



# Mining Guniting / Shotcrete

High Performance Rheology Modifier and Mix Stabilizer

## Product Description

Acti-Gel® 208 is a low-dose rheology modifier and anti-settling agent that stabilizes mixtures, provides superior aggregate suspension, and dramatically improves the performance and paste quality of concretes. When fully dispersed, Acti-Gel® 208 particles form a unique lattice 'microstructure' that supports slightly higher yield stress and thixotropy, resulting in a greater ability to suspend both cement particles and aggregate with reduced segregation and bleed. Under conditions of shear, flow conditions are enhanced resulting in improved pumpability and workability. Some designs may result in a reduction in measured slump. Please see optimizing recommendations below.

Acti-Gel® 208 is a highly purified Mg-aluminosilicate made from a patented process. It is non-swelling and shear stable in both low and high salt environments and between pH 2-13.

Acti-Gel® 208 is neutral setting and will not affect air contents.

Acti-Gel® 208 complies with ASTM C 494, Type S.



## Packaging

Acti-Gel® 208 is supplied in powder form.

## Reduces Shotcrete Costs:

- Decreases rebound
- Eliminates expensive silica fume
- Reduces dosage of set accelerators
- Increase application thickness up to 100% in a single pass
- Decreases cycle times
- Reduces nozzle accelerator up to 50%

## Increases Quality and Workability:

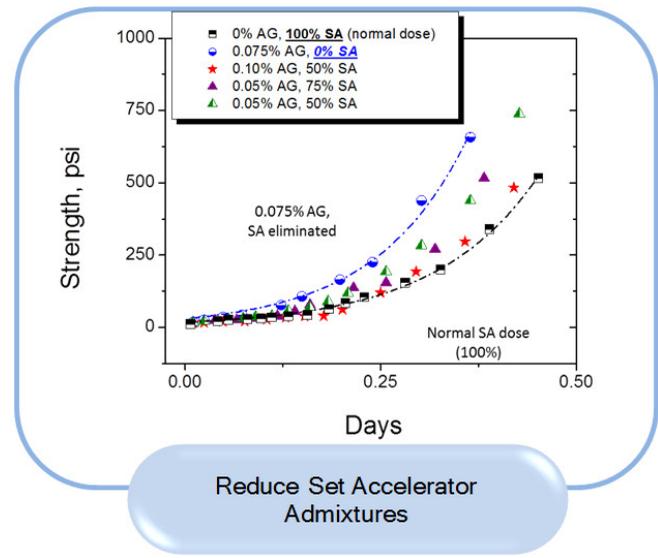
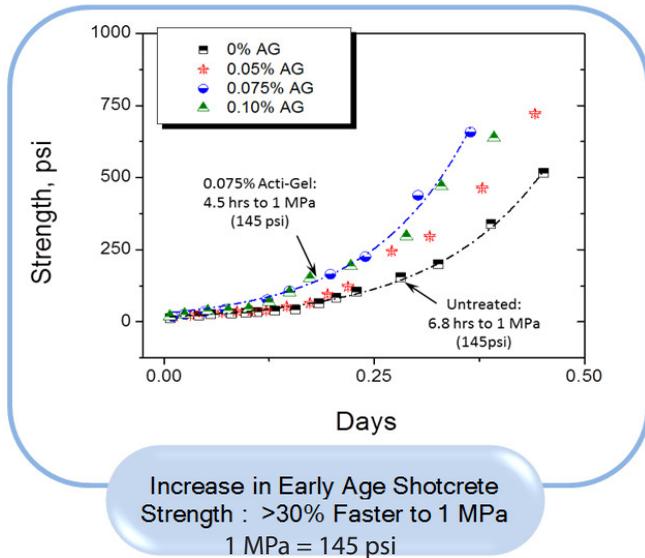
- Reduces airborne particles when spraying
- Improves adhesion, cohesion and compaction
- Eliminates sagging and sloughing
- Achieves higher lifts
- Reduces time to reach 1MPa (145psi)
- Improves re-entry times in underground applications
- Allows lower quality aggregates and manufactured sands to be utilized
- Improves and extends workability
- Reduces / Eliminates efflorescence



## Performance

Acti-Gel® 208 is a thixotropic material that suspends particles, reduces segregation, and dramatically stabilizes concretes. During mixing or emplacement flow is greatly enhanced due to its shear-thinning behavior. On removal of shear, the rate of thixotropic rebuilding of the lattice structure is exceptionally fast, which provides i) superior cohesion and reduced rebound ii) rapid development of green strength and shape stability, iii) excellent anti-washout properties, and iv) reduction in hydrostatic pressure.

When used in an optimized mix design, Acti-Gel® 208 has been shown to increase early strength, reduce shrinkage, decrease rapid chloride permeability, and reduce efflorescence – all with outstanding workability and off-form finish. Please contact your local representative for recommendations.



## Guidelines for Use

Acti-Gel® 208 can be added in the mixing sequence at various stages depending on the application, using a recommended dry dosage range of ~0.03% to ~0.10% (total dry weight material basis) or 1.5 lbs ~ 4.0 lbs per yd<sup>3</sup> in aqueous solution. Please contact your local representative for recommendations. Acti-Gel® 208 must be mixed with sufficient high shear to become fully dispersed with the constituents. Mixing at high shear in a ready-mix truck with a conventional charge of aggregate is usually sufficient. If Acti-Gel® 208 is added last, a minimum of 10 minutes of mixing time is required. Three to five minutes in a small concrete drum mixer is also adequate. For laboratory preparations without aggregate, mixing at high speed for at least 5 minutes in a Waring-type blender is recommended.

## Optimizing Acti-Gel® 208

Like any additive, the performance of Acti-Gel® 208 is dependent on mix proportions, local materials, cement chemistry, fineness of materials, and w/c ratio. Potential mix designs for specific applications should be evaluated using actual job materials to ensure that the chosen mix design meets project specifications. Acti-Gel® 208 has a unique ability to transport higher aggregate contents which will maximize available paste and reduce water demand. Please contact your local representative for recommendations

Product Data Sheet, Rev. Sept 2014

Recommendations and advice concerning dosages, application, performance, and use is provided in good faith, based on our testing, experience, and knowledge of the product under normal conditions. All claims based on performance are believed to be accurate. No guarantee, either expressed or implied, is made with reference to the infringement of any patent. These values represent typical data from samples taken from production batches. They are not considered to be specifications. Results may vary depending upon equipment and procedures. The user of these materials is responsible for determining its suitability for their application with different materials and actual site conditions.



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## Acti-Gel® Shot-Crete Underground Trials

### Surface Area Sprayed - Meshed Hard Rock

| TESTS CONDUCTED                                 | Standard Mix                                | Acti-Gel® Mix - No Silica Fume  |
|---|---|---|
| Slump at Transfer Pad (in)                      | 120   | 120   |
| Slump at Pump Prior to Spraying (in)            | 120   | 120   |
| Concrete Temperature at Pump (°C)               | 30  | 30  |
| Accelerator Dosage                              | 4.1 gal/yd <sup>3</sup> (1.3 gal/min or 5%) | 4.1 gal/yd <sup>3</sup> (1.3 gal/min or 5%)   |
| Re-Entry (Time Taken to Reach 1 psi) (hr)       | 1.8   | < 1.0   |
| Rebound (%)                                     | 9.6   | 4.6   |
| <b>Dust Monitoring Results</b>                  |   |   |
| Inhalable Dust Results (mg/m <sup>3</sup> ) Air | 30.90                                       | 12.50   |
| <b>Strength Testing Results</b>                 |   |   |
| Cylinder Results - 7 Days (psi)                 | 4714  | 5801  |
| Cores No ACC - 7 days (psi)                     | 6164  | 5831  |
| Cores With ACC - 7 days (psi)                   | 2756  | 5918  |
| Cylinder Results - 28 Days (psi)                | 5294  | 6817  |
| Cores No ACC - 28 days (psi)                    | 8238  | 7615  |
| Cores With ACC - 28 days (psi)                  | 4902  | 7325  |
| Flexural Toughness (Round Panels) <sup>1</sup>  | Joules, 382.5 - kN 25.0                     | Joules, 351 - kN 30.8   |
| Comments  | Standard design                             | Silica Fume removed, Acti-Gel® added at 1.5kg per m <sup>3</sup> . 10 kg of OPC was added to off set the S/F. |

<sup>1</sup>ASTM C1550-10. Standard test method for flexural toughness of fiber reinforced concrete (using centrally loaded round panel).

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