



# CERTIFIED REFERENCE MATERIAL BCR<sup>®</sup> – 169

## CERTIFICATE OF ANALYSIS

ALPHA ALUMINA	
Nitrogen 'BET' Specific Surface Area	
Certified value <sup>1)</sup> [m <sup>2</sup> /g]	Uncertainty <sup>2)</sup> [m <sup>2</sup> /g]
0.104	0.012
<p><sup>1)</sup> The certified value is the mean of means of measurements obtained in 4 laboratories using volumetric techniques and 1 laboratory using a gravimetric technique in the relative pressure range 0.05 – 0.30 and is traceable to the nitrogen 'BET' volumetric and gravimetric methods.</p> <p><sup>2)</sup> The uncertainty is taken as the 95 % confidence interval of the mean defined in 1).</p>	

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 1 g.

### 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 1987

Revised: May 2007

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

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## DESCRIPTION OF THE SAMPLE

Each sample consists of a glass bottle filled with approximately 60 g of alpha alumina powder obtained by subdividing a bulk quantity of the material using a multi-stage procedure involving 2 riffles.

## ANALYTICAL METHOD USED FOR CERTIFICATION

Nitrogen 'BET' volumetry and gravimetry

## PARTICIPANTS

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- Institut für Anorganische Chemie und Analytische Chemie – Johannes Gutenberg Universität, Mainz (DE)
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- School of Chemistry, University of Bristol, Bristol (GB)

## SAFETY INFORMATION

Particles 10 µm or less in diameter can enter deeply into the respiratory system when inhaled. Precautions must then be taken accordingly when manipulating this CRM.

## INSTRUCTIONS FOR USE

BCR-169 is intended to be used by laboratories either to test the accuracy and the effectiveness of their instruments measuring BET specific surface area or alternatively to calibrate these types of instruments. This is increasingly important as the BET specific surface area is lower (less than about 10 m<sup>2</sup>/g).

The user of the reference material should refer to the IUPAC document entitled 'Reporting physisorption data for gas/solid systems' published in Pure and Applied Chemistry 57 (1985) 603-619. Sample sub-division should be undertaken with a rotating riffle. Outgassing should be under vacuum for a minimum of 12 hours for volumetric methods and 4 hours for gravimetric methods at a temperature of 75 ± 5 °C. The final pressure should be < 0.01 Pa.

## STORAGE

Specimens should be kept at ambient temperature in their original packing until used. 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-169 is available on the internet (<http://www.irmm.jrc.be>). A paper copy can be obtained from IRMM on request.