

Report # 39745



Technical Services Department

**EVALUATION OF BLIND
SAMPLES FROM AN INDEPENDENT COMPANY**

By

J.E. Smith

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MUD AND SOLUBILITY RESULTS

Six samples labeled 1 through 6 were submitted by an independent company for evaluation. The samples were tested in a ten pound per barrel (ppb) bentonite slurry containing 350 ml of tap water, 10 g of bentonite, 0.5 g Na-lignite and 0.1-0.2 ml of DSCo Defoamer. The pH of the base fluid was adjusted to 10.0 -10.5 using a 50% w/v caustic soda solution. Six ppb of test product was used.

TEST PROCEDURE

A ten barrel equivalent base mud was mixed and then divided into 350 ml samples. Six grams of material was added to a sample and stirred for 10 minutes. After the addition of test material, the samples were evaluated for initial properties, static aged overnight at 250° F and cooled to room temperature. After which, the samples were stirred for 10 minutes on a Multimixer and tested for properties. The HTHP fluid loss was run at 300° F and 500 psi differential pressure. (All of the samples required additional defoamer added while being stirred after static aging.)

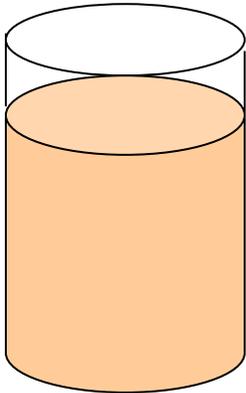
TEST RESULTS

Sample	600	300	PV	YP	Gels	pH	API Fluid loss	HTHP Fluid Loss	Water Solubility
Control	28	18	10	8	8/23	9.2	---	---	81.2%
1	28	17	11	6	8/18	8.7	---	---	100%
2	27	18	9	9	10/23	8.7	---	---	75.2%
3	34	22	11	11	2/13	9.4	---	---	65.5%
4	30	18	12	6	5/23	9.9	---	---	82.0%
5	32	21	11	10	8/25	10	---	---	69.3%
6	43	26	17	9	2/15	9.4	---	---	22.9%
									Appearance of Material
Control	40	27	13	14	8/22	8.2	13	30	Dark brown
1	32	21	11	10	10/18	8.4	14	46	Reddish tan
2	33	23	10	13	8/18	8.4	14	34	Dark brown
3	31	20	11	9	3/15	8.4	12	38	Black/sticky
4	25	15	10	5	2/13	8.9	13.2	50	Gray
5	28	17	11	6	5/18	8.9	6.1	54	Gray
6	43	28	15	13	3/18	8.5	12.6	42	Black/sticky

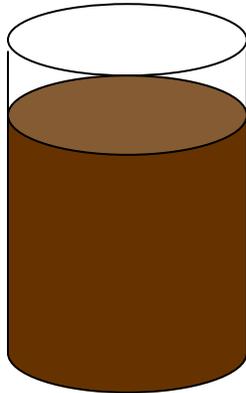
Note: Control is the 350 ml of the base fluid containing 6 g of Soltex® Additive

PRECIPITATE TEST RESULTS

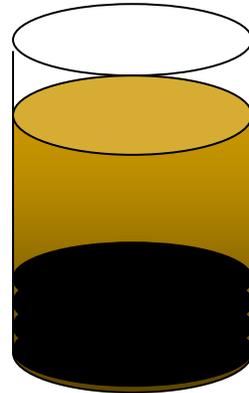
One gram of test product was added to 350 mls deionized water (DI water). After stirring 10 minutes, 0.5 grams of a proprietary precipitant was added and the solutions stirred 10 minutes more. Observations were made after the samples sat for 1 hour undisturbed. The illustrations below represent the test results.



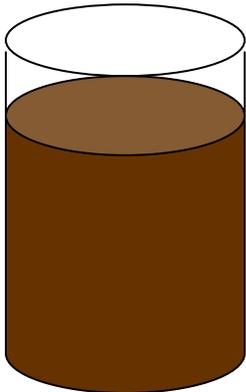
Sample 1



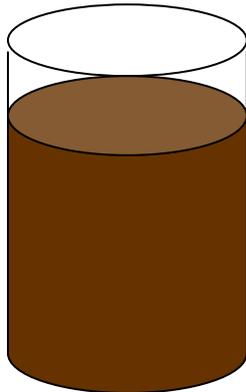
Sample 2



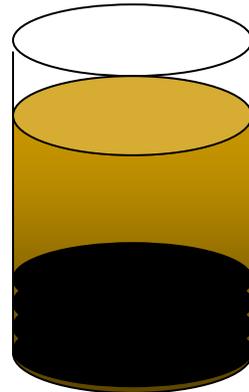
Sample 3



Sample 4



Sample 5



Sample 6

CONCLUSIONS

- Test results indicate no asphalt in sample # 1 due to its reddish tan filtrate color and high HTHP results.
- Test results from sample # 2 indicate the sample is Soltex[®] Additive and this was confirmed by the customer.
- Test results from sample # 3 indicate the sample contained significant amounts of lignite due to the settling of product at the bottom of the beaker and the lower than expected YP and Gel strengths.
- Test results from sample # 4 indicate the sample was a non - sulfonated asphalt due to much lower expected YP and Gel strengths and a very high HTHP filtrate.
- Test results from sample # 5 indicate the sample was a non - sulfonated asphalt due to lower than expected YP and Gel strengths and a very high HTHP filtrate.
- Test results from sample # 6 indicate the sample was a non - sulfonated asphalt due to the very low 22.9% solubility and the high HTHP filtrate. The settling of product at the bottom of the beaker indicates the product contains significant amounts of lignite.

Note: Sample # 3 and # 6 had severe settling indicating the presence of thinners most likely lignite which is black in color. Thinners, which may be harmful because they disperse shales, are often used to make substitutes appear to be soluble like Soltex[®] Additive.

Note: Sample # 4 and # 5 had high solubility and good brown color similar to Soltex[®] Additive when mixed with water. Finely ground asphalt treated with the proper surfactants gives water dispersibility – but not solubility. This difference may not be apparent to a casual observer. Causticized thinners are water-soluble and impart color so that a physical blend of a blown asphalt or gilsonite and causticized lignite may appear to behave like Soltex[®] Additive when added to water. The fact is non – sulfonated asphalt is water – insoluble; moreover, shale control endeavors to prevent the very dispersion of shales and cuttings caused by the thinners.

Soltex[®] Additive is a trade mark product from Drilling Specialties Company, a division of the Chevron Phillips Chemical Company. Soltex[®] Additive is produced by the sulfonation of asphalt. This sulfonation process produces a product which is highly anionic and is typically over 70% to 80% water soluble. Asphalt is neither anionic nor water soluble. Therefore, after sulfonation Soltex[®] Additive, no longer has the chemical or physical properties of an, asphalt. In the same way, it is chemically different from gilsonite and blown asphalts which are not sulfonated but are sometimes mistakenly characterized as “Soltex[®] Additive substitutes”. For more information visit us at our web site at www.drillingspecialties.com.

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