**Observation**

**Part-1**

Weight of empty crucible = W1 g = g

Weight of Crucible + Coal = W2 g = g

Weight of sample before drying = W2 – W1 g

= g

Weight of crucible + sample = W3 g = g

after heating at 1000 for 60 min

Weight of sample after heating = W3 – W1 g

= g

Loss in weight = W2 - W1 - (W3-W1)

= W2 - W3 g

= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_g

**CO-3:**

**Name:**

**Batch: Roll No.:**

**Date:**

**Experiment No. 6**

# **Title: MOISTURE CONTENT AND VOLATILE MATTER IN COAL**

**Aim** : To determine the moisture content and volatile matter in the given coal sample

**Requirement** : Porcelain crucible, silica crucible, finely ground charcoal powder, oven, muffle furnace, Desiccator, Balance, fractional weight box.

**Theory** : Moisture and volatile matter 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** : **Part-1-** To determine inherent moisture, air dried coal is crushed (which can pass through mesh No.60 (ASTM). Initially weigh empty crucible. Note down the weight. Then weigh add about 1 to 2 scoops (spatula) of the coal sample in a crucible. Note the weight again. Keep this crucible in an oven maintained at a temperature between 105- 1100C. Keep it for 1hour in an oven. After 1hour, the crucible is removed and transferred to a desiccator for cooling. After cooling for 10 to 15 mins, the crucible is weighed again. Note down the weight.

**Calculations**

**Part-1**

% moisture = Loss in weight x100 Wt of sample taken

= W2 – W3 x 100

W2- W1

= \_\_\_\_\_\_\_ %

**Part-2**

Loss in weight = W2 - W1 - (W3-W1)

= (W2 - W3)

= \_\_\_\_\_\_\_\_\_\_\_ g

% Volatile matter = Loss in weight x100 Wt of sample taken

= W2 – W3 x 100- %Moisture gm

W2- W1

= \_\_\_\_\_\_ %

**Observation**

**Part-2**

Weight of empty crucible = W1 g = g

Weight of Crucible + Coal = W2 g = g

Weight of sample before drying = W2 – W1 g

= g

Weight of crucible + sample = W3 g = g

after heating at 9200 for 7 min

Weight of sample after heating = W3 – W1 g

= g

Loss in weight = W2 - W1 - (W3-W1)

= W2 - W3 g

=\_\_\_\_\_\_\_\_\_\_\_\_ g

**Procedure** : **Part-2-** To determine the volatile matter, 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 add to it about 1 to 2 scoop (spatula) of the coal sample. Note down the weight. Keep this crucible in an oven maintained at a temperature between 920 ± 200C with half lid open. After seven minute the crucible with closed lid is transferred to a desiccator for cooling. After cooling the crucible is weighed again. Note down the weight.

**Result :**

1. Percentage of moisture in the given charcoal powder= \_\_\_\_\_\_\_\_\_\_\_\_\_%

2. Percentage of volatile matter in given charcoal powder= \_\_\_\_\_\_\_\_\_\_\_\_\_\_%