



## U.S.A. REPORT #50-04

- Stability in Synthetic Mud Systems
- Slot Sealing Comparison of LCM's in Synthetic Muds

### SUMMARY:

The Pheno Seal® Lost Circulation Material (LCM) was tested in a synthetic mud to determine any detrimental effects on the fluid properties. Pheno Seal® was also tested in a synthetic mud for slot-sealing performance as compared to fibers and nut hulls.

### TEST METHOD: STABILITY IN SYNTHETIC MUD

Pheno Seal was tested in this evaluation for compatibility with a synthetic-based drilling fluid. Pheno Seal® was tested at a dosage of 20 pounds per barrel in a 11.0 PPG synthetic mud system.

### TEST RESULTS:

The chart below contains the fluid test results of the Pheno Seal® LCM as compared to a control in various measurement areas. No adverse effects to the fluid were observed, concluding that Pheno Seal has no detrimental effects on synthetic-based muds.

#### Stability in Synthetic Mud System

	Control	Pheno Seal®
600 R.P.M	50	50
300 R.P.M.	33	32
200 R.P.M.	25	25
100 R.P.M.	19	19
6 R.P.M.	11	11
3 R.P.M.	10	10
PV	17	18
YP	16	14
GELS-S/M	15/27	14/23
ELEC.STAB.	570/576 Volts	570/580 Volts
OIL/WATER	77/23	77/23
SOLIDS	16%	16%

[From "Pheno Seal® Synthetic Mud Evaluation", Montello, Inc., 1996.]

### TEST METHOD: SLOT SEALING IN SYNTHETIC MUD

A Particle Plugging Apparatus was used for testing of the bridging effectiveness of three LCM products when used in a synthetic mud. Each LCM was used at a dosage of 40 pounds per barrel and evaluated at pressures of 500, 1000, 1500, and 2000 p.si., held for ten minutes at each pressure. The lost fluid was measured and recorded for each LCM at each pressure level. Total test fluid used was 350 c.c.

### TEST RESULTS:

The following chart contains the fluid loss values for Pheno Seal®, fibers, and nut hulls at each test pressure. Pheno Seal® easily outperformed the other LCM products in sealability, and had no adverse effect on the synthetic mud properties.

**Lost Circulation Slot Sealing: Fluid Loss**

<b>Product</b>	<b>Pressure</b>	<b>500 psi</b>	<b>1000 psi</b>	<b>1500 psi</b>	<b>2000 psi</b>
Pheno Seal®		33 cc	20 cc	15 cc	25 cc
Fibers		20 cc	60 cc	135 cc	200 cc
Nut Hulls		350 cc*	350 cc*	350 cc*	350 cc*

\* Indicates no seal - total fluid volume lost.

[From "Pheno Seal® Synthetic Mud Evaluation", Montello, Inc., 1996.]

FORTA® Pheno Seal® is warranted to be free of defects and to meet all quality control standards set by the manufacturer. FORTA® has no control over the placement or use of the fluids in which Pheno Seal® is incorporated, therefore FORTA Corporation assumes no responsibility for the end product.

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**FORTA Corporation, 100 Forta Drive, Grove City, PA 16127 USA**  
**Phone: 1-800-245-0306 or 724-458-5221; Fax: 1-724-458-8331; [www.super-sweep.com](http://www.super-sweep.com)**