Return To Secondary Lesson Plans

Title: Coal Moisture Analysis
Level: Secondary
Day/Time: 3 hrs- May have to be shortened
KERA Goals: 1.3, 1.5, 2.1
Objective:
This exercise is in conjunction with the drying loss of a coal sample. Analytical results can be obtained by establishing the loss in mass of a sample when heated under controlled conditions of temperature.

Materials:
Crucible
Spatula
Tongs
Balance (sensitive to 0.0001 g)
Desiccator
Prepared coal sample

Activity #1

Heating the Sample:
1. Heat the empty crucible and cover in oven maintained at a temperature of 104-110 deg. C. After one hour, remove the crucible from the oven and cool in a desiccator for 15-20 minutes

2. Using tongs, record the empty crucible weight.

3. Using a spatula, transfer approximately 1 g of the coal sample to the crucible and mass to the nearest 0.0001 g and record grams as W1. Subtract the crucible from the sample mass (W1) and record mass as W3.

4. Secure the crucible in a desiccator and transfer into a pre-heated oven at 104-110 deg. C.

5. Heat for one hour without the lid on the crucible.

6. Place the cover on the crucible and transfer into the desiccator for 15-20 minutes to cool. Remass the crucible to the nearest 0.0001 g and record the weight in grams as W2.

7. Open the crucible and examine for complete combustion.

8. If coal is still visible, return to Step 4 and repeat.

Data Collection / Analysis:

1. Table 1 - Laboratory

Temperature	Humidity

Table 2 - Heating / Drying

Time Burner	Trial 1	Trial 2
Desiccator		

Table 3 -

Sample #	Mass Crucible	Sample Before Change	Sample After Change

Activity #2

Calculation of the Moisture Content:
1. Calculate the percent of moisture in the analysis sample as follows:

$$\% \text{ moisture, uncorrected} = \frac{W1 - W2}{W3} \times 100$$

Where W1 = mass of crucible and sample in grams
W2 = mass of crucible
W3 = mass of sample in grams

Provided by American Coal Foundation

Return To Secondary Lesson Plans