



P-ESA

CEMENTING SERVICE BULLETIN

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10/ 12/98

P-ESA (ENHANCED STRENGTH ADDITIVE)

SUMMARY

P-ESA is a fibrous material that has been developed to increase the stress resistance of cement. The function of the fibers is to reinforce the cement by transferring the stress evenly throughout the cement. Concentrations of 0.25 to 0.50 pounds of P-ESA per sack of cement produces higher compressive strength, shear and tensile strengths.

PHYSICAL PROPERTIES

Product	SG	Purpose	Color	Packaging
P-ESA	1.13	Strengthening Agent	White Fibers	50 LB/SK.

SAFETY, HEALTH, AND ENVIRONMENT

Industrial Hygiene P-ESA is essentially a non-toxic inert material. It is combustible; care should be taken to store it away from any ignition source.

First Aid Procedure

Eyes: Not likely a problem.

Skin: Not likely a problem.

Inhalation: Not likely a problem.



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DISCUSSION

P-ESA is recommended for use in any cement system where increased stress resistance is required. P-ESA increases the tensile, compressive, and shear strength of the cement.

P-ESA is chemically inert in all cement systems and may therefore be used with all systems and is compatible with all cement additives. Special cement systems having a high viscosity, such as Thixotropic Cement or high gel cement, should be pre-tested with P-ESA to be sure that the resulting slurry is not too viscous.

Thickening Time

P-ESA is an inert material that does not affect the thickening time. Therefore the existing thickening time data for a particular cement system can be used. For laboratory testing to determine the thickening time of a cement system, the P-ESA must be omitted because the P-ESA fibers will hang up on the stirring blades in the consistometer cup and interfere with the proper operation of the consistometer.

Compressive Strength

P-ESA will increase the 24-hour compressive strength on the order of 5-10 percent more than a neat cement system. The following compressive strength data shows this effect.



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Compressive strengths for various amounts of P-ESA
(Class H + 0.3% P-LTR Cement with 46% Water for 24 hours at 150°F & 200°F)

<u>P-ESA Pounds/Sack</u>	<u>Compressive Strength (psi)</u>	
	<u>150°F</u>	<u>200°F</u>
None	3650	5235
0.25	4030	5785
0.50	3825	5524

MIXING PROCEDURE

P-ESA is a particulated material and should be handled as a bridging material. P-ESA can be dry blended with the cement and mixed through a mixer tub. It will tend to separate toward the top since it is lighter than cement. The blending procedure used should be similar to that used for blending Cellophane-Flake, Ground Coal, cement Extenders and other lost circulation materials.

Slurry Handling

The P-ESA modified slurry may bridge off small openings. Therefore, it should not be pumped through perforations or tools with small ports.

P-ESA does not require extra mixing water.