P-2000

CEMENTING SERVICE BULLETIN

06/12/2002

P-2000 (PETROCHEM-GAS CONTROL AND SHEAR BOND CEMENT ADDITIVE.

TECHNICAL DATA

P-2000 is a liquid cement additive for combating gas migration and enhancing the shear bond strength of cement to pipe and hole. P-2000 cement slurries may be used in salt systems up to 18% salt BWOW at BHCT of 180^{o}F. and up to 30% salt BWOW at BHCT at 85^{o}F. and in fresh water systems up to 312^{0}F.

P-2000 is pre-stabilized and therefore does not normally require the use of P-500 stabilizer. However, the slurry must still be optimized in the laboratory through thickening time tests to ensure that the slurry does not gel up at 100Bc. but sets and hardens in a minimum period of time. If the slurry does experience a gel problem, add P-500 (P-2000 stabilizer) to the slurry in increments of 1% to 2% by volume of P-2000, in order to prevent this happening.

The cement recommended for use with P-2000 systems is an API class "G" cement, from which, slurry densities ranging from 12.5 To 20.5 Ppg. Can be obtained by using the appropriate light weight or weighting up additives. The optimum slurry weight is 15.8 Ppg.

The P-2000 slurry is fully dispersed (for turbulent flow) and provides excellent fluid-loss properties with values of 30 to 40 cc/30 minutes and adequate thickening times at a 6,000 ft. schedule of 4 to 4.5 Hours. Subsequently, only small quantities of additives may be needed to perfect the cement design. P-2000 is not compatible in a viscous slurry.

P-2000 is used between 1.0 To 1.5 Gallons per sack in applications for enhancing shear bond strength, and 1.5 To 2.0 gallons per sack for gas bearing formations. The optimum concentration will be determined when tested with local cement and water prior to the cement job.

A clean tank is to be used to premix the additives as the volume of P-2000 may be higher than your continuous liquid additive system is capable of handling.

The recommended volume of P-2000 slurry for use on a gas bearing formation is a volume equal to that required to cover the shallowest gas zone, plus 700 annular feet above. The annular hydrostatic pressure above the shallowest gas zone should be 5-10% in excess of the gas formation pressure.

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If a lead slurry is used ahead of the P-2000 slurry, the rheological properties are to be similar to the P-2000 slurry (for turbulent flow) and the thickening time is to be longer than the P-2000 slurry. This is to ensure that the annular hydrostatic pressure designed for the job is kept on the shallowest gas zone during the setting phase of the P-2000 slurry.

Part of the design criteria for a P-2000 slurry, is the use of P-TFS (Petrochem-Turbulent Flow Spacer) to precede the P-2000 slurry. The volume required is equal to 10 minutes of contact time across the zone of interest at turbulent flow rate.

PROPERTIES

PRODUCT	FORM	SP. GR.	PACKAGING
P-2000	WHITE LIQUID	1.00	55 GAL/Drum
P-500	CLEAR LIQUID	1.06	55 GAL/Drum

SAFETY

Chemical goggles should be worn when handling P-2000 and P-500. If either product gets in the eyes, wash thoroughly with water for at least 15 minutes. If irritation persists, seek medical attention. For skin contact, wash with soap and water, if irritation develops, see a doctor. Inhalation is not a severe problem, if overcome, move to fresh air. Consult the M.S.D.S. before handling.

Notice: thus information is presented in good faith, but no warranty is given and Petrochem USA, Inc. assumes no liability for advice or recommendations made concerning results to be obtained from the use of any of its products. Freedom from patents of Petrochem USA, Inc. or others is not to be inferred.

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CLASS H CEMENT + P-2000

DENSITY: 16.5 PPG
123.42 PCF

W.R.: 4.28 GPS
YIELD: 1.05 CU FT/SK

THICKENING TIME UNDER A. P. I. CONDITIONS

GPS	10, 000 FT
ADDITIVE	180°F
0.7	1:30

COMPRESSIVE STRENGTH
P. S. I. (24 HOURS)

GPS	
ADDITIVE	200°F
0.7	3,900

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