

ADVA® 455 Data Sheet

High-range water-reducing admixture -- ASTM C494 Type A and F and ASTM C1017 Type I

Product Description

ADVA®455 is high efficiency polycarboxylate-based superplasticizer intended for the production of Self-Consolidating Concrete (SCC) in ready-mix applications. ADVA®455 has been formulated to extend slump-flow life while imparting extreme workability without segregation to concrete.

ADVA®455 is supplied as a ready-to-use liquid that weighs approximately 8.65 lbs/gal (1.04 kg/L). ADVA®455 does not contain intentionally added chlorides.

Product Advantages

- Enables consistent manufacture of self-consolidating concrete
- Provides extended slump flow retention with minimal impact on set time
- Reduces job site QC support
- Consistent air management

Uses

ADVA®455 is recommended for use in the production of Self-Consolidating Concrete and is a component of GCP's Self-Consolidating Concrete System. ADVA®455 can also be used as a conventional high-range water reducer.

- Can produce SCC concrete with extremely high levels of workability without segregation.
- Provides superior water tolerance to the concrete making it less susceptible to normal manufacturing moisture fluctuations.
- Extends slump life to enable batch plant adjustments and predictable job site plastic properties.
- Provides superior concrete surface finish characteristics with reduced bugholing.

Self-Consolidating Concrete

SCC produced with ADVA®455 has unique advantages over conventional flowing concrete.

- **Lower SCC viscosity** — flow properties of SCC are enhanced, reducing SCC viscosity with no change in stability or segregation resistance.
- **Self placement** — vibration can be eliminated because SCC is highly flowable and will change shape under its own weight to self level and consolidate within formwork.
- **No segregation** — SCC is a flowable, yet highly cohesive material that will not segregate. The window of acceptable mix designs to maintain cohesive SCC's is increased. Bleeding is significantly reduced.
- **No blocking** — SCC can pass freely through narrow openings and congested reinforcement without aggregate "blocking" behind obstructions that stop the flow of concrete.

The production of SCC typically requires both the use of specialty admixtures specifically tailored for SCC such as ADVA[®]455, as well as mix design adjustments. Therefore, for SCC applications, pre-placement testing is strongly recommended to determine the optimal admixture addition rate and approximate mix design parameters. Factors that influence optimum addition rate include other concrete mix components, aggregate gradations and shapes, form geometry, and reinforcement configurations. Please consult your local GCP Applied Technologies representative for assistance with developing mix designs for Self-Consolidating Concrete.

Addition Rates

ADVA[®]455 is an easy to dispense liquid admixture. Dosage rates can be adjusted to meet a wide spectrum of concrete performance requirements. Addition rates for ADVA[®]455 can vary with the type of application ranging from 8 to 22 fl oz/100 lbs (520 to 1435 mL/100 kg) of cement, but typical dosage rates will normally range from 12 to 18 fl oz/100 lbs (785 to 1175 mL/100 kg) of cement. Should conditions require using more than the recommended addition rate, please consult your GCP Applied Technologies representative.

Compatibility with Other Admixtures and Batch Sequencing

ADVA[®]455 is compatible with most GCP admixtures as long as they are added separately to the concrete mix. However, ADVA[®] products are not recommended for use in concrete containing naphthalene-based admixtures including DARACEM[®]19 and DARACEM[®]100 and melamine-based admixtures including DARACEM[®]65. In general, it is recommended that ADVA[®]455 be added to the concrete mix near the end of the batch sequence for optimum performance. Different sequencing may be used if local testing shows better performance. Please see GCP Technical Bulletin TB-0110, *Admixture Dispenser Discharge Line Location and Sequencing for Concrete Batching Operations* for further recommendations.

Pretesting of the concrete mix should be performed before use and as conditions and materials change in order to assure compatibility with other admixtures, and to optimize dosage rates, addition times in the batch sequencing, and concrete performance.

For concrete that requires air entrainment, the use of the ASTM C260 air-entraining agent DAREX[®]II AEA is recommended to provide suitable air void parameters for freeze-thaw resistance. The use of any other AEA should be done in consultation with your GCP Applied Technologies representative for guidance.

Packaging & Handling

ADVA[®]455 is available in bulk, delivered by metered trucks, in totes, and drums. ADVA[®]455 will freeze at approximately 32 °F (0 °C) but will return to full functionality after thawing and thorough mechanical agitation.

Dispensing Equipment

A complete line of accurate, automatic dispensing equipment is available.

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This product or its use may be covered by US Patent Nos. 7,462,236; 8,187,376; 8,317,918.

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