

General Properties and Benefits of DCI[®] S Corrosion Inhibitor

Introduction

DCI[®] S Corrosion Inhibitor is formulated for situations where accelerated concrete set times are not required or desired. Such applications may include warm or hot weather cast-in-place construction and prestress concrete. DCI S is a non-accelerating version of DCI Corrosion Inhibitor. DCI S contains a set control component that compensates for the accelerating effect of DCI. The result is:

- Corrosion protection identical to DCI
- Set time performance similar to untreated concrete
- DCI concrete with improved slump life

DCI S will not be exactly neutral setting for all cements at all weather and project conditions. Preconstruction testing is required.

Corrosion Protection

For corrosion protection, DCI S is equivalent to DCI on a unit to unit basis. If a project specification requires 20 L/m³ (4.0 gal/yd³) of DCI Corrosion Inhibitor, 20 L/m³ (4.0 gal/yd³) of DCI S may be substituted.

Mix designs for DCI S concrete should be handled as described in the technical bulletin, “Proportioning DCI (and DCI S) Concrete Mixes” (TB-0900), with one exception — little correction has to be made for acceleration. Because DCI S is essentially a neutral-set admixture, offsetting acceleration with a retarder may not be necessary. It is important to remember, however, that the set control component of DCI S only compensates for the accelerating effect of the DCI. When weather conditions warrant the use of a retarder in normal concrete, it should be included with a DCI S mix.

As with DCI, trial mixes with the project’s concrete materials must be performed with DCI S several weeks before the project start-up in order to adjust the mix to obtain the desired air content, set time and slump.

Example 1: Concrete Temperature 21 °C (70 °F); Ambient Temperature 21 °C (70 °F)

Materials	DCI Mix	DCI S Mix
Cement, kg/m ³ (lbs/yd ³)	390 (658)	390 (658)
Water, kg/m ³ (lbs/yd ³)	156 (263)	156 (263)
DCI/DCI S, L/m ³ (gal/yd ³)	19.8 (4.0)	19.8 (4.0)
ADVA [®] Flow, mL/100 kg (oz/100 lbs)	261 (4.0)	261 (4.0)
Daratard [®] 17, mL/100 kg (oz/100 lbs)	261 (4.0)	0 to 130 (0 to 2.0)
Daravair [®] , mL/100 kg (oz/100 lbs)	as needed	as needed

Comparable Concrete Mix Designs

The following two examples show DCI mix designs altered for DCI S. Note that the water content includes the 0.86 kg/L (7.0 lbs/gal) of water contributed by the DCI or DCI S.

Example 2: Concrete Temperature 32 °C (90 °F); Ambient Temperature 32 °C (90 °F)

Materials	DCI Mix	DCI S Mix
Cement, kg/m ³ (lbs/yd ³)	390 (658)	390 (658)
Water, kg/m ³ (lbs/yd ³)	156 (263)	156 (263)
DCI/DCI S, L/m ³ (gals/yd ³)	19.8 (4.0)	19.8 (4.0)
ADVA Flow, mL/100 kg (oz/100 lbs)	261 (4.0)	261 (4.0)
Daratard 17, mL/100 kg (oz/100 lbs)	391 to 522 (6.0 to 8.0)	261 to 326 (4.0 to 5.0)
Daravair, mL/100 kg (oz/100 lbs)	as needed	as needed

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GCP Applied Technologies Inc., 62 Whittemore Avenue, Cambridge, MA 02140 USA.

In Canada, 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

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