

CA-EX9

POZZOLANIC EXTENDER

DESCRIPTION

CA-EX9 is a high quality siliceous material that has the pozzolanic properties to react with lime and water and develop cementitious properties. Unlike some commonly used extenders, CA-EX9 is not merely a viscosifier or an inert bulk builder; CA-EX9 develops cementitious properties by reacting with the free lime available from the hydrating cement. The complimentary strength developed by the CA-EX9 facilitates superior compressive strength development, respective to other lightweight, extended cements. Typically, combinations of Portland cement and CA-EX9 are further extended with the inclusion of CA-EX5 (bentonite).

PHYSICAL PROPERTIES

- Meets the requirements of Section 12, API Spec 10, 1984
- Has an absolute volume of 0.478 ft³/sk
- Packaged in bags containing 74 lb or 1 ft³ bulk volume
- Water requirement of 40% by weight of CA-E9 eg. 100 lb CA-EX9 = 40 lb water

APPLICATION

CA-EX9 is utilized in conjunction with Portland cement, both with and without CA-EX5 (bentonite), to produce lightweight, economical cement designs. CA-EX9:Portland cement blends can be engineered to provide cements suitable for perforating, temperatures up to 450° F (232° C) BHST, or low density fill by varying the mix ratios and incorporating other additives. CAEX9: Portland cement blends exhibit increased resistance to attack by sulfate brines, reduced retarder demand, lower heat of hydration and improved economics.

RECOMMENDED TREATMENT

The mixture of CA-EX9:Portland cement is regarded as one cementitious material for calculation of yield and additive concentrations. Some of the commonly used ratios of CA-EX9:Portland cement are listed below:



<u>Percent Mixture*</u>		<u>Weight of Components</u>		<u>Total Weight Per</u>
				<u>Equivalent Sack</u>
				Pounds
CA-EX9	Cement	CA-EX9	Cement	
0	100	0.0	94.0	94.0
35	65	25.9	61.1	87
50	50	37.0	47.0	84
65	35	48.1	32.9	81

* Based on absolute volumes of each material and 74 lb CA-EX9 and 94 lb cement each provide 0.478 ft³ (absolute volume).

For illustration of the commonly used, industry wide nomenclature, a 2% CA-EX5 addition to a 50:50 blend of CA-EX9 and cement is denoted as a 50:50:2 blend with the 2% CA-EX5 (bentonite) equaling 1.68 lb (84 lb eq. sk wt x 2%). Without the bentonite addition this mixture would be denoted as 50:50:0. The first place in the three part ratio indicates % CA-EX9, the second place indicates % cement and the third place indicates % bentonite based on the combined weight or sack weight of the CA-EX9:cement blend.

CA-EX5 is normally included in these blends in amounts ranging from 2-6%, depending on strength, density and costs requirements. Changes in the % CA-EX5 or the blend ratio of CA-EX9:cement create great changes in the properties of the resultant cement.

For additional design or engineering data on CA-EX9 contact the Messina Incorporated office.

PACKAGING

CA-EX9 is packaged in 74 lb, export quality sacks.

SAFETY AND HANDLING

As with any fine, siliceous material, dust masks and goggles should be worn for protection.

CA-EX9 is a Messina trademark

