Analytical Report Characterization of A Peat Humic Substance

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Scope of Work

A study was done to determine the characteristics of a Peat Humic Substance (PHS) extracted from peat humus. The study focus was to determine if it contains organics and inorganics, nitrogen, and phosphorus. Samples were scanned with a GC/MS spectrometer testing to EPA methods.

Results and Discussion

Appearance

The sample was a brownish semi-solid with very heavy suspended solids and no visible foreign objects present other than the brownish sediment.

Total Solids

EPA Method 160.3 was used. Sample was mixed, placed in a crucible and dried to 103-105°C.

Crucible: 42.0053 grams

Weight of sample: 39.2738 Grams

Crucible + Sample: 81.2791 grams

The dish was heated to 103-105°C and no visible oil or grease was observed.

Results after Drying:

Crucible + Sample: 47.7587 grams

Residue: 5.7534 grams

Total Solids: 14.6494 %

Volatile Solids

EPA Method 160.4 used with residue from above total solid test and dried to 103-105°c

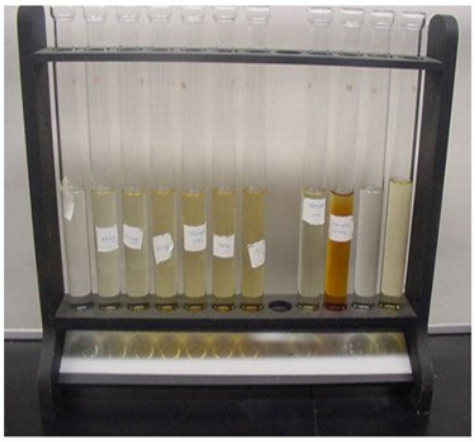
The sample was now transferred to a muffle furnace and heated to 550°C for 3-hours and cooled.

Crucible + Sample: = 47.7587 Grams

Weight of Residue: = 5.7534 Grams

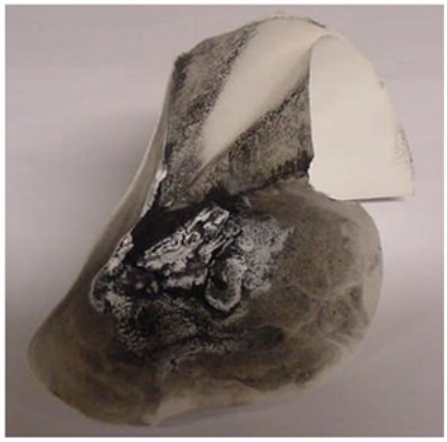
Crucible + Sample: = 42.6156 Grams

Volatile Solids: = 89.4%



Colorimetric method to determine Total Kjeldahl Nitrogen

Residue of the solids after total solids determination.



Residue on the filter paper after sample digestion.

Total Phosphorus

EPA Method 365.4 was used with an Ascorbic Acid to determine phosphorus content. After color developed the sample was scanned with a HP 8453 UV Vis4 Spectrophotometer and calibration curve to determine total phosphorus.

250 ml Sample: 63.22 mg / liter

Total Nitrogen

EPA Method 351.3 using 100 ml of a well mixed digested sample was heated and . cooled and the filtrate diluted to 200ml and transferred to a Kjeldahl flask with 50 ml of 2% boric acid and Ammonia measured by Nesslerization Method.

200 ml sample: 58.3 mg / 1,000 liter

GC/MS Analysis

EPA method 625 was used to analyze 75-targeted compounds, The results from the analysis indicated there was only a small amount of the targeted compound present in the sample.

Findings

- Sample is 14.65% solids, with fixed solids at 10.% and Organic Matter at 89.4%
- Phosphorus and total Nitrogen were 63.22 mg/l and 58 mg/l, indicating some nutrients present
- PHS does not pose a threat to biological degradation