



CSI Technologies

Professional Fluid Services, LLC

**PRO BOND® SSW (Saturated NaCl)
Dump Bailer Kit Testing**

Prepared For: Donnie Burts
Date: 29 November, 2005



Purpose

CSI Technologies was asked by Professional Fluid Services to investigate the setting and strength developments of Pro Bond® SSW, a new addition to the Pro Bond® product line and designed for dump bail placement into saturated NaCl brines

Conclusion

The Pro Bond® SSW dump bailer kit is designed for placement into a well which contains a 10 lb/gal NaCl brine. Pro Bond® SSW was designed to minimize the effects of delayed development of compressive strength's by saturated brines. Pro Bond® SSW when mixed into a 10 lb/gal NaCl brine will have reduced strength developments and ultimate compressive strengths compared to Pro Bond® mixed in fresh water. However, 12 hour compressive strengths for Pro Bond® SSW in 10 lb/gal NaCl were 1,342 psi, where most cement slurries would still be 0 psi. Standard cement slurries have the potential for a 2/3 reduction in compressive strengths, shear bond and ultimate anchor strength compared to Pro Bond® SSW in saturated NaCl brines. Depending upon the shear bond and ultimate anchor strength required Pro Bond® SSW has application as an isolation plug in saturated NaCl brines. If higher shear bond and anchor strengths are required, consider the use of Ultra Seal-R® (RESIN).

Discussion of Results

The set times and compressive strengths of Pro Bond® SSW and Pro Bond® when mixed into 10 lb/gal NaCl were measured, as seen in Table 1. The twelve hour strengths for Pro Bond® SSW were 1,342 psi, compared to 805 psi of Pro Bond®, as seen in table 1. The brine also delayed the strength development for Pro Bond® by at least 6 hours. One additional test was performed with Pro Bond® to demonstrate the different set times and strength developments when mixed into fresh water, compared to a 10 lb/gal NaCl brine, as seen in Table 2. The strength measurements were verified with a crush test performed on the set UCA plugs. Both Pro Bond® and Pro Bond® SSW were tested on a UCA at 14,000 psi and 356°F.



Table 1: Compressive Strengths performed on UCA at 14,000 psi and 356°F

System	50 psi	500 psi	12 hour CS
Pro Bond® SSW mixed with 10 lb/gal Sodium Chloride brine	3:52 hrs:min	4:54 hrs:min	1342 psi
Pro Bond® mixed with 10 lb/gal Sodium Chloride brine	8:28 hrs:min	10:10 hrs:min	805 psi

Table 2: Compressive Strengths performed on UCA at 14,000 psi and 356°F

Pro Bond® mixed with DISTILLED WATER	2:12 hrs:min	3:06 hrs:min	2647 psi
--------------------------------------	--------------	--------------	----------