Introduction

Two common uses of retarders in prestressed concrete are (1) to control the setting characteristics of the concrete during the placement operations, and (2) to improve the strength performance of the concrete.

Set Control

Retarders prevent the concrete that is in contact with the strand from setting prior to the completion of vibrating operations. Vibration of the strand after set takes place can break the bond between the strand and the concrete and reduce the structural integrity of the prestressed piece.

Strength Performance

Many prestressed concrete producers use elevated curing temperatures to achieve maximum 12–16 hour strengths. In these situations, the higher curing temperatures can cause a rapid, less complete, hydration reaction and 28-day strengths tend to suffer. DARATARD® Retarders slow the hydration of the cement and permit the application of high temperature curing without affecting the ultimate strength of the concrete.

Considerations

In the interest of reducing the energy costs associated with curing prestressed concrete, many producers are using lower curing temperatures. This generally requires some reduction in the addition rate of DARATARD® Retarders. If curing temperatures are reduced and retarder dosage rates are not adjusted, over-retardation may result. Dosage rates should also be examined when using high-range water reducers such as DARACEM® and ADVA® in conjunction with retarders. At high temperatures a retarder may help in the strength development of superplasticized concrete, but at lower temperatures it may be beneficial to:

- Reduce the addition rate of DARATARD®
- Switch to a water reducer which will give less retardation, or
- Remove the retarder from the mix and use a HRWR alone
We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate and is offered for consideration, investigation and verification by the user, but we do not warrant the results to be obtained. Please read all statements, recommendations and suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation, or suggestion is intended for any use that would infringe any patent, copyright, or other third party right.

DARATARD, DARACEM, and ADVA are trademarks, which may be registered in the United States and/or other countries, of GCP Applied Technologies Inc. This trademark list has been compiled using available published information as of the publication date and may not accurately reflect current trademark ownership or status.

© Copyright 2018 GCP Applied Technologies Inc. All rights reserved.

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

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

This document is only current as of the last updated date stated below and is valid only for use in the United States. It is important that you always refer to the currently available information at the URL below to provide the most current product information at the time of use. Additional literature such as Contractor Manuals, Technical Bulletins, Detail Drawings and detailing recommendations and other relevant documents are also available on www.gcpat.com. Information found on other websites must not be relied upon, as they may not be up-to-date or applicable to the conditions in your location and we do not accept any responsibility for their content. If there are any conflicts or if you need more information, please contact GCP Customer Service.

Last Updated: 2018-08-24