexible construction and resulting in significant time and cost savings.

If you would like to learn more about constructing with SINH™ panel, please contact our technical support team or visit our website: www.sinhbuild.com

Details

**Plan section view**
Panel construction

**Panel connection**

**Detail description**

1. SINH™ board 6 - 18 mm
2. Hard insulation: EPS / PIR / Cavity wall insulation
3. Pinewood battens or MgO battens
Bungalow park Vapi, India

For the construction of a new bungalow park in the state of Gujarat, Withindia Building Solutions teamed up with Avadh, a company that has implemented groundbreaking projects in Amreli, Surat, Bardoli, Navsari and Ahmedabad. Avadh has a strong reputation for pioneering innovative building solutions in the design of lifestyle projects, and its quest for innovation led to the sourcing of SINH™ board for roofing underlayment for this project.

Avadh’s choice of SINH™ board was based mainly on the fact that SINH™ board is strong and lightweight, making it possible to reduce the load on the rooftop structure. This generated significant cost savings in the steel roof construction, as well as for transport and labour.

Other compelling arguments for using SINH™ board were that SINH™ board is fire- and water-resistant, highly durable and can serve as an excellent insulation layer for both hot and cold. All these properties enabled Avadh to comply with the most stringent of health and safety requirements in this project.

The fact that Withindia Building Solutions is a stock-holding company in SINH™ magnesium oxide boards, offering great technical service and timely on-site delivery, sealed the partnership. The end result was excellent collaboration and the realisation of yet another innovative building project for Avadh.

Details

1. The main roof construction comprises a steel framework. SINH™ board (12 mm) serves as the first roofing layer, providing a durable, highly insulating, waterproof and fire-proof construction layer.

2. The joint gaps between the SINH™ boards are filled with a magnesium finishing paste and covered with a layer of joint finishing tape. The roof is finished off with a layer of roofing tiles, protecting the construction against all elements of the weather.

Detail description:

1. 9 mm SINH™ board
2. Roof tiles
3. Insulation
4. Load-bearing construction
5. SINH™ tools corrosion-resistant drywall screw
Availability

**SINH™ board**

<table>
<thead>
<tr>
<th>Width</th>
<th>Thickness</th>
<th>Colour</th>
<th>Edges</th>
<th>Finishes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2440 x 1220 mm</td>
<td>6 mm</td>
<td>White (standard)</td>
<td>Square</td>
<td>Paint (oil / water based latex)</td>
</tr>
<tr>
<td>2700 x 1220 mm</td>
<td>8 mm</td>
<td>Grey</td>
<td>Tapered</td>
<td>Plaster</td>
</tr>
<tr>
<td>3000 x 1220 mm</td>
<td>10 mm</td>
<td>Pink</td>
<td></td>
<td>Ceramic tiles</td>
</tr>
<tr>
<td></td>
<td>12 mm</td>
<td>Blue</td>
<td></td>
<td>Brick strips</td>
</tr>
<tr>
<td></td>
<td>16 mm</td>
<td>Green</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SINH™ laminate**

<table>
<thead>
<tr>
<th>Width</th>
<th>Thickness</th>
<th>Colour</th>
<th>Edges</th>
<th>Finishes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2440 x 1220 mm</td>
<td>6 mm</td>
<td>Among others:phin:</td>
<td>Square</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>8 mm</td>
<td>Walnut</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 mm</td>
<td>Ivory</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 mm</td>
<td>Ebony</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 mm</td>
<td>Beech</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SINH™ panel**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Colour</th>
<th>Edges</th>
<th>Finishes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to client specifications</td>
<td>White (standard)</td>
<td>Tongue &amp; Grove</td>
<td>Paint (oil / water based latex)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Plaster</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ceramic tiles</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Brick strips</td>
</tr>
</tbody>
</table>

**Colours**

<table>
<thead>
<tr>
<th>White (standard)</th>
<th>Grey</th>
<th>Pink</th>
<th>Blue</th>
<th>Green</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="White" /></td>
<td><img src="image2" alt="Grey" /></td>
<td><img src="image3" alt="Pink" /></td>
<td><img src="image4" alt="Blue" /></td>
<td><img src="image5" alt="Green" /></td>
</tr>
</tbody>
</table>

**Edges**

- Square
- Tapered
- Tongue & Groove (Panel)

**SINH™ tools**

Within India Building Solutions offers a complete toolset for installation and finishing. This toolset includes:

- 4x40 corrosion-resistant drywall screws
- Magnesium finishing paste
- Joint finishing tape
- Joint finishing knife
- Compri sealing tape
Additional information

Product performance

All our products are tested to European quality standards in accordance with ETAG 018: GUIDELINE FOR EUROPEAN TECHNICAL APPROVAL OF FIRE PROTECTIVE PRODUCTS. This guarantees that our products have been thoroughly tested and meet all European directives that apply in the areas of safety, health and the environment.

<table>
<thead>
<tr>
<th>Product performance tests</th>
<th>In accordance to</th>
<th>Clause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire safety (60 minutes fire resistant)</td>
<td>EN 1364-1:2015</td>
<td></td>
</tr>
<tr>
<td>Flexural strength</td>
<td>ETAG 018-4, EN 12467</td>
<td>clause 5.2.4, clause 7.3.2</td>
</tr>
<tr>
<td>Tensile strength (perpendicular to the plane of the board)</td>
<td>EN 326-1, EN 319</td>
<td></td>
</tr>
<tr>
<td>Tensile strength (parallel to the plane of the board)</td>
<td>ETAG 018-4, EN 789</td>
<td>clause 9</td>
</tr>
<tr>
<td>Compressive strength</td>
<td>ETAG 018, EN 789</td>
<td>clause 8</td>
</tr>
</tbody>
</table>

Quality assurance

Withindia takes great pride in delivering premium quality products supported by prompt technical and customer service. In support of this Withindia Building Solutions enforces a strict quality control for all its product lines. Production batches are marked with a unique serial number and the official SINH™ lion trademark.

Green choice

SINH™ products are highly energy efficient, non-toxic, and mould- and asbestos-free. Moreover, they are 100 per cent recyclable and they have a low carbon-footprint. Thanks to these “green” features, our products contribute directly to the sustainability of any project in which they are used.

Technical specifications

For 9mm SINH™ board, the technical specifications are as follows:

<table>
<thead>
<tr>
<th>Criterium</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>975 kg/m³ ±2.5%</td>
</tr>
<tr>
<td>Construction material fire class</td>
<td>A1</td>
</tr>
<tr>
<td>Moisture content</td>
<td>15.5 % (20 °C, 65% RH)</td>
</tr>
<tr>
<td>Thermal conductivity</td>
<td>0.213 W/(m·K)</td>
</tr>
<tr>
<td>Flexural strength</td>
<td>13.4 N/mm²</td>
</tr>
<tr>
<td>Modulus of elasticity</td>
<td>4599 N/mm²</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>2.61 N/mm² (parallel to the plane)</td>
</tr>
<tr>
<td>Compressive strength</td>
<td>10.58 N/mm²</td>
</tr>
<tr>
<td>Resistance to nail head pull-through</td>
<td>394.5 N</td>
</tr>
</tbody>
</table>
Overview of wall cross sections

Partition walls wood
Recommendations
- Insulation: stone wool
- Thickness: 9 mm SINH™ board for 60 minute fire resistance
- Screws: 4x40, corrosion-resistant
- Finishing: SINH™ paste + coating

Partition walls metal stud
Recommendations
- Insulation: stone wool
- Thickness: 9 mm SINH™ board for 60 minute fire resistance
- Screws: 4x40, corrosion-resistant
- Finishing: SINH™ paste + coating

Roof underlayment
Recommendations
- Insulation: stone wool
- Screws: 4x40, corrosion-resistant
- Finishing: roofing tiles

Wall

Option 1

Option 2

Technical support

For product or installation support for any SINH™ product or service, please contact our technical support team. You can also visit our website, where you will find a wealth of useful information about our products, their benefits and how to use them.

Call: +91 (0) 79 40051753 (INDIA)
Call: +31 (0) 88 3748400 (EUROPE)

www.sinhbuild.com: