

# DARASET<sup>®</sup> 400 Data Sheet

Set-accelerating admixture ASTM C494 Type C

## Product Description

DARASET<sup>®</sup> 400 is a non-corrosive, non-chloride admixture for concrete. It accelerates cement hydration resulting in shortened setting times and increased early compressive and flexural strengths. DARASET<sup>®</sup> 400 does not contain calcium chloride and is formulated to comply with ASTM C494 Type C, and can be used at any dosage to comply with ACI 318 guidelines for chloride content of concrete. DARASET<sup>®</sup> 400 weighs approximately 11.5 lbs/gal (1.38 kg/L).

## Uses

DARASET<sup>®</sup> 400 set accelerator may be used wherever it is desirable to reduce the setting time of concrete and/or to increase its early compressive and flexural strengths. For mixes designed with pozzolans, such as fly ash or slag, DARASET<sup>®</sup> 400 set accelerator can help offset the retarding effects of these materials, especially in cooler temperatures.

In cold weather, DARASET<sup>®</sup> 400 may be used to reduce the time that it takes the concrete to set prior to finishing. Typical results show that when concrete containing DARASET<sup>®</sup> 400 is poured at 50°F (10°C), the concrete will set up to 2 hours faster than the reference concrete.

When used in the manufacture of precast concrete, DARASET<sup>®</sup> 400 speeds the concrete's strength development allowing for earlier form removals and more efficient production. DARASET<sup>®</sup> 400 can also be used in masonry mortar to obtain higher early strengths and accelerated setting time effects.

## Product Advantages

- Accelerates setting time
- Increases early compressive and flexural strengths
- Offsets the retarding effects of pozzolans such as slag or fly ash
- Non-corrosive

## Special Feature

DARASET<sup>®</sup> 400 set accelerator provides setting time results and early strength development similar to that provided by calcium chloride, but without the potential corrosive effects. DARASET<sup>®</sup> 400 can, therefore, at recommended dosage rates, safely be used where the potential corrosion of embedded or stressed steel must be avoided. It can also be used in concrete that is to be placed on steel clad or zinc coated steel decks where corrosion must be similarly avoided.

## Compatibility with Other Admixtures and Batch Sequencing

DARASET<sup>®</sup> 400 is compatible with most GCP admixtures as long as they are added separately to the concrete mix, usually through the water holding tank discharge line. In general, it is recommended that DARASET<sup>®</sup> 400 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, as conditions and materials change in order to assure compatibility, and to optimize dosage rates, addition times in the batch sequencing and concrete performance. For concrete that requires air entrainment, the use of an ASTM C260 air-entraining agent (such as DARAVAIR<sup>®</sup> or DAREX<sup>®</sup> product lines) is recommended to provide suitable air void parameters for freeze-thaw resistance. Please consult your GCP Applied Technologies representative for guidance.

## Mix Adjustment

Since DARASET<sup>®</sup> 400 may be used at high dosages, the concrete producer should account for the water contained in the product. Each gallon of DARASET<sup>®</sup> 400 added to a concrete mix will contribute 6.3 lbs (0.76 kg/L) of water to that mix. Similar to all concrete admixtures, DARASET<sup>®</sup> 400 should not come into contact with other admixtures prior to entering the concrete.

## Packaging & Handling

DARASET<sup>®</sup> 400 is currently available in bulk quantities by GCP metered systems, or in totes and drums.

DARASET<sup>®</sup> 400 freezes at approximately -10 °F (-23 °C), but its set acceleration, strength gain and non-corrosive properties are completely restored by thawing and thorough agitation.

## Performance

In concrete mixtures, DARASET<sup>®</sup> 400 accelerates the chemical reaction between Portland cement and water. It speeds up the formation of gel—the binder that bonds concrete aggregates together. Accelerated gel formation in turn shortens the setting time of concrete, compensates for the set-slowing effects of cooler weather and contributes to the development of higher early strengths.



## Addition Rates

The amount of DARASET® 400 used will depend on specific job conditions, on local materials and on the degree of set acceleration and early strength development required. Typical addition levels range from 10 to 60 fl oz/100 lbs (650 to 3910 mL/100 kg) of cement. Higher dosage rates may be used for select applications after consulting with your local GCP Applied Technologies sales representative.

## Dispensing Equipment

A complete line of accurate dispensers is available. While DARASET® 400 may be added to the mix on the sand or in the water, for greatest effectiveness, we recommend DARASET® 400 be added at the end of the batch cycle.

Similar to all concrete admixtures, DARASET® 400 should not come into contact with other admixtures prior to entering the concrete.

## Specifications

The set-accelerating admixture shall be DARASET® 400, nonchloride set accelerator, as manufactured by GCP Applied Technologies. The admixture shall be used in strict accordance with the manufacturers' recommendations. The admixture shall comply with ASTM Designation: C494 Type C and will not contain purposely added chlorides or contribute to steel corrosion. DARASET® 400 is NSF Std. 61 certified when used at a maximum addition rate of 40 fl oz/100 lbs (2600 mL/100 kg) of cementitious material. Certification of compliance will be made available upon request.

Concrete shall be proportioned in accordance with *Recommended Practice for Selecting Proportions for Normal Weight Concrete*, ACI 211.1 or *Recommended Practice for Selecting Proportions for Structural Lightweight Concrete*, ACI 211.2, or in accordance with ACI 318.

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