Report on Preparation and Certification of Australian Coal Industry Reference Samples

Electrode Carbon Reference Sample EC - 2011

Report No: AD– EC - 2011

Report Date: June 2011

ANALYSIS AND TESTING REPORT

Electrode Carbon Reference Sample
EC - 2011

1. Introduction

This report describes the preparation and analysis of ACIRS – EC - 2011, which comprises a sealed jar of electrode carbon material used in the Gray-King coke type test as described in AS 1038.12.2 and ISO 502.

2. Previous EC series Preparation

This is the first in the series.

3. Sample preparation

Approximately 400kg of spent electrodes used in an electric arc furnace was obtained. The sample was inspected and any contaminants removed.

The electrode carbon was progressively crushed to a nominal top size of 4mm using large, medium and small jaw crushers. The resultant material was mixed and progressively ground to a nominal top size of 212μm using a ring grinder.

The bulk sample was mixed and divided into 16 lots of equal mass by rotary sample division (RSD).

The lots were further divided into sub-lots of 1kg and transferred to plastic jars with screw-top lids.

10% of the jars were randomly selected and contents tested for homogeneity by determining and recording the ash and moisture content of each as well as the size distribution. The average results of these tests are given in Appendix A.

4. Test program

5% of the jars were selected and tested by accredited laboratories for proximate analysis, relative density and bulk density in accordance with relevant Australian and ISO Standards. The results of these tests are given in Appendix B.

5. Specification

The test work indicated that the electrode carbon conforms to the following requirements as specified in AS1038.12.2:

Moisture	<1 percent
Ash	<5 percent (dry basis)
Volatile matter	<1.5 percent (dry basis)
Relative density	2.05 to 2.09 (dry basis)
Bulk density	1000g/L to 1050g/L
Size analysis +212μm	<1 percent

Appendix A

Australian Coal Industry Reference Sample

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Sample Preparation Results

Standard Test Requirement		Actual result
Moisture	< 1 percent	0.2 percent
Ash	<5 percent (dry basis)	2.8 percent (dry basis)
Volatile matter	<1.5 percent (dry basis)	0.8 percent (dry basis)
Relative density	2.05 to 2.09 (dry basis)	2.08 (dry basis)
Size analysis		
+212µm	<1 percent	0.2 percent
-212 +125µm	<26 percent	12.2 percent
-125 +63µm	>=10, <=40 percent	25.4 percent
-63µm	>=50, <=85 percent	62.2 percent

EC - 2011 conforms with the requirements of AS 1038.12.2 and ISO 502.

Appendix B

Test Results

Lab Number	Moisture % (ad)	Ash % (db)	Volatile Matter % (db)	Relative Density (db)	Bulk Density g/L (db)
1	0.2	2.7	0.7	2.11	1014
2	0.2	2.8	0.7	2.11	1022
3	0.2	2.8	0.7	2.08	1031
4	0.3	2.8	1.2	2.06	1020
5	0.2	2.8	0.9	2.13	1028
6	0.1	2.9	0.8	2.04	1036
7	0.1	2.9	0.7	2.07	1041
8	0.2	2.8	0.7	2.06	1030
Ave.	0.2	2.8	0.8	2.08	1028

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Certificate of Analysis

Moisture	0.2 percent
Ash	2.8 percent (dry basis)
Volatile matter	0.8 percent (dry basis)
Relative density	2.08 (dry basis)
Bulk density	1028 g/L (dry basis)
Size analysis +212µm	< 1 percent

EC - 2011 conforms with the requirements of AS 1038.12.2 and ISO 502.