

CA-R7

RETARDER

GENERAL INFORMATION

CA-R7 is a premium quality cellulosic derivative, which acts both as a fluid loss control additive and as a retarder in practically all types of cement slurries. CA-R7 is fully compatible with all classes of API cements, and many other cementing additives.

DESCRIPTION

CA-R7, a modified organic polymer, is a free-flowing white powder.

MAJOR ADVANTAGES

The flexibility and capability of CA-R7 combined with its dual-purpose function, provides many advantages in cement slurry preparation.

These advantages can be summarized as follows:

CEMENT COMPATIBILITY - CA-R7 is fully compatible with classes A, D, E, G, and H.

ADDITIVE COMPATIBILITY - CA-R7 can be used in combination with many other cement additives, including extenders, retarders, and certain accelerators.

FILTRATION CONTROL - Excellent fluid loss control is achieved by CA-R7 in all slurries including high water content extended cement mixtures.

CONCENTRATION - CA-R7 is used in extremely small concentrations, normally 0.05 to 0.5% by weight of cement, making it extremely efficient and cost effective.

VISCOSITY BUILDING - CA-R7 increases the viscosity of cement slurries which allows its application where a plug flow regime is required as opposed to turbulent flow.

TEMPERATURE STABILITY - CA-R7 is stable at high temperatures with a typical temperature range of 200°F to 250°F.

RETARDER - CA-R7 is an effective retarder which exhibits increased retarding ability at lower temperatures (i.e. <140°F).

FLASH SETTING - Due to CA-R7's fluid loss control and retarding abilities, the risk of flash setting, either by slurry dehydration or as a result of temperature effects, is greatly reduced.

CHANNELING - The increased homogeneity of CA-R7 prepared slurries reduces the risk of channeling during cement placement.

CEMENT BONDING - Cement bonding is greatly enhanced as a result of the uniform slurry produced when CA-R7 is used.



WEIGHTING - The increased viscosity of CA-R7 slurries enables improved suspension of weighting agents.

APPLICATION

The ability of CA-R7 to act as both a fluid loss control additive and as a retarder enables its use in a variety of cement slurry applications. The fluid loss function enables cement slurries to be successfully utilized in primary cementing, especially where permeable/porous formations are exposed, and also in secondary cementing operations e.g., lost circulation zone cementing, perforation sealing, etc.

One major application is the use of CA-R7 as an effective filtration control agent in bentonite extended cement slurries.

The additional retarding ability of CA-R7 further enables its use in variations of the above stated operations, where temperature and depth effects may negate the application of other standard fluid loss additives and retarders. Particular uses include cementing in higher temperature wells and retarding salt water cement slurries.

CONCENTRATIONS

CA-R7 is normally added in concentrations of 0.05% - 0.5% by dry weight to cement which does not require any additional water content. At concentrations above 0.5%, a higher water content will be necessary due to the increased slurry viscosity. In some extended cement slurries, concentrations of up to 1.5% can be used. It is recommended that for any particular application, a series of pilot tests should be made in order to correctly evaluate the concentration of CA-R7 based on the principal parameters anticipated (ie., depth, temperature, formation strength, and the degree of filtration and retardation required).

The attached tables provide general information concerning the use of CA-R7 and should not be used to predict the product's performance in a specific application.

RECOMMENDED MIXING PROCEDURE

CA-R7 should always be dry blended with the cement and not added directly to the slurry mix water. The blending operation should be very thorough to ensure complete mixing and distribution of the CA-R7 in the cement.

SAFETY

As with all powder products, CA-R7 should be handled by personnel fully equipped with eye goggles, protective gloves, and dust masks. CA-R7 dust is a potential fire hazard; therefore, during the blending operation all smoking and open flames should be prohibited.



If eye contact occurs, the eyes should be thoroughly flushed with water for at least 15 minutes and if any irritation persists, medical attention should be sought. In the case of skin contact, the contact area should be thoroughly washed using soap and water. If ill effects occur as a result of inhaling CA-R7 dust, the person should be moved into fresh air. If for any reason symptoms persist, medical attention should be obtained.

ADDITIONAL INFORMATION

As previously stated, CA-R7 exhibits an increased retarding effect at lower temperatures. In certain cases the resultant thickening time may be excessive, requiring the use of an accelerator. Calcium Chloride (CaCl₂) must not be used to accelerate slurries retarded with CA-R7, as it will totally nullify all fluid loss control in the slurry. "Diacel A" is specifically recommended to accelerate CA-R7 slurries.

PACKAGING

CA-R7 is packaged in 50 lb (U.S.A.) or 25 kg (Europe, Africa, Eastern Hemisphere) export quality sacks.

**COMPREHENSIVE STRENGTH DEVELOPMENT CLASS "G"
CEMENTATION WITH CA-R7 (IN psi)**

PERFECNT CA-R7	24 HRS (at 140 °F)	24 HRS (at 170 °F)	24 HRS (at 200 °F)
0.1	2810	3980	3170
0.2	2275	3850	2805
0.4	1995	2970	2580
0.6	1205	2020	3445

**CA-R7 CONCENTRATION REQUIREMENTS
VS. TEMPERATURE, IN CLASS "A" CEMENTS**

TEMP °F	PERFECNT CA-R7	THICKENING TIME
120	0.1	4 Hours
160	0.2	3 Hours 45 Minutes
200	0.3	3 Hours 45 Minutes