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## MAGNESIA CEMENT PRODUCTS VS PC CEMENT BASED PRODUCTS

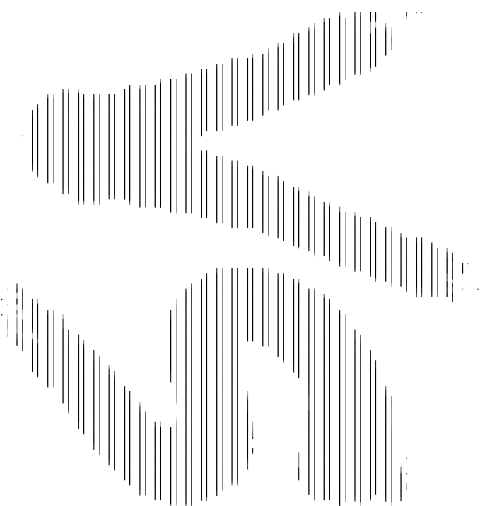
### Magnesia (MgO) Cement:

The carbon footprint of MgO cement is not dependent on carbonation during use.

Its footprint is achieved during manufacture by the combination of the following features:


- Use of magnesium silicates minerals, which eliminates the CO<sub>2</sub> emissions from raw materials processing.
- Use of a production process that not only requires less energy but also lower temperatures and allows the use of fuels with low energy content or carbon intensity (i.e. biomass).
- Use of hydrated magnesium carbonates in the cement composition that absorb CO<sub>2</sub> during their production and therefore have a carbon negative footprint.

Current calculations estimate that the carbon footprint will be in the range of **-100kg CO<sub>2</sub> to +100 kg CO<sub>2</sub>/tonne** magnesia (MgO) cement



### Portland Cement:

The ongoing search for alternative materials to that of PC because of its large CO<sub>2</sub> emissions footprint of around **8% of global anthropogenic greenhouse-gas emissions** has led to Magnesia Cement being identified as a potential low-CO<sub>2</sub> alternative to PC



**GREENHOUSE GASSES /  
EMBODIED ENERGY  
PROTECTION FROM EXTREME  
WEATHER EVENTS AND FIRE**

**ALL PLAY A PART IN THE  
FAVOURABLE RETURN OF  
MAGNESIA CEMENT BASED  
HIGH PERFORMANCE  
BUILDING PRODUCTS AS A  
PREFERRED GO TO MATERIAL**

# CONTINUE

This section presents the carbon footprint and carbon uptake information for all the products (50pcs) of this report. Each of the products are presented in more detail in the following chapters of this report.

The following table shows the carbon footprint and carbon uptake information for building boards.

**Table 6.** Carbon footprint and carbon uptake information for building boards.

| Building board                                       | CO <sub>2</sub> e<br>g/kg | CO <sub>2</sub> uptake<br>g/kg |
|--|---------------------------|--------------------------------|
| Fibreboard (porous) – Finland                        | 425                       | 1531                           |
| Chipboard (Raw) – Europe                             | 409                       | 1564                           |
| Chipboard (Melamine faced) – Europe                  | 467                       | 1527                           |
| Gypsum plasterboard – Europe                         | 1967                      | –                              |
| High Density Fibreboard (Raw) – Germany              | 661                       | 1437                           |
| Medium Density Fibreboard (Raw) – Germany            | 852                       | 1418                           |
| Medium Density Fibreboard (Raw) – Sweden             | 340                       | 1406                           |
| Medium Density Fibreboard (Melamine Faced) – Germany | 788                       | 1468                           |
| Oriented Strand Board (Raw) – Germany                | 208                       | 1892                           |
| Plywood (Standard Birch) – Finland                   | 718                       | 1186                           |
| Plywood (Standard Conifer) Finland                   | 606                       | 1708                           |
| Plywood – Sweden                                     | 229                       | 1731                           |

# CONTINUE

## Magnesium Oxide Board Ratings

|                                   | Best | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Worst | Notes   |
|-----------------------------------|------|---|---|---|---|---|---|---|---|---|----|-------|---|
| Environmental Impacts             |      |   |   |   |   |   |   |   |   |   |    |       | Manufactured in mainland China and exported globally  |
| Embodied Energy                   |      |   |   |   |   |   |   |   |   |   |    |       | N/A   |
| Waste Generated                   |      |   |   |   |   |   |   |   |   |   |    |       | Based on typical single sheet wall lining. Reduction in up to 50 to 67% materials for FRL protection was not calculated |
| Energy Efficiency                 |      |   |   |   |   |   |   |   |   |   |    |       | Sheets are an effective air control layer and resist the loss of energy through shrink and expansion                    |
| Material Costs                    |      |   |   |   |   |   |   |   |   |   |    |       | Base material cost is higher than common gypsum. Cost is greatly reduced to that of multi layer wall systems            |
| Labor Inputs                      |      |   |   |   |   |   |   |   |   |   |    |       | Base labor is similar to gypsum with greater benefits being applied when calculating MgO single layer applications      |
| Skill Level Required by Homeowner |      |   |   |   |   |   |   |   |   |   |    |       | Similar applications to gypsum and FC sheet with ability to gain class 5 finishes with professional skilled trades      |
| Sourcing and Availability         |      |   |   |   |   |   |   |   |   |   |    |       | Direct sourcing through manufacturer and import of goods that are distributed by local companies                        |
| Durability and Longevity          |      |   |   |   |   |   |   |   |   |   |    |       | Very high multipurpose durability and longevity in building and construction with resistance to fire, mould and impact  |
| Building Code Compliance          |      |   |   |   |   |   |   |   |   |   |    |       | Limited access to high quality independent 3rd party certified and compliant manufacturers                              |
| Indoor Air Quality                |      |   |   |   |   |   |   |   |   |   |    |       | Materials are inert, non nutrient and non toxic. Use of toxic jointing compounds will negatively affect IAQ             |