



# P-1000

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## **CEMENTING SERVICE BULLETIN**

06/19/12

### P-1000 (PETROCHEM-GAS CONTROL & SHEAR BOND CEMENT ADDITIVE)

#### TECHNICAL DATA

**P-1000** is a liquid cement additive for combating gas migration and enhancing the shear bond strength of cement to pipe and hole, at BHCT up to 200 Deg. F. and can be used with either fresh, salt or sea water up to 8% NaCl BWOW.

However, with the addition of 5 % P-500 stabilizer by volume of P-1000 (to be optimized in the laboratory through thickening time tests so that the slurry does not gel up at 100 Bc, but sets and hardens in a minimum period of time) P-1000 cement slurries may be used in salt systems up to 18 % NaCl BWOW at BHCT of 180 Deg. °F., up to 30% NaCl BWOW at BHCT at 85 Deg. °F. And in fresh water systems above 200-312 Deg. F.

The cement recommended for use with P-1000 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-1000 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-1000 is not compatible in a viscous slurry and must be used with only Petrochem additives.

P-1000 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-1000 may be higher than your continuous liquid additive system is capable of handling.

The recommended volume of P-1000 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.



If a lead slurry is used ahead of the P-1000 slurry, the rheological properties are to be similar to the P-1000 slurry (for turbulent flow) and the thickening time is to be longer than the P-1000 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-1000 slurry.

Part of the design criteria for a P-1000 slurry, is the use of P-TFS (Petrochem-Turbulent Flow Spacer) to precede the P-1000 slurry. The volume required is equal to 10 minutes of contact time across the zone of interest at turbulent flow rate.

### PROPERTIES

<u>PRODUCT</u>	<u>FORM</u>	<u>SP.GR.</u>	<u>PACKAGING</u>
P-1000	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-1000 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.



**CLASS H CEMENT + P-1000**

<b>DENSITY:</b>	16.5 PPG	<b>W. R.:</b>	4.28 GPS
	123.43 PCF	<b>YIELD:</b>	1.05 CUFT/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

The data given is to be used only as a guide. Subsequently, each job is to be designed and tested in the laboratory with the actual water, cement and additives intended for the job, and similar mixing energy is to be duplicated in the field.