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Engineers, architects and specifiers have long used slag cement in major projects to achieve improved concrete performance. These performance enhancements are becoming more important to builders of residential homes, and their owners. The durability, versatility and beauty of concrete are vital to residential homes, and slag cement is playing an increasingly larger role in this segment.

WHERE CAN SLAG CEMENT BE USED IN RESIDENTIAL CONSTRUCTION?

Slag cement can be used in almost any residential concrete application. It has been used in footings, basement walls, basement floor slabs, sidewalks, driveways, and garages. Slag cement has been used in mixes for above-grade insulating concrete form (ICF) concrete walls for safe, energy-efficient homes as well. In addition to these concrete applications, slag cement is also used in masonry construction.



Completed exterior of a home with insulating concrete forms, in Wisconsin.

WHAT ARE THE BENEFITS OF SLAG CEMENT IN RESIDENTIAL CONSTRUCTION?

- Improved workability
 - Easier placement
 - Improved consolidation
 - Decreased "honeycombing"
 - Improved finishing characteristics
- Lighter Color
 - Aesthetically pleasing
- Smoother surfaces
 - Fewer blemishes
 - More uniform finish
- Long service life
 - Improved strength
 - Resistant to sulfate attack
 - Mitigates alkali silica reaction
 - Reduced permeability



Insulating concrete form construction using concrete with 60 percent slag cement, 30 percent portland cement and 10 percent fly ash.

Slag cement is preferred in decorative concrete. Because of its lighter base color, colors may appear more vibrant in integrally colored and stamped concrete. Concrete containing slag cement can be acid etched and stained as well.

SLAG CEMENT IN RESIDENTIAL CONCRETE

DOES SLAG CEMENT AFFECT THE CONSTRUCTION PROCESS?

Slag cement has been used extensively in residential construction with little or no impact on construction processes. Wall forms can usually be removed on the same schedule as other mixes. When backfilling a foundation, care must be taken by the excavator to make sure walls are not subjected to excessive pressures from machinery and backfill material. The same is true in walls containing slag cement.



Self-consolidating concrete for residential floor slab using 50 percent slag cement, 50 percent portland cement.

Finishing of flatwork requires proper timing by finishers before the operations are begun. In cooler temperatures, the timing of the operations may be delayed. Flatwork crews should avoid premature finishing. Lower water content, accelerators or adjusted mixture proportions can help address any delays in time of set if they are anticipated.



Decorative residential concrete with 25 percent slag cement: Interior acid stained concrete (top) and exterior stamped and colored concrete (bottom)

As with all concrete mixtures, trial batches should be performed to verify concrete properties. Results may vary due to a variety of circumstances, including temperature and mixture components, among other things. You should consult your slag cement professional for assistance. Nothing contained herein shall be considered or construed as a warranty or guarantee, either expressed or implied, including any warranty of fitness for a particular purpose.

WILL SLAG CEMENT BE DURABLE IN EXTERIOR APPLICATIONS?

Exterior concrete containing slag cement has shown good durability in severe conditions. Various mixture proportions have performed well in a wide range of environments. To assure good performance, concrete—whether or not it contains slag cement—should have:

- Adequate air void systems
- Water-cementitious materials ratio (W/CM) below 0.45
- Correct finishing practices
- Proper curing

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About the Slag Cement Association...

The Slag Cement Association is the leading source of knowledge on blast-furnace slag-based cementitious products. We promote the increased use and acceptance of these products by coordinating the resources of member companies. We educate customers, specifiers and other end-users on the varied attributes, benefits and uses of these products.

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