Tech Letter

Improve Concrete Quality with Fly Ash

Concrete quality is increasingly dependent on the strength, finishing characteristics and pumpability of the concrete mixture. while fly ash and portland cement are both finely divided materials, cement particles are cubical and resemble crushed stone, while fly ash particles are spherical in shape. The spherical shape of fly ash provides easier finishing and more effective pumping compared with concrete formulated without fly ash.

Improves Strength

Adding fly ash to improve workability and finishing characteristics of the concrete mixture also permits reduction of the water required for a given slump. Reducing water decreases the water/cement ratio, thereby improving the strength and durability of the hardened concrete.

Reduces Segregation

When concrete is placed, internal and external forces may cause segregation of mix components. With high slump concrete, coarser and heavier particles may settle, while finer and lighter materials rise with the bleed water.

Rock pockets, sand streaks, and weak, non-durable surfaces are often caused by segregation and/or bleeding. These undesirable effects can be minimized by using Boral Fly Ash to increase the ratio of solids to volume of water in the paste. This gives the paste added "body", making a more cohesive mixture that is less vulnerable to segregation.

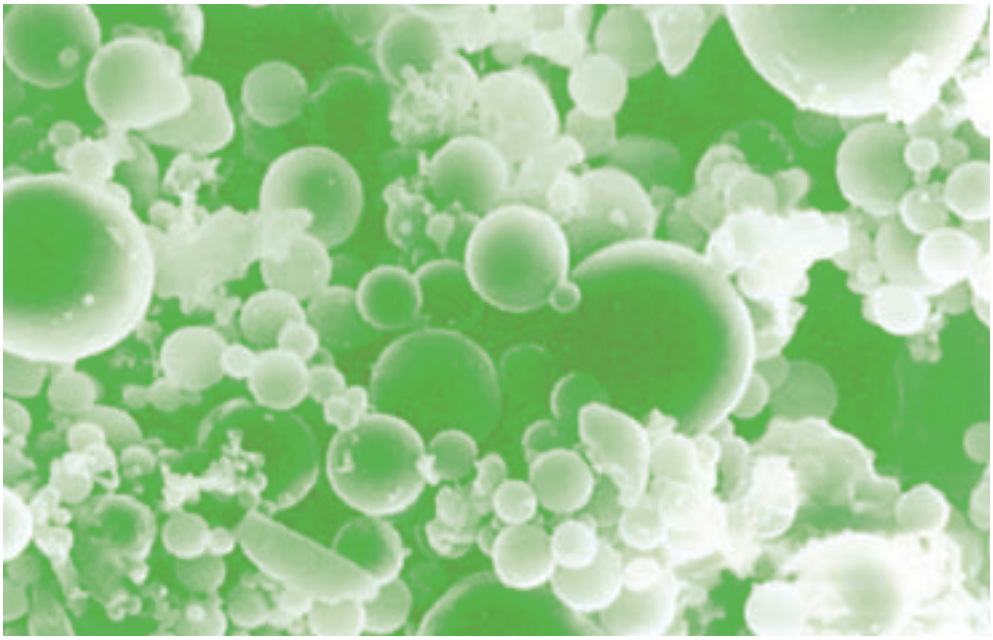
Easier Pumping

Adding Boral Fly Ash to concrete assures a mixture which is easier to pump. Because fine and coarse aggregates in a concrete mix possess a high coefficient of friction, they rely upon the paste for lubrication. Paste quality is vital because concrete conveyed through a pipe or hose moves as a cylinder riding on a thin lubricant film of paste between the mix components and the pump hose.

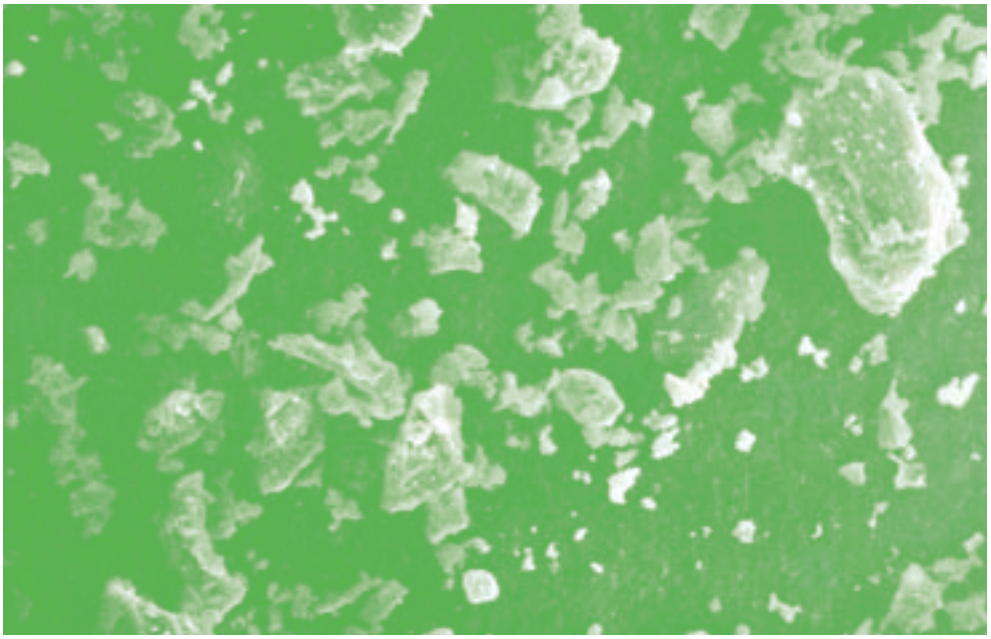
Due to its spherical shape, Boral Fly Ash in the concrete mixture reduces this internal friction, thus improving pumpability of the paste.

Boral Fly Ash also increases the mobility of pumped concrete, permitting higher and longer pumping distances.

Boral Fly Ash, because of its physical characteristics, increases strengths, improves viscosity, reduces segregation and increases pumpability—resulting in higher concrete quality.



The spherical shape of fly ash (photo above) provides easier finishing and more effective pumping compared to portland cement particles (photo below).



Consult your Boral Representative for further information on improving your concrete with Boral Fly Ash. The Boral technical staff is prepared to assist you in developing the most durable concrete possible.

Boral Material Technologies is a major processor and marketer of coal combustion products in the United States. With over 40 years of marketing experience, Boral is committed to supplying quality products broadly supported with skilled technical sales professionals. To meet both our customer's present and future needs with coal combustion products Boral continues its commitment to customer based research and development and broad based marketing programs.

For more information on our complete line of products, contact your local Boral representative, corporate office or visit us online at www.boralmti.com.

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