P-TTC

CEMENTING SERVICE BULLETIN

07/13/12

P-TTC (PETROCHEM – THIXOTROPIC CEMENT ADDITIVE)

TECHNICAL DATA

P-TTC is a Gypsum cement used in isolation or in combination with Portland cement can be used for capping a gravel plug back, protecting a bridge plug, a temporary plug or similar repairs on gas and oil wells. In situations where openings for effective bridging or squeeze work, gypsum cement can be used to attempt to seal off lost circulation zones. It is also used for killing a well, repairing holes in pipe to set a short surface, or conductor pipe. Neat gypsum cement has a slight water solubility and should not be used where high strength plugs or permanent seals are required. The primary use of gypsum cement is for temporary remedial plugs.

Gypsum cement has high gel strength and is a quick setting cement. Accelerators, retarders and temperature significantly affect the thickening time of gypsum cement. Compressive strengths are generally low, but can be increased by adding Portland cement.

PROPERTIES

PRODUCT	FORM	S.G.
P-TTC	White	2.70

SAFETY:

Eyes: Flush eyes with water at least 15 minutes. If irritation persists, obtain medical attention.

Skin: Wash with water.

Inhalation: Not likely a problem.

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EXPANSION

The Expansion of cement allows penetration into irregular spaces to form tight seals. Gypsum has a linear expansion of 0. 3 % after it has set.

THICKENING TIME

Gypsum cement is thixotropic in nature and as such develops rapid gel strength once motion stops. This gives it the ability to seal off the channels to which the slurry was previously being lost. Gypsum cement should not be used in wells with temperatures in excess of 180°F as it will not set properly. Pumpability is possible for 80% of the thickening time of gypsum cement. It is important to note however that an increase in temperature significantly reduces thickening time. Several different accelerators and retarders also affect the thickening time of gypsum cement.

STRENGTH

Within three hours of setting, gypsum achieves a compressive strength of 2500 psi, thus giving it the ability to withstand the weight of a cement or mud column at an early age (See Table). To attain extra strengths in excess of 2500 psi, a 50:50 ratio of Class A Cement
and gypsum should be blended. See Table II.

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TABLE 1
NEAT GYPSUM 15.0 LB/GAL

COMPRESSIVE STRENGTH, PSI

BCHT °F	THICKENING TIME HRS/MINS	3 HRS	8 HRS	24 HRS
80	1:15	2800	2750	2900
100	1:00	2850	2900	2950
120	1:05	2800	2850	3000
140	1:05	2800	2800	2850
160	1:00	2400	2350	2250
180	2:35	1100	2150	1050

TABLE II
50/50 CLASS A + GYPSUM

Composition: 47 LB Cement, 50 LB Gypsum, 4.7 Gal Water

Slurry Properties: 15.6 lb. /gal. 1.16 ft^3/sk

COMPRESSIVE STRENGTH, PSI

BCHT °F	% P-LTRL	THICKENING TIME HRS/MINS	3 HRS	8 HRS	24 HRS
80	0.00	0:30	1800	2650	3550

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