



# P-EXTL

## CEMENTING SERVICE BULLETIN

02/09/12

### P-EXT (PETROCHEM – EXTENDER LIQUID)

#### TECHNICAL DATA

**P-EXTL** is a liquid extender for use in cement slurries which have been prepared with seawater. However it may be used with fresh water that has been treated with Calcium Chloride to adjust the water to 3,500 ppm Calcium. If Calcium Chloride is to be used, it must be added to the mix water prior to adding the P-EXTL or other additives. It may be necessary to adjust the concentration of P-EXTL, Calcium Chloride and retarder to minimize free water and optimize thickening time.

P-EXTL allows control of cement slurry densities over a wide range from 11.5 Ppg. To 14.5 Ppg. Without excessive water separation and with proper retardation. However, different cement brands have different cement grinds and are important to the cement slurry design, since a coarse cement grind will require higher concentrations of P-EXTL compared to a finer cement grind. Class "G" cement has been found to work very well with P-EXTL.

The concentration of P-EXTL will vary according to the slurry density. The normal range will be from 0.2 Gal/sk. to 0.6 Gal/sk. and therefore should be confirmed in the laboratory prior to the job. The P-EXTL must be dispersed in the mix water thoroughly before mixing the cement slurry. However, the volume of P-EXTL is to be considered as part of the total mix volume.

Most additives are compatible with P-EXTL slurries; however, some of these may not react as expected and should be tested prior to the cement job. The only fluid-loss additives recommended for use with P-EXTL are Petrochem, Products "P-FLE" and "P-LTFL" of which are to be added to the mix water prior to the P-EXTL.

Calcium Chloride does not accelerate strength development in P-EXTL slurries and may actually increase the thickening time at low concentrations (< 1.5 % BWOC). It may also induce free water when used in excessive amounts. P-1000 is not compatible with P-EXTL slurries. Also liquid retarder "P-LTRL" is not recommended for use above 0.1 Gal/sk. as it may cause excessive gelation.



Once P-LTRL and P-EXTL mix water is prepared it must be used immediately as ageing will extend the thickening time.

If the addition of liquid additives are to be done through a liquid additive system it is recommended to have strong agitation at the bottom of the displacement tanks. Care must be taken to avoid the commingling of the additives prior to their addition in the water as most additives are not compatible with P-EXTL unless diluted previously.

P-EXTL slurries are difficult to retard because P-EXTL acts as an accelerator. For proper slurry design, a balance must be obtained between the retarder and the P-EXTL to minimize free water and optimize thickening time.

### **PHYSICAL PROPERTIES.**

<b><u>MATERIAL</u></b>	<b><u>FORM</u></b>	<b><u>SP GR</u></b>	<b><u>VISCOSITY</u></b>	<b><u>PACKAGING.</u></b>
P-EXTL	Clear	1.40	180 Cp	55 gals/Drum

### **SAFETY AND HANDLING**

P-EXTL is a liquid additive that is a weak caustic material. Care should be taken to avoid leaks and spills.

### **INDUSTRIAL HYGIENE**

Exposure of the eyes to P-EXTL would be very damaging and could cause permanent loss of vision. Chemical goggles and resistant gloves must be worn when handling this material. Short exposure to the skin can cause irritation. If contact does occur, remove contaminated clothing, including shoes and launder before reuse. P-EXTL should not present an inhalation problem.

### **FIRST AID PROCEDURE**

Eyes: Flush the eyes immediately with water for at least fifteen minutes and get medical attention. Skin: Wash the skin with plenty of soap and water. Inhalation: Not likely a problem.

For further safety information see the material safety data sheet on P-EXTL.



## COMPATIBILITY

Most additives are compatible with P-EXTL slurries. However, calcium chloride does not improve early strength and, therefore, is not recommended as an accelerator. Data contained in this section are intended as a guide only. Actual blends should be tested in the laboratory prior to field use.

**TABLE I  
SLURRY PROPERTIES  
TYPICAL API CLASS G & H CEMENTS**

<u>SLURRY DENSITY</u>		<u>P-EXTL</u>		<u>SEA WATER</u>		<u>SLURRY YIELD</u>
<u>lb./gal</u>	<u>lb./ft<sup>3</sup></u>	<u>gal/sk.</u>	<u>ft<sup>3</sup>/sk.</u>	<u>gal/sk.</u>	<u>ft<sup>3</sup>/sk.</u>	<u>ft<sup>3</sup>/sk.</u>
14.2	106.2	0.20	.027	7.51	1.00	1.51
13.6	101.7	0.30	.040	8.81	1.17	1.70
13.0	97.2	0.36	.048	10.50	1.40	1.93
12.5	93.5	0.42	.056	12.32	1.65	2.18
12.0	89.8	0.50	.067	14.67	1.96	2.51
11.5	86.0	0.60	.080	17.85	2.39	2.95

**TABLE II  
TYPICAL THICKENING TIME - API CLASS H**

Thickening Time at BHCT, h/min

<u>DENSITY</u>	<u>Thickening Time at BHCT, h/min</u>		
<u>lb./gal</u>	<u>103<sup>0</sup>F</u>	<u>113<sup>0</sup>F</u>	<u>175<sup>0</sup>F</u>
14.2	2:30	2:30	1:40
13.6	3:00	2:40	1:40
13.0	4:00	2:50	1:50
12.5	4:00+	3:00	2:30
12.0	4:00+	4:00+	3:20
11.5	4:00+	4:00+	4:00+

**TABLE III**



**TYPICAL COMPRESSIVE STRENGTH  
API CLASS H CEMENT + P-EXTL**

24-h Compressive Strengths at BHST, psi

<b>SLURRY DENSITY <u>lb./gal</u></b>	<b><u>95°F</u></b>	<b><u>110°F</u></b>	<b><u>140°F</u></b>	<b><u>170°F</u></b>	<b><u>200°F</u></b>
14.2	700	1150	1400	1450	2050
13.6	400	800	1000	950	1300
13.0	300	500	800	700	900
12.5	200	350	500	350	450
12.0	150	200	300	200	250
11.5	100	150	150	100	150

**Note:** The above data is intended as a guide only. Actual blends should be tested in the laboratory prior to field use.