

ENR

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100th Anniversary ENR Cost Indexes

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RESEARCH REVOLUTION

ENERGY LAB WITH UNIQUE ROTATING
TEST BED INSPIRES GLOBAL STUDY
OF INTEGRATED SYSTEMS (p. 40)



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McGraw Hill
CONSTRUCTION

Specialized Calcium Aggregates Enhance High-Performance Concrete

The use of calcium aluminate cement as the binder in refractory systems in general and refractory shotcretes in particular, is widely known and well documented. A lesser-known approach to high-performance refractory concretes and shotcretes involves the use of calcium aluminate aggregates along with the calcium aluminate cement (FONDAG®). The addition of this unique aggregate

imparts enhanced properties to concretes, enabling them to endure the toughest of industrial environments.

There are two processes used to manufacture calcium aluminates: sintering and fusion. The fusion process can be employed to produce calcium aluminate aggregates. Aggregates made by fusion are well-known for their high strength and very low porosity. When suitably proportioned in conventional concretes or shotcretes, the mixtures of calcium aluminate cement and calcium aluminate aggregate will provide high early strength, high ultimate strength, outstanding resistance to heat and thermal shock, and very good abrasion resistance. In these mixtures, the paste-to-aggregate bonding is both mechanical and chemical—an affinity that provides many of the enhanced properties of the systems.

FONDAG® concretes and shotcretes have found widespread use in the iron and steel, aluminum, petrochemical and aerospace industries. ■



PHOTO COURTESY OF SPACEX

Kerneos' FONDAG offers high-performance properties in tough industrial conditions.



South District Wastewater Treatment Plant in Miami-Dade County, Fla.

The Impermeable, Sustainable Value Of Crystalline Waterproofing

A major filtration plant in Vancouver. A center for performing arts by the bay in Singapore. A high-end residential and retail high-rise in London. A wastewater treatment plant in Dade County, Fla.

All of these projects have one thing in common. In each case, the building team opted to use more sustainable, impermeable, low-maintenance crystalline technology to waterproof the concrete systems instead of conventional concrete waterproofing systems, such as coatings or membranes.

Crystalline waterproofing, such as Xypex, will enhance the life cycle and durability of concrete structures while at the same time providing a much more economical waterproofing method than traditional construction procedures. This includes both a lower initial cost and reduced lifetime maintenance costs.

Crystalline waterproofing has a number of other advantages. In addition to providing an integral waterproofing effect, it enhances the durability of concrete exposed to sulfates, chlorides and other aggressive chemicals.

It is also considered sustainable because it does not contain VOCs, reduces jobsite waste (no waste from excess membrane materials) and the concrete can be easily recycled. The technology has been used to waterproof, protect and repair major concrete structures over the past 44 years in more than 70 countries. ■



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Presents:

MacLean Vortex Pile

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