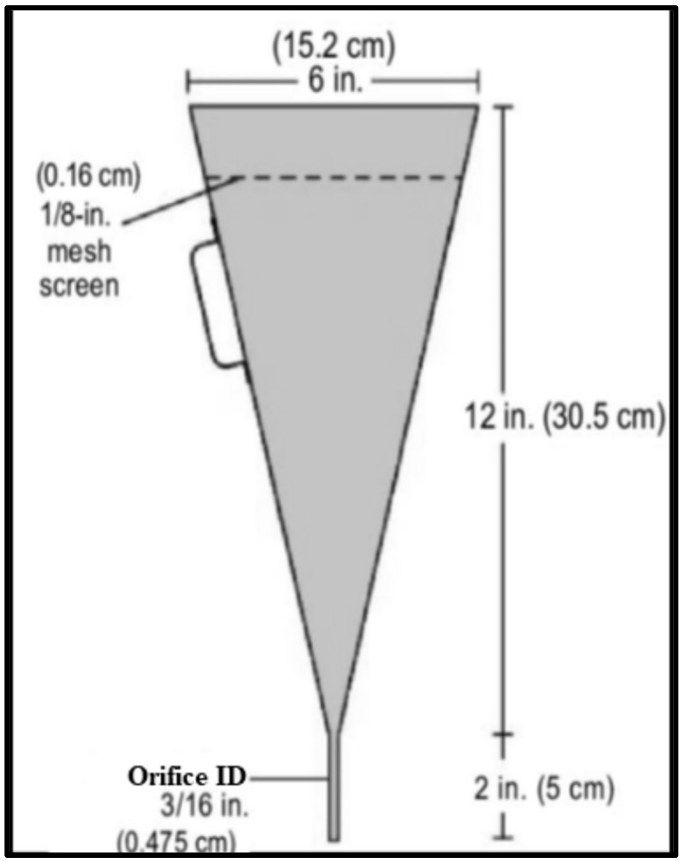
LAB EXPERIMENT: MARSH FUNNEL VISCOMETER



To measure the viscosity of drilling fluid using Marsh Funnel Viscometer

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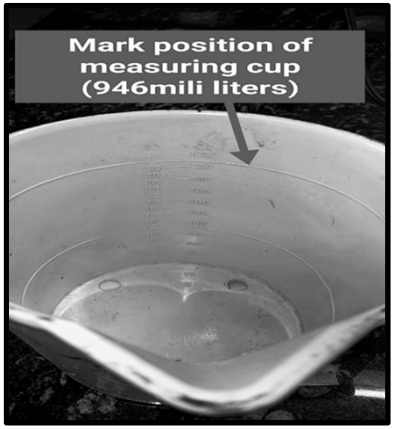

For one quart (1 quart = ¼ gallon = 946 ml)

Procedure:

1. Obtain all the necessary accessories as indicated in left side figure
2. Hold the funnel in an upright position just above the measuring cup.
3. Block orifice outlet with the index finger
4. Pour drilling muds through the screen until the fluid level reaches the bottom of the screen.
5. After that wait 15 seconds and check your stop watch is properly working
6. Remove your index finger from the orifice outlet and start the stop watch.
7. Measure the time for the drilling mud to fill the mark position (946mili liter) of the measuring cup
8. Measure the temperature of the fluid in ^0C or ^0F
9. Record the time to the nearest second as **Marsh funnel time** and record the temperature of the drilling mud.
10. After experiment thoroughly clean the Marsh funnel and measuring cup with fresh water.

Calculations:

The Marsh-funnel based effective viscosity can be determined from following simple formula

$$\mu = \rho\,(t - 25)$$

Where,
μ = effective viscosity in centipoise
ρ = density in g/cm3
t = quart funnel time in seconds

CALIBRATION PROCEDURE

1. We do the calibration of the Marsh funnel viscometer with fresh water.
2. The temperature of the fresh water must be within $70^0F \pm 5^0F$ or $21^0C \pm 3^0C$.
3. Filling the measuring cup of one quart (946mili liter) the fresh water should take 26 sec ±0.5 sec.

Precautions:

1. Clean and dry the funnel and cup thoroughly after each use.
2. Do not bend or flatten the orifice in the bottom of the funnel.

Calibration frequency:

- Once a month..

VIDEO OF MARSH FUNNEL VISCOMETER :

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ASSIGNMENT:

Group-A

Theory question

1. What is the capacity of conical portion of the marsh funnel viscometer ?

a) 1000cm3
b) 1500cm3
c) 1300cm3
d) None of the above.

2. What is the mesh size of top screen of the Marsh funnel viscometer?

a) 12 inch
b) 10 inch
c) 13 inch
d) 14 inch.

3. Measuring cup marked position is equal to?

a) One quart
b) 946 milli liter
c) $1/4^{th}$ gallon
d) All of the above

Numerical question

Determine the viscosities of the fluids using Marsh funnel:

Fluid	Time, sec	Density, g/cm^3
1	65	1.8
2	78	2.3
3	120	1.6

Group-B

Theory question

Numerical question

Determine the viscosities of the fluids using Marsh funnel:

Fluid	Time, sec	Density, g/cm^3
1	56	1.7
2	43	2.5
3	89	0.9

Group-C

Theory question

Numerical question

Determine the viscosities of the fluids using Marsh funnel:

Fluid	Time, sec	Density, g/cm^3
1	135	1.4
2	110	2.8
3	28	2.5

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ASSIGNMENT:

Group-D

Theory question

1. What is the capacity of conical portion of the marsh funnel viscometer ?

a) 1000cm3
b) 1500cm3
c) 1300cm3
d) None of the above.

2. What is the mesh size of top screen of the Marsh funnel viscometer?

a) 12 inch
b) 10 inch
c) 13 inch
d) 14 inch.

3. Measuring cup marked position is equal to?

a) One quart
b) 946 milli liter
c) 1/4th gallon
d) All of the above

Numerical question

Determine the viscosities of the fluids using Marsh funnel:

Fluid	Time, sec	Density, g/cc
1	75	1.7
2	82	2.1
3	97	1.2