Magnesium Oxychloride Cement

Description: Magnesium oxychloride cement, also known as MOC, is a high performance cement binder that has a multitude of beneficial properties when compared to Ordinary Portland Cement (OPC) binder systems. The binder is formed through an acid-base reaction between a PREMag® grade of magnesium oxide, PREMagMOC® MagChloride and water in the appropriate proportions.

MOC cements provide strong and durable binder systems for a wide variety of construction products applications for internal use. The binder system bonds tenaciously to a wide variety of aggregates, fillers, scrim and fibers allowing a broad choice of ingredients while maintaining sufficient compressive strength and integrity even at low binder ratios. The binder system also bonds with a wide variety of substrates such as itself, concrete, asphalt, metals, wood, and a variety of plastics thus providing a wide spectrum of potential applications.

Uses: There is a wide range of applications for construction materials and products manufactured using MOC as the binder of choice:

- Industrial and decorative monolithic flooring
- Residential and commercial building wallboards
- Backer boards, SIP panels and tiles
- Rendering wall insulation and stucco replacement
- Concrete overlayment and underlayments
- Marine decking and underlayments
- Fire-protection walls, doors and partitions

Benefits of MPC cements:

- Greener / sustainable technology
- Fire-resistant and non-combustible
- Mold, bacteria and insect resistant
- Abrasion and wear resistant
- Impact, indentation and scratch resistant
- Acid and alkali chemical resistant
- Low electrical conductivity
- Oil, grease and solvent resistant
- Good thermal conductivity
- Lightweight
- Resilient
- Excellent bonding
- Cost-effective
Formulating with MOC binder: MOC binder is formed as a product of a reaction between a PREMag magnesium oxide (MgO), PREMagMOC MagChloride magnesium chloride and water. The material does not need wet curing, has high fire resistance, excellent mold resistance, low thermal conductivity, low shrinkage and excellent abrasion resistance. In the right proportions it can provide high compressive and flexural strength. Compressive strength can reach 7,000 to 10,000 psi when fully cured even in the presence of 40-50% filler.

The choice of grade of PREMag magnesium oxide component has a significant effect on set time, with the lower reactive grades (as measured by SSA) providing longer set time. For a typical formulation using PREMag 93HR, use a weight ratio of 1.2 part PREMag 93HR to one part PREMagMOC MagChloride to 0.6-0.8 parts water. The preferred method is to dissolve the PREMagMOC MagChloride under agitation until fully dissolved, then add the solution under agitation to a dry blend containing PREMag 93HR and all other fillers/agggregates and other components. Typically aggregates, fillers and other components are added in the amount of 40-60% of the total mix. Magnesite is an excellent filler for MOC. Do not use limestone or materials containing calcium carbonate or lime. Contact PremierCPG for technical assistance in formulating.

Material handling: Minimize the generation of dust during handling and transfer of material. While PREMag materials have low toxicity, appropriate use of personal protective equipment and good industrial hygiene practices should always be followed. See appropriate SDS for more information. The reaction to form MOC is exothermic and can develop high temperatures. Care should be taken, particularly with neat binder paste, to avoid damage to substrate or personal injury. With sufficient addition of other components temperature rise can be managed to prevent any potential issues.

Note that due to its strong binding characteristics care should be taken to avoid letting a MOC based mix set in or on equipment. MOC can be easily washed off with plenty of water while still wet or within 10-15 minutes of application.