MagO® breaks into the North American market with ULC certified magnesium oxychloride (MgO) construction board

Magnesium based cements are some of the oldest in the world, first used around the same time as gypsum. Magnesium phosphate cement is strong, impervious to the weather, and was used as mortar by Romans, in the Great Wall of China, to build Stupas in India, and to protect wood structures like the Forbidden City and 800-year-old timber buildings in Europe.

Stanislaus Sorel rediscovered magnesium based cements about 60 years after Joseph Aspdin invented Portland cement in 1824. Magnesium based cements have since been used for specialty applications and, among other things, as high temp kiln linings, patching cement for airport runways and bridges, oil well mud, and hospital and institutional floors.

Around 30 years ago, Vance Steyner reverse engineered mortar from the Great Wall of China, and from this, magnesium oxychloride (MgO) board has been developed in that country where it has become a popular construction material for walls and ceilings. MgO boards were used extensively as the premier material in the Beijing Olympic buildings to make the games more environmentally sustainable, and Taipei 101, the world's tallest LEED Platinum building, uses them on every wall and ceiling inside and out for decoration and fireproofing. In some European jurisdictions, MgO is replacing OSB as the sheathing of choice due to its strength, durability, and ease of use.

Currently, almost all MgO board comes from China where there the current certification program does not meet Canadian standards. This means every brand must be tested and certified to be accepted in Canadian construction, and buyers need to be cautious. MagO® is promoting an imported board that is ULC certified. MagO® is rated for non-combustible construction and has been subjected to 30 or so different ASTM and other tests to measure its performance in a wide range of construction uses.

MagO can be used as a replacement for all gypsum and fibre-cement products in interior and exterior uses. Most recently, MagO boards have been used to make an integral rain-screen commercial grade cladding system—the aptly named MagO Cladding System.

MgO board works differently than gypsum. It can be scored and snapped, but better results come from cutting with carbide saws and shaping with routers. Attachment is best done using a nail gun, resulting in much faster construction times, although self-countersinking screws work well too. MagO board has superior strength for impact, fastener holding, and shear applications—a single screw into 12 mm board can hold over 200 lbs in shear and half that in tension.

Due to its hardness, corner and J beads are not required. Joints do not have to be on a stud and it is possible to go from board to paint the same day. Because

of its stiffness, thinner boards can be used—10 mm or 3/8 inch is common for walls in Europe and 6 mm is used for ceilings in China.

There is no paper overlay and on good quality boards the finish surface is super smooth, resulting in Level 5 finishes with much less work. Due to this smooth surface the appropriate primers must be used and it is best to pre-test unproven primers. Sherwin Williams Loxon is one that provides excellent results. Many brands of acrylic and cement based stuccos have been tested on MagO also with excellent results as have thin set and cement mortars. The boards, which have a smooth and a rough side, can be used with either surface facing out to provide different appearances and greater adhesion for stucco and mortars.

MgO boards were first used in Canada to make SIPs (structural insulated panels). Unlike OSB SIPs the MgO version can provide the interior and exterior finish surfaces integrally with the structure. There are several companies making MgO SIPs to service agricultural, industrial, and some residential projects. MgO SIPs are an excellent choice for foundation walls, particularly in Northern locations due to their superior strength to weight ratios and resistance to moisture. MgO SIPs are best pre-fabricated in a factory or shop, but can also be processed on site from blank 4x8 and 10-foot panels.

MgO cements and boards are completely non-toxic and, in fact, the main ingredients, magnesium oxide and magnesium chloride, are both minerals required for good health. The waste can be completely recycled or used as soil amenders; there is no need or requirement to separate the waste from landfill.

For more information about MagO, please visit www.magobp.com. ■