

# Analytical Report

## Earth Care Products

**NWL Lot:** 347827  
**NWL Report:** 632192  
**Report:**

**Project:** Curde Oil Absorbent Efficiency  
**Project ID:** Sphag Sorb  
**Samples:** Sphag Sorb

### Objective:

To determine the efficiency of Sphag Sorb absorbent material on oil products.

### Sample Requirements:

Peat/Oil Ratio	= 0.23 g/mL (0.5 lb/1 L Water)
Water	= 500 g
Supplied Crude Oil	= 150 g

### Experimental Protocol:

1. Determine and record oil density.
2. In 1000mL beaker weigh (~500 g) and record mass of water.
3. Add oil to water (~150 g) and record mass of oil.
4. Calculate mass of peat required based on Peat/Oil ratio.
5. Add peat to water/oil mixture and record mass.
6. Let stand 10 minutes.
7. Gravity filter mixture and collect filtrate.\*\*
8. Weigh filtrate collected.
9. Perform O/G analysis on filtrate.
10. Perform Dean Stark analysis on filtered solids (peat/oil mixture).
11. Calculate % solids, % water, % oil in peat.
12. Calculate mass balance and calculate recovery.
13. Calculate peat efficiency. (% Recovery of Oil Product)

*\*\*Filter is water wetted prior to filtration to avoid oil absorption.*

### Observations:

- 2.70 cm oil layer measured on water surface
- 5.20 cm peat layer measured after 4 minute contact with oil/water mixture.
- 2.70 cm high dark region in peat from water oil interface after 4 minute contact.
- No other visible changes from 4 to 10 minutes from first contact.
- No color change from original observed in remaining 1.50cm layer. Remaining peat appears dry.



## Physical Property Data

Density of Oil @ 15°C	0.8446	g/mL	Sample ID: 1358567 NWL De-ionized Water
Density of Water @ 15°C	1.0000	g/mL	
Volume of Oil	178.2	mL	
Volume of Water	507.9	mL	
Total Volume	686.1	mL	
% Oil by Volume	26.0%		
% Water by Volume	74.0%		
Depth of Oil Layer	2.70	cm	
Depth of Peat Layer	5.20	cm	

## Experimental Data

Pre-Treatment						
	Total	Oil (g)	Peat (g)	Water (g)		
Initial Mass of Sample	690.9 g	150.5	32.5	507.9		
Post Treatment						
	Total	% Oil	% Peat	% Water	Sample ID	Lot Ref
Peat Analysis	100.0 %	46.1	13.1	40.8	1358565	-1
Light End Loss	10.0	10.0	0.0	0.0	1358565	-1
Water	100.000 %	0.001	0.000	99.999	1358566	-2
Mass of Residue Peat/Oil	3.1 g	1.7	0.4	1.3		
Mass of Filtrate Water	439.5 g	0.003	0.00	439.5		
Mass of Solids (Wet)	243 g	136.3	31.7	99.2		
Total Mass Recovered	685.6 g	138.1	32.1	540.0		
<b>% Recovery</b>	<b>99.2%</b>	<b>91.7%</b>	<b>98.9%</b>	<b>106.3%</b>		

## Conclusion:

The efficiency of the Sphag Sorb was 91.7% on supplied crude oil as per the experimental parameters. The % recovery of Oil after treatment indicates the absorbency of the product. The loss of peat may be due to dissolution of the peat into the oil and/or solvents used in extraction the loss of crude oil can be partially attributed to light end loss during reflux extraction with toluene.

## **Methodology and Notes:**

### **Method of Analysis:**

Density of Liquid - ASTM D 4052-96

Standard Test Method for Density and Relative Density of Liquids by Digital Density Method,

Oil and Grease in water

\*APHA 5520 B Oil and Grease: Partition-Gravimetric Method

Oil in soil by Dean-Stark

\*ACOSA Determination of the Bitumen, Water and Solids in Oil Sand,

\* Norwest method(s) is based on reference method

### **References:**

APHA Standard Methods for the Examination of Water and Wastewater ASTM Annual Book of  
ASTM Standards Dean-Stark ACOSA Reference Method

### **Comments:**

Sample 2 (1358566) was low in volume for oil and grease analysis which may affect the accuracy of the results.

Approved by: Dave Murray *Manager, Oil & Gas Operations*