

# MasterPel<sup>®</sup> 240

## Water-Repellent/Efflorescence Control Admixture

### Overview

MasterPel<sup>®</sup> 240 water repellent/efflorescence control admixture is a revolutionary technology for manufactured concrete products (MCP) and precast/prestressed concrete that provides unprecedented water repellency.

### Why is Water Repellency Important?

Water-repellent admixtures in concrete masonry units reduce the rate at which water enters the concrete. When water contacts concrete masonry units (CMUs), which inherently have a high surface energy, the natural tendency of the liquid is to spread and penetrate into the block. MasterPel 240 admixture both reduces the surface energy of the CMU, forcing water to bead, and substantially reduces the spreading and penetration of water into the concrete.

The concrete sample in Figure 1 illustrates what happens when water is applied to concrete containing no water-repellent admixture. The CMU's high surface energy causes water to quickly absorb and penetrate widely.

The concrete in Figure 2 contains a conventional water-repellent admixture, which slightly reduces surface energy.

The water is still absorbed into the CMU, but at a slower rate.

The sample in Figure 3 contains MasterPel 240 admixture, which substantially decreases the surface energy of the CMU, reducing the rate at which water enters the concrete.

This high level of repellency will help the producer consistently manufacture high-quality products.



**What is Efflorescence?**

Efflorescence is a white deposit that appears on concrete surfaces. It is a costly problem for manufactured block producers, affecting the overall appearance of the CMU.

In order for efflorescence to occur in manufactured concrete products, all of the following three conditions must exist:

1. Soluble salts must be available
2. Water must be available and come in contact with the salts, forming a salt solution
3. A pathway must be present to allow the salt solution to migrate to the surface

**How the Technology Works**

All CMUs contain a network of interconnected pores that allow water to leave and enter the concrete. Cement and aggregates used in the manufacture of the concrete masonry units contain salts that may be transported by water to the CMU surface. Once on the surface, these salts can remain and produce efflorescence.

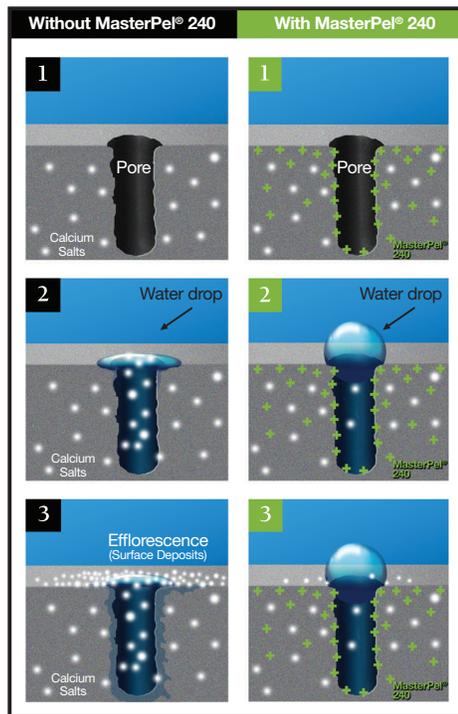
MasterPel 240 admixture bonds to the capillary pores and concrete surfaces. The unique chemistry reduces the rate at which water moves both into and out of the CMU, thus retarding the transport of salts and ultimately reducing the formation of efflorescence deposits.

**Illustration 1**

A magnified view of a CMU. Interconnected pores allow water to penetrate the concrete and come into contact with the naturally-present calcium salts.

**Illustration 2**

The low surface energy provided by MasterPel 240 admixture is shown by the shape of surface water droplets. In practice, this reduces the rate of water penetration (increased water repellency).



**Illustration 3**

After transport to the surface, calcium salts may remain as a white deposit known as efflorescence. MasterPel 240 admixture limits the transport of calcium salts to the surface, which reduces efflorescence.

**MasterPel 240 Benefits**

MasterPel 240 admixture provides several benefits for MCP and precast/prestressed concrete producers:

- Superior water repellency versus conventional water-repellent admixtures
- Significantly reduces secondary efflorescence
- Improves primary efflorescence control
- Improves color vibrancy and pigment efficiency
- Increases compressive and flexural strengths
- Increases production rate

**Water-Repellent Certification Program**

MasterPel 240 admixture is an important part of the BASF Water-Repellent Admixture Certification Program for concrete masonry producers. This program offers producers an opportunity to qualify their mix designs and dosage rates to meet the requirements of specified water-repellent concrete masonry projects.

The program uses stringent guidelines and testing methods to help the producer consistently manufacture quality water-repellent CMUs.

For architects, the certification program provides confidence when specifying water-repellent CMUs for their projects.

**More Information**

Master Builders Solutions is a leading global manufacturer of concrete admixtures, as well as other sustainable solutions for the construction industry, focussed on delivering its vision: Inspiring people to build better. Master Builders Solutions provides value-added technology and market-leading R&D capabilities to improve the performance of construction materials and to enable the reduction of CO2 emissions in the production of concrete. Founded in 1909, Master Builders Solutions has ca. 1600 employees operating 35 production sites globally, supporting their customers in mastering their building challenges of today – for a decarbonised future.

**Master Builders Solutions Admixtures US, LLC**

23700 Chagrin Boulevard  
Beachwood, OH 44122 USA  
(800) 628-9990

**Master Builders Solutions Canada, Inc**

1800 Clark Boulevard  
Brampton, Ontario L6T 4M7 CANADA  
(289) 360-1300

[master-builders-solutions.com/en-us](http://master-builders-solutions.com/en-us)  
[admixtures@masterbuilders.com](mailto:admixtures@masterbuilders.com)

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