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院

Crucible Loss-on-Ignition
Analytical Report
for Asia Coal Catalyst Company

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1. Coal Samples:

No.	Name
09-404	Huaming (Shandong Province)
09-405	Huajin (Shandong Province)
09-411	Pingshuo (Shanxin Province, from CCCUGC)
09-438	Guangwang (Sichuan Province)

Catalyst Sample: CC-88 from ACCC

2. Coal property analysis

Coal property analysis includes: determination of ash, moisture, volatile matter, sulfur content and calorific value.

The results of 4 coal samples are shown in attached table 1.

The results of 3 coal samples with CC-88 are shown in attached table 2.

3. Procedures of Crucible LOI Tests:

[1] Coal preparation: all the samples are crushed, sieved to 3mm (1/8") and blended.

[2] Combustion of coal only

A. Weigh out 2.0000 grams of the coal sample in a fired and tared crucible, and blended.

B. Ignite the coal with the alcohol-gas burner, and kept the temperature ($>1050^{\circ}\text{C}$) for 15 minutes with constant rotation by hand.

C. Cool the crucible and take a final weight of the remains of the sample. Calculate the percent of WEIGHT LOSS.

Analyze the ash yield of the remains of the sample. Calculate the BURNOUT DEGREE.

[3] Combustion of coal plus CC-88

A. Weigh out 2.0000 grams of the coal sample in a fired and tared crucible.

B. Weigh out 0.100 grams of the CC-88. Sprinkle the CC-88 on the coal sample in the crucible, and blend it.

C. Ignite the coal and CC-88 mixture with the alcohol-gas burner, and kept the temperature ($>1050^{\circ}\text{C}$) for 15 minutes with constant rotation by hand.

D. Cool the crucible and take a final weight of the remains of the sample. Calculate the percent of WEIGHT LOSS.

E. Analyze the ash yield of the remains of the sample. Calculate the BURNOUT DEGREE.

4. Calculation Formula of Index:

$$\textit{Weight.loss.percent} = \left(1 - \frac{\textit{residue.mass}}{\textit{raw.sample.mass}}\right) \times 100\%$$

$$\begin{aligned} \textit{Burnout.degree} &= \frac{\textit{burnout.portion}}{\textit{all.combustible.portion.of.coal}} \\ &= \frac{\textit{raw.sample.mass} - \textit{residue.mass}}{\textit{raw.sample.mass} - \textit{coal.ash}} \times 100\% \end{aligned}$$

The results of Crucible LOI Tests are shown in attached table 3.

5. Discussion and Summary

[1] Despite of the factors of the non-homogeneity of 3mm sample and the influence of coal ash, we think the index of Burn-out Degree is better to characterize the property of combustion. [2]

We have to do several tests on one sample, and the attached table 3 shows rather good results of the tests.

[3] According to data from table 3, CC-88 treated Coal shows a 6.0%~14.4% increase of Burn-out Degree, which represents a rather higher efficiency in the burning of the Coal