Somaiya TRUST

Somaiya Vidyavihar University.
K. J. Somaiya College of Engineering, Vidyavihar, Mumbai 400077.

Department of Science and Humanities
Applied Chemistry Laboratory

Subject: Engineering Chemistry

CO3: Design and evaluate sustainable energy system such as solar, hydrocarbon, biodiesel, power alcohol including power generation and storage system.

Batch: C5-3 **Roll No.:** 54

Name: RAJAT KUMAR

Date: 07/10/2024

Experiment No. 5

Title : **Determination of moisture content in Fuel**

Aim : To determine the moisture content in the given coal sample.

Requirement : Porcelain crucible, finely ground charcoal powder, desiccator, Balance , fractional weight box.

Theory : Moisture is an undesirable component of mined coal. It is bought and transported at the cost of fuel. It does not contribute to calorific value but actually reduces it. Moisture can be surface moisture which is lost on just drying. However inherent moisture is not lost by air drying.

Procedure : To determine inherent moisture, air dried coal is crushed (which can pass through mesh No.60 (ASTM). Initially weigh empty crucible along with lid. Note down the weight. Then weigh about 1 gm of sample in a crucible. Put the lid on the crucible and weigh it again. Note down the weight again. Keep this crucible in an oven maintained at a temperature between 105- 110^{0}C. The lid is removed to allow for the evaporation of moisture. Keep it for 1hour in an oven. After 1hour, the crucible is covered with the lid and transferred to a desiccator for cooling. After cooling the crucible is weighed again. Note down the weight.

Somaiya Vidyavihar University.
K. J. Somaiya College of Engineering, Vidyavihar, Mumbai 400077.

Department of Science and Humanities
Applied Chemistry Laboratory

Subject: Engineering Chemistry

Observation

Weight of empty crucible= 21.5995 gm (W1)

Weight of crucible + Sample (Before heating) = 22.3545 gm (W2)

Weight of sample before drying = 0.755 gm($W_2 - W_1$)

= 0.755 gm (W3)

Weight of crucible + sample (after heating) = 22.2160 gm (W4)

Weight of the sample (after heating) = 0.6165 gm (W4- W1)

= 0.6165 gm (W5)

Loss in weight of sample = 0.1385 gm (W5- W3)

= 0.1385 . gm (W6)

Somaiya Vidyavihar University.
K. J. Somaiya College of Engineering, Vidyavihar, Mumbai 400077.

Department of Science and Humanities
Applied Chemistry Laboratory

Subject: Engineering Chemistry

Calculations

Weight of sample = 0.755 gm (W3)

Loss in weight = 0.1385 gm (W6)

$$\%\text{Moisture} = \frac{\text{Loss in weight}}{\text{Wt of sample taken}} \times 100$$

$$= \frac{W6 \times 100}{W3}$$

$$= 18.3443\ \%$$

Result : Percentage of moisture in given charcoal powder
= 18.3443%

28/30

10/10/24