Magnesium Phosphate Cement

Description: Magnesium phosphate cement, also known as MPC, is a high performance, quick setting 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, PREMagMPC® MKP or other alkali metal phosphate and water in the appropriate proportions.

MPC cement provides a fast-setting, strong and durable binder system for a wide variety of construction products applications for both external and internal use. The binder system bonds tenaciously to a wide variety of aggregates, fillers, 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.

The main applications for MPC binder systems are for dry shotcrete mixes, for rapid setting and hardening patching mortar or dry-mix products, and protective coatings.

Benefits of MPC cements:

- Greener / sustainable technology
- Quick-setting, early strength development
- Low shrinkage properties / little to no shrinkage cracking
- Excellent water and freeze-thaw resistance
- Fire resistant and non-combustible
- Abrasion and wear resistant
- Impact, indentation and scratch resistant
- Mold, bacteria and insect resistant
- Low electrical conductivity
- Good thermal conductivity
- Oil, grease, solvent and chemical resistant
- Excellent bonding to a wide variety of ingredients and substrates
- Corrosion protection
- Durable
- Cost-effective

For orders or technical questions, contact Premier CPG Customer Service at 1-800-227-4287
Formulating with MPC binder: MPC binder is formed as a product of a reaction between magnesium oxide (MgO) and a phosphate such as PREMagMPC MKP in water at room temperature. The reaction to form MPC is very fast and exothermic. In general, for most practical applications steps need to be taken to insure that sufficient working time is allowed for placement of MPC.

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 DB90, use a weight ratio of 1 part PREMag DB90 to one part PREMagMPC MKP to 0.5-0.7 parts water. In most cases powder is blended first, then water is added under agitation. MPC mix will start setting up as soon as water is added. Set time can be extended by the use of appropriate retarders. Most commonly used retarders are materials such as boric acid or borates. 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. MPC mixes are highly exothermic and develop significant heat. Care should be taken in handling of material and gloves be worn to avoid burns.

Note that due to its strong binding characteristics and reasonably quick set times, care should be taken to avoid letting a MPC based mix set in or on equipment once it has been mixed with water. It is recommended that water not be added to the dry MPC mix till ready for material placement. MPC can be easily washed off with plenty of water while still wet or within 10-15 minutes of application, but it is very difficult to remove once it has set.

**PRODUCT WARRANTY:** Premier warrants that its Products shall be free from defects in material and workmanship and shall substantially conform to Premier’s Product specifications upon shipment. If Buyer believes this warranty has been breached, it will provide written notice to Premier as soon as the defect becomes apparent, but no later than six (6) months from the date of shipment. If during the warranty period the Products are found to be defective in material or workmanship or fail to substantially conform to Premier’s Product specifications, Premier will furnish replacement Products, ex-works jobsite, or at Premier’s option, refund the purchase price, provided the Buyer has stored and installed the Products in accordance with Premier’s instructions and provided further that Premier is given the opportunity to inspect and test the Products within fifteen (15) days from when the defect becomes apparent and is given access to all necessary operating records with respect to the use of the products. THE EXPRESS WARRANTY SET FORTH IN THIS ARTICLE IS EXCLUSIVE, AND NO OTHER WARRANTIES OF ANY KIND, WHETHER STATUTORY, ORAL, WRITTEN, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY. THE BUYER’S EXCLUSIVE REMEDIES AND PREMIER’S ONLY OBLIGATIONS ARISING OUT OF OR IN CONNECTION WITH DEFECTIVE MATERIAL OR WORKMANSHIP, WHETHER BASED ON WARRANTY, CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, SHALL BE THOSE STATED HEREIN.

**LIMITATION OF LIABILITY:** The liability of Premier, its agents, employees, subcontractors and suppliers with respect to any and all claims arising out of the performance or nonperformance of obligations in connection with the design, manufacture, sale, delivery, storage, installation or use of the Products or the rendition of services, whether based on contract, warranty, tort (including negligence), strict liability or otherwise, shall not exceed the Contract Price and shall in no event include damages for loss of profits or revenue or the loss of use of either; loss by reason of plant shutdown or inability to operate at rated capacity; increased expense of operation of plant or equipment; increased costs of purchasing or providing equipment, materials, supplies or services outside of Seller’s scope of supply; or incidental or consequential damages of any nature. No such claims shall be asserted against Seller, its agents, employees, subcontractors or suppliers, unless the injury, loss or damage giving rise to the claims is sustained prior to the expiration of the period of warranty specified herein, and no suit or action thereon shall be instituted or maintained unless it is filed in a court of competent jurisdiction within one (1) year after the date the cause of action accrues. This LIMITATION OF LIABILITY Article shall apply to and prevail over any and all provisions contained in any of the documents comprising the Contract.