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LUBRICITY TESTING RESULTS OF OBM, WBM, BBM, NaCl₂ AND 3% BOSS-155

On August 24, 2018, this report summarizes the results of the testing conducted at a drilling fluids laboratory by BOSS-CHEM representative using API recommended practices.

SECTION A: DEMONSTRATES THE PROCEDURE OF THE LUBRICITY TEST

SECTION B: SAMPLE DESCRIPTION

SECTION C: TEST RESULTS

SECTION A

Calibration: Mount a steel lubricity test ring and block on the instrument. Submerge test ring and block in deionized water. Set motor speed to 60 RPM and torque to 150 inch-pounds, and run for 15 minutes. (The reading should be 34 ± 2 for deionized water calibration.) Remove the water and dry the assembly.

Step 1: Set the motor speed to 60 rpm and let run for 15 minutes. Zero the torque reading. Run the unit approximately 5 more minutes and zero the torque again if required.

Step 2: Fill the stainless steel sample cup with the test fluid (240 - 280 mL) and place it on the lowered cup stand. Raise the cup stand until the test ring, test block, and block holder are fully submerged. Tighten the thumbscrew to secure the cup stand. Zero the torque reading.

Step 3: Position the torque arm so that it fits inside the concave portion of the torque arm clamp. Check to make sure the test block has not fallen out of the holder and is lying at the bottom of the cup.

Step 4: Apply torque to 150 inch-pounds

Step 5: Let machine run for 5 minutes, and then Record the torque reading

Step 6: Release pressure, to find the lubricity coefficient $\frac{\text{meter reading} \times .98(\text{correction factor})}{100}$

SECTION B: SAMPLE DESCRIPTION

Lubricity Machine used: FANN EP/ Lubricity tester Model 212

Sample Boss-155: Boss-Chem drilling lubricant

Sample OBM: 10 ppg Oil Base Mud

Sample WBM: 10 ppg Water Base Mud

Sample BBM: 10 ppg Brain Mud

Sample NaCl₂: 4% NaCl₂ in tap water

* Note sample were heat rolled with out boss-155

SECTION C: TEST RESULTS

	No Boss-155	With 3% Boss-155	Torque Reduction
OBM	<i>.12 COF</i>	<i>.09 COF</i>	<i>25%</i>
WBM	<i>.36 COF</i>	<i>.18 COF</i>	<i>50%</i>
BBM	<i>.32 COF</i>	<i>.19 COF</i>	<i>41%</i>
NaCl ₂	<i>.33 COF</i>	<i>.08 COF</i>	<i>76%</i>