



# CERTIFIED REFERENCE MATERIAL BCR<sup>®</sup> – 331

## CERTIFICATE OF ANALYSIS

LOW VOLATILE STEAM COAL		
	Mass fraction based on dry mass	
	Certified value <sup>1)</sup> [g/kg]	Uncertainty <sup>2)</sup> [g/kg]
sulfur	4.99	0.10
<p>1) This value is the unweighted mean of the means of 11 accepted sets of results. These sets were independently obtained by different laboratories and/or different methods. The value is traceable to the International System of Units (SI).</p> <p>2) The uncertainty is taken as the half-width of the 95 % confidence interval of the mean given in 1).</p>		

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 2 g but smaller sample sizes are possible after careful rehomogenization (chapter 9 in the certification report).

### DESCRIPTION OF THE SAMPLE

The sample is a ground low volatile steam coal (sieve fraction of particles up to 125 µm). It is provided in units of approx. 20 g in sealed, hard-glass ampoules with an argon atmosphere. Additional information on the material is given in the report.

### NOTE

This material has been certified by BCR (Community Bureau of Reference, the former reference materials programme of the European Commission). The certificate has been revised under the responsibility of IRMM.

Brussels, December 1988  
Latest revision: May 2007

Signed: \_\_\_\_\_

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## ANALYTICAL METHOD USED FOR CERTIFICATION

A wide range of sample pretreatment techniques was applied including wet digestion with acids, Wickbold combustion, combustion in O<sub>2</sub> or with Eschka-mixture addition. As a final determination method gravimetry, titrimetry, plasma emission spectrometry, ion chromatography or isotope dilution mass spectrometry were used.

## PARTICIPANTS

- Dutch Centre for Coal Specimens, Eindhoven (NL)
- EOLAS, The Irish Science and Technology Agency, Dublin (IE)
- British Coal – Scientific Control, Headquarters Technical Department, Burton-on-Trent (GB)
- Centre d'Etudes et de Recherches des Charbonnages de France, Verneuil-en-Halatte (FR)
- CISE SpA, Segrate (Milan) (IT)
- COMEXAL, Antwerp (BE)
- Empresa Nacional de Electricidad (ENDESA), Madrid (ES)
- Energieonderzoek Centrum Nederland (ECN), Petten (NL)
- Hoogovens Groep b.v., IJmuiden (NL)
- Keuring van Electrotechnische Materialen N.V. (KEMA), Arnhem (NL)
- Ministère des Affaires économiques; Laboratoire Central de l'Administration de l'Industrie, Bruxelles (BE)

## SAFETY INFORMATION

The usual laboratory safety precautions apply.

## INSTRUCTIONS FOR USE

- The reference material is especially intended for the verification of methods. The material is in powder form and has been crushed to pass a sieve with apertures of 125 µm.
- The user should take a sample for analysis which is representative of the contents of the ampoule. Homogenization is best carried out by grinding the whole sample to pass a sieve of apertures of 100 µm. The moisture content of the analytical portion shall be in equilibrium with the laboratory atmosphere, before it is carefully extracted in small increments (see ISO 331: Coal – determination of moisture in the analysis sample).
- The correction to dry mass should be made after grinding the whole sample to pass a sieve of apertures of 100 µm on a separate portion of the material, by drying 1 g in a stream of oxygen-free nitrogen at 105 °C for 1 h according to ISO 589: Method B – Coal – determination of moisture in the analysis sample.
- When the reference material is used to assess the performance of a method, the user should refer to the recommendations of the certification report.

## STORAGE

Upon receipt samples may be stored at room temperature. After opening, direct prolonged exposure to moisture, elevated temperature or light should be avoided by storing the sample under inert gas (Ar or N<sub>2</sub>) in a desiccator, preferably in a closed cupboard at a temperature not exceeding 20 °C. Experience in the laboratories shows that with a proper storage procedure the sample will still be useful after 5-6 weeks. However, the European Commission cannot be held responsible for changes that happen during storage of the material at the customer's premises, especially of opened samples.

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## NOTE

A technical report on the production of BCR-331 is available on the internet (<http://www.irmm.jrc.be>). A paper copy can be obtained from IRMM on request.