PHPA Adapter (HPK Test) Instruction Sheet

WATER BASED FLUID TEST PROCEDURE

1) Pre-heat HTHP jacket to 285 ºF
2) Dry HTHP Cell; Insert and tighten stem valve; Invert and place in stand
3) Add amount of sample (typically 5 mL)
4) Add DI water (55 mL)
5) Add 5 mL NaOH (5N); Put lid on and lock in place with set screws
6) In PA apparatus add 30 mL Boric Acid (3% aq. soln.) and 6 drops bromocresol green- methyl red indicator (should be a pink color)
7) Place HTHP cell in heating jacket, keeping the cell inverted
8) Place PA apparatus on cell, and lock in place with pin
9) Carefully open stem-valve one-quarter turn so that pressure can be released from cell.
10) After first bubble appears in HPK boric acid solution, start a 30 min. timer.
11) After 30 min. close stem-valve and lift cell out of the jacket.
12) Carry out titration in titration bowl using N/50 H_2SO_4 (solution should turn from dark green to red/pink color)
13) Calculate ppb PA from calibration curve.
14) Clean-up is simply done by washing cell and PA apparatus with tap water.

Notes:

1) Calibration should be carried out with samples containing the equivalent of 1 ppb, 2 ppb, 4 ppb, 8 ppb PA. Individual calibration curves should be determined for different additives (e.g., PHPA, CLAY GRABBER, CLAY SYNC etc…)
2) If more than 30 mL of acid is required, test should be redone with 2.5 mL of sample, and 57.5 mL of DI water.

ORGANIC/SYNTHETIC BASED FLUID TEST PROCEDURE

Modified SOP for LE SUPERMUL Test

1) Dry HTHP Cell; Insert and tighten stem valve; Invert and place in stand
2) Add a measured amount of mud sample (typically 5 mL)
3) Add DI water (50 mL)
4) Add 5 mL NaOH (5N); Put lid on and lock in place with set screws
5) Also, place cell stem in lid.
6) Place collection apparatus (HPK unit) on cell stem, and lock in place with pin.
7) In collection apparatus bowl add 30 mL Boric Acid (2% aq. soln.) and 7 - 10 drops bromocresol green- methyl red indicator (should be a ***faint pink*** color)
8) Place HTHP cell/with attached collection apparatus into the pre-heated* heating jacket, keeping the cell inverted. *Open the stem-valve* connecting HPK and HPHT cell one-quarter turn.
9) After first bubble appears in boric acid solution, start a 60 minute timer.
10) After color change** (***faint green***), *close stem-valve*, lift cell/with collection apparatus out of the jacket, and place in cell holder.
11) Carry out the titration in the collection apparatus bowl using N/50 H_2SO_4 **(2)** (solution should turn from ***faint green*** to ***faint pink*** color). The solution can be optionally transferred to a 50 - 100 mL beaker, a small magnetic stirring bar added, and the solution titrated while mixing on a magnetic stirrer.

12) To calculate lb/bbl LE SUPERMUL:

a.) mL LE SUPERMUL/ mL mud
Divide the mL of Acid used, by the standard coefficient **(1)***; then divide this value by the mL of mud used. [(mL Acid/SC)/mL Mud]*

b.) g LE SUPERMUL/mL mud
Multiply the value in step (a) by the density of LE SUPERMUL (0.924 g/mL)

c.) lb/bbl of LE SUPERMUL
Multiply the value in step (b) by 350 mL (~ 1 bbl)

13) Clean-up is simply done by washing cell and collection apparatus bowl with tap water.

*The Heating Jacket should be preheated to 300°F

**The color change timing may vary from 30 to 60 minutes, depending on the LES concentration.

Notes:

1. The standard coefficient ***(SC)*** should be determined by performing the test on weighed amounts of LE SUPERMUL i.e. 0.5g, 1.0g, 1.5g
2. If more than 30 mL of acid is required, test should be redone with 2.5 mL of sample.

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Our correspondence address is:

Fann Instrument Company
P.O. Box 4350
Houston, Texas USA 77210

Telephone: 281-871-4482
Toll Free: 800-347-0450
FAX: 281-871-4446

Email: fannmail@fann.com

Our shipping address is:

Fann Instrument Company
15112 Morales Road, Gate 7
Houston, Texas 77032 USA