



**NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS**  
Centre for Quality Management, Standards and Calibration Services

**CERTIFICATE OF ANALYSIS**  
**COAL STANDARD**  
**CRM-1031B**

**Date: 23<sup>rd</sup> December 2015**  
**Certificate No.: Coal/1031B/**

The Certified Reference Material **CRM-1031B** has been developed by National Council for Cement and Building Materials (NCB), India, for calibration of bomb calorimeter, evaluating proficiency of analysts and evaluating/comparing various test methods. This **CRM-1031B** is packed in 3 sealed vials, each containing approximately 13g of powdered coal. This CRM supersedes CRM 1031 which is now certified as a new CRM for analysis on 'air-dried' and 'as-received' basis.

**Traceability, Certified Value and Uncertainty:** The **CRM-1031B** is metrologically traceable to SI units of measurement. The parameters have been analysed as g/g of the total material and reported in percent. Calorific value has been reported as cal/g. The certified value and expanded uncertainty of CRM, estimated with known sources of bias, are given below:

CONSTITUENT	ANALYSIS ON AS-RECEIVED BASIS		ANALYSIS ON AIR-DRIED BASIS	
	Certified Value	Expanded Uncertainty (Coverage Factor k=2)	Certified Value	Expanded Uncertainty (Coverage Factor k=2)
Ash (%)	32.20	±0.10	32.39	±0.13
Volatile Matter (%)	28.13	±0.30	28.54	±0.13
Sulphur (%)	0.49	±0.03	0.52	±0.03
Gross Calorific Value (cal/g)	4628	±19	4654	±13

**The nominal value of moisture for 'as-received basis' is 3.15% and 'air-dried basis' 2.50%.**

The expanded uncertainty of the certified value for a constituent is estimated according to the Guide to the expression of Uncertainty in Measurement (GUM) at 95% confidence level. The uncertainty includes the measurement variability among the participating laboratories and material inhomogeneity, latter controlled through statistical means. The value listed for a constituent is the best estimate of true value based on testing in NCB laboratories. Proximate analysis tests (moisture, ash and volatile matter), calorific value and sulphur have been determined as per IS 1350 (Part-I): 1984, IS 1350 (Part-II): 1975 and IS 1350 (Part-III): 1969, respectively.

**Instructions for Use:**

1. CRM should be used in controlled conditions, using calibrated equipment, by trained personnel.
2. The analysis should be conducted on 'as-received'/'air-dried basis', as required.
3. Leftover portion of a vial, if any, should not be used at a later date.
4. NCB has provided only one set of material against the above Certificate No. mentioned at the top.
5. The material should be stored under non-humid conditions to avoid any ingress of moisture.
6. Record of usage of CRM and the results must be maintained.

**Nature of Material:** Non-hazardous

**Expiry Date of CRM:** This **CRM-1031B** with all its values and uncertainty is developed in **December 2015** and valid upto **31<sup>st</sup> December 2018** in sealed condition. The CRM will be **monitored** over the period of its certification.

**Certification:** NCB has provided only one set of material against the Certificate No. mentioned at the top.

Sd/-

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Date of release:

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