



CA-EX11

POZZOLAN/CEMENT BLEND

DESCRIPTION

CA-EX11 is a blended cement system used primarily in lead cement applications to well depths ranging from surface to +12,000 ft. The density of the cement blend can be varied by changing the mix ratios of pozzolan:cement in this system. Typically, blends of 75:25, 65:35, 50:50, 35:65 and 75:25 are used in primary cementing applications, however, at pozzolan levels below 50% by weight the compressive strength of the resultant set cement is very low and slow in developing.

At very low densities free water can develop rapidly which can dramatically affect the height of the cement column in the annulus, and the degree of cement bonding to the casing and formation. The use of Messina's extenders CA-EX5 and CA-EX2 are recommended to control free water in CA-EX11 cementing applications.

PHYSICAL PROPERTIES

<u>Component</u>	<u>Form</u>	<u>Sp. Grav.</u>	<u>Abs. Vol.</u>	<u>Packaging</u>
Portland Cement	Grey Powder	3.15	0.0382 gal/lb	94
lb sacks				
CA-EX9	Grey Powder	2.48	0.048 gal/lb	74 lb sacks
CA-EX5	Tan Powder	2.65	0.045 gal/lb	50 lb sacks
CA-EX2	White Granular	2.40	0.050 gal/lb	50 lb sacks

APPLICATION

CA-EX11 cement slurries can be applied in all primary cementing applications as lightweight lead (or fill) systems or for lightweight tail-in applications. Cement slurries can be prepared at densities ranging from 12.0 ppg up to 14.2 ppg.

The dry blend is prepared by weight. For example, a 50:50 CA-EX11 system would contain 1/2 sack (37 lb) of CA-EX9 and 1/2 sack (47 lb) of Portland Cement. The weight of the dry blend would be 84 lb/sack equivalent.

Typically, 2% CA-EX5 (Extender) is required to minimize free water at a density of 14.2 ppg. This level is increased to a maximum concentration of 16% BWOC as the density of the CA-EX11 slurry is decreased. CA-EX5 can be retarded with Messina's low temperature retarders, and functions well with Messina's fluid loss additives to provide an excellent, versatile cement system for problem wells.



CA-EX11 slurries can be accelerated for use in low temperature applications or retarded with conventional retarders for applications ranging from 6,000 ft to +12,000 ft. CA-EX11 is thermally stable at BHST's greater than 230° F, and does not require the addition of silica to stop strength retrogression. CA-EX11 functions well with Messina Fluid Loss Additives.

CA-EX11 is a Messina trademark

