

Daracem® Family of Superplasticizers

Daracem® 19, Daracem 100, Daracem ML 330, Daracem ML 500, ADVA™ Flow

What are superplasticizers?

Superplasticizer is another name for high-range water reducers — admixtures which can be used to:

- increase slump to make a flowing concrete
- reduce water to gain higher strengths

Grace superplasticizers are added to the concrete by the concrete producer, either at the batch plant during the batching process or in a ready-mix truck with full mixing capabilities.

For most situations, Grace recommends that the concrete producer be in final control of the addition of the superplasticizer to the concrete. Any changes required in the performance properties of the concrete should be conveyed to the concrete producer, so that adjustments can be made by a qualified expert.

How do superplasticizers work?

Superplasticizers are dispersants for the cement particles in the concrete mix. That is, they force cement particle agglomerates (clumps) to break up, so there is more complete and uniform distribution of the mix water and the cement grains throughout the concrete mix.

The effect is the same as adding water; it increases slump. Superplasticized concrete has a higher slump with a given amount of water. And the lower the water content of the concrete, the better the quality of the hardened concrete.

How do you use superplasticizers?

To get maximum benefit from superplasticizers:

- select the right kind of job
- order concrete which meets the specific performance requirements of the job
- make labor adjustments to take advantage of the superplasticized concrete

Types of Jobs

Flatwork — floors, slabs, driveways, sidewalks

You want flowable concrete that saves time placing and leveling and gives you better flatness. You don't want excess water that could cause slow set, finishing difficulties, segregation in the mix or spalling or scaling of the concrete surface.

Walls — columns and precast

You want moderately flowable concrete that gives you good fill and consolidation in and around

tight rebar spacing and in tight areas of formwork without having to over-vibrate. You don't want to risk honeycombing or segregation.

High early strengths

You want concrete that combines moderate workability with higher early strength. Reducing the amount of water in the mix and using a superplasticizer to get enough workability lowers the water-to-cement ratio. This gives high early, and higher ultimate strength, in the hardened concrete.

Ordering Concrete

Tell the concrete producer what kind of job the concrete is to be used on, and any specification requirements such as strengths, air content, slump limits or admixture limitations like restrictions on the use of fly ash or calcium chloride. Also, indicate the method of placement to be used (chutes, buckets, conveyers, pumps) and the estimated length of time needed to discharge each truck. Help the concrete producer provide you with the best concrete for the job by telling him the performance you need from the concrete.

Labor Adjustments

Superplasticized concrete has many advantages in quality, performance and handling, however, slump loss may be more noticeable than non-superplasticized concrete of an equal slump. Though fewer people are usually required to handle a job with superplasticized concrete, they may have to work faster during

some parts of the placement process. A good concreting crew can easily make the necessary adjustments easily.

Specifications

Daracem® 19, Daracem 100, Daracem ML 330 and Daracem ML 500 and ADVA™ Flow superplasticizers meet and/or exceed the requirements of ASTM C 494,

“Standard Specification for Chemical Admixtures for Concrete”, and ASTM C 1017, “Chemical Admixtures for Use In Producing Flowing Concrete”, as well as many other national, state and local specifications.

For additional information on specification compliance for Grace superplasticizers, contact your concrete producer or Grace Construction Products at 617-876-1400.

- ADVA 100 Superplasticized concrete, even at high slump, exhibits little significant segregation in comparison to concrete without a superplasticizer at the same slump.
- ADVA 100 Superplasticizer finishes easily without stickiness, tearing or spotty set characteristics.

Addition Rates

Addition rates of ADVA 100 Superplasticizer can vary with type of application, but will normally range from 195 to 650 mL/100 kg (3 to 10 fl oz/100 lbs) of cement. In most instances the addition of 195 to 325 mL/100 kg (3 to 5 fl oz/100 lbs) of cement will be sufficient. For best results, ADVA 100 Superplasticizer may be added to the initial mix water. At a given water/cement ratio, the slump required for placement can be controlled by varying the addition rate. Should job site conditions require using more than recommended addition rates, please consult your Grace Representative.

Compatibility

In concrete containing ADVA 100 Superplasticizer the use of an air-entraining agent (such as Daravair® 1000 or Darex® II AEA) is recommended to provide suitable air void parameters for resistance against freeze-thaw attack. Please consult your Grace Representative for dosage guidance.


Most Type A water reducers or Type D water-reducing retarders are compatible with ADVA 100 Superplasticizer as long as they are separately added to the concrete. Normally these admixtures are added to concrete before the ADVA 100. Caution should be exercised when using ADVA 100 Superplasticizer together with a retarder, as excessive retardation can occur if the admixture dosages are too high. Pre-testing of the concrete should be performed to optimize dosages and addition times of these admixtures. The admixtures should not contact each other before they enter the concrete.

Packaging

ADVA 100 Superplasticizer is available in bulk, delivered by metered tank trucks, in 1250 L (330 gal) disposable totes, and in 208 L (55 gal) drums. ADVA 100 Superplasticizer contains no flammable ingredients.

It will begin to freeze at approximately 0°C (32°F), and may not return to full strength after thawing and thorough agitation. Please consult your Grace Representative if this product freezes.

In storage, and for proper dispensing, ADVA 100 Superplasticizer should be maintained at temperatures above 0°C (32°F) and below 55°C (132°F).

 Visit our web site at: www.gcp-grace.com

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