POLARSET®

Non-corrosive, non-chloride, set-accelerating admixture

Product Description

POLARSET®is a non-corrosive, non-chloride admixture for concrete. It accelerates cement hydration resulting in shortened setting times and increased early compressive strengths.

PolarSet does not contain calcium chloride and is completely non-corrosive to reinforcing steel, metal decks, and to all metal components of your admixture storage and dispensing system. It 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. One litre weighs approximately 1.35kg ± 0.02kg.

Applications

PolarSet is specially formulated to reduce concrete setting times and increase early strengths for concrete in very cold conditions, and may be used to reduce the time that concrete must be protected against freezing in ambient temperatures as low as -7°C. For conditions not subject to freezing, PolarSet may be used to speed finishing operations and/or form removal, leading to savings in concrete construction costs.

Special Feature

PolarSet provides set time acceleration and early strength development similar to that provided by calcium chloride, but without the potential corrosive effects. PolarSet can, therefore, be used where 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.

Chemical Action

In concrete mixes, PolarSet 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 cold weather and contributes to the development of higher strengths. Gel formation promotes heat generation within the mix - helping to protect the concrete from freezing during the critical first hours after placement.

Packaging and Availability

PolarSet is currently available in bulk quantities by GCP metered system, or in 208L drums. PolarSet freezes at approximately -23°C, but its set acceleration, strength gain and non-corrosive properties are completely restored by thawing and thorough agitation.

Specifications

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.

NOTE TO SPECIFIER: For use in freeze protection, request sample specification available from your local GCP representative.

Addition Rates

The amount of PolarSet 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 520 to 3,910mL/ 100kg of cementitious material, but levels as high as 6,520mL / 100kg of cementitious material can be used. For freeze protection purposes typical addition rates are between 3,910 and 5,220ml / 100kg of cementitious material.

Compatibility with Other Admixtures

PolarSet is compatible with air-entraining admixtures such as Darex®and Daravair®, water reducers such as WRDA®, mid-range water reducers such as MIRA®, and high range water reducers such as Daracem®. Precaution should be taken to avoid mixing PolarSet with other admixtures before they enter the concrete. However, once they have been separately added to the mix, the products will function as prescribed.

Mix Adjustment

Since PolarSet may be used at high dosages, the concrete producer should account for the water contained in the PolarSet. Each litre of PolarSet added to a concrete mix will contribute 0.78kg of water to that mix.

Dispensing Equipment

Please contact your local GCP representative for further information regarding the dispensing equipment for this product.

Health and Safety

See PolarSet Material Safety Data Sheet or consult GCP Applied Technologies

GCP Applied Technologies Inc., 2325 Lakeview Parkway, Alpharetta, GA 30009, USA

GCP Australia Pty. Ltd., 14 Colebard Street West, Archerfield, Brisbane, Queensland 4108, Australia

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