



CERTIFIED REFERENCE MATERIAL BCR[®] – 178

CERTIFICATE OF ANALYSIS

CALCIUM AMMONIUM NITRATE FERTILISER			
	Mass fraction		Number of accepted sets of results p
	Certified value ¹⁾ [mg/g]	Uncertainty ²⁾ [mg/g]	
ammoniacal-N	130.44	0.32	11
nitrate-N	130.15	0.57	10
total N	260.19	0.54	12
Ca	88.82	0.27	12

¹⁾ Unweighted mean value of the means of p sets of data, each being obtained in a different laboratory and/or with a different method. The certified value is traceable to the SI.

²⁾ Half-width of the 95 % confidence interval. The 95 % confidence interval is a measure of the uncertainty and is applicable when the reference material is used for calibration purposes.

When the reference material is used to assess the performance of a method, the user should refer to the recommendations laid down in the last chapter (instructions for use) of the certification report.

This certificate is valid until March 2021. This validity may be extended, as further evidence of stability becomes available.

The minimum amount of sample to be used is 0.5 g.

DESCRIPTION OF THE SAMPLE

The sample consists of a homogeneous powder (particle size: 1.48–1.67 mm) taken from a batch of commercially produced calcium ammonium nitrate. The CRM is available in brown bottles containing approximately 100 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 1986
Revised: October 2006

Signed: _____

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ANALYTICAL METHODS USED FOR CERTIFICATION

The sample was completely dissolved. Methods of determination included:

- For ammoniacal-N: - titrimetry after alkaline steam distillation or reaction with methanal
- For nitrate-N: - removal of ammonium ions by alkaline steam distillation, reduction with Devarda-alloy, alkaline steam distillation and acidimetric titration
- gravimetry (with nitron)
- reversed phase ion pair chromatography and spectrometric measurement
- reduction with Fe (II) and oxidimetric titration
- spectrometry (nitroxylenol complex)
- For total N: - reduction with various alloys (Devarda and Arnd) or with Cr, alkaline steam distillation, acidimetric titration
- For Ca: - chelatometric titration
- precipitation as calcium oxalate followed by a permanganometric titration
- atomic absorption spectrometry

PARTICIPANTS

- Azienda Nazionale Idrocarburi Agricoltura S.p.A., Ravenna (IT)
- BASF Aktiengesellschaft, Ludwigshafen (DE)
- Groupe CdF Chimie, Azote Produits Chimiques, Toulouse (FR)
- Imperial Chemical Industries, Agricultural Division, Cleveland (GB)
- Joint Research Centre, Commission of the European Communities, Ispra (IT)
- Laboratory Stikstofbindingsbedrijf/Unie van Kunstmestfabrieken, Geleen (NL)
- Landwirtschaftliche Untersuchungs- und Forschungsanstalt, Bonn (DE)
- State Laboratory, Dublin (IE)
- Station Agronomique de l'Aisne, Laon (FR)
- Università Bologna, Istituto di Chimica Agraria, Bologna (IT)
- Universität Hohenheim, Landesanstalt für Landw. Chemie, Stuttgart (DE)
- Windmill Holland B.V., Vlaardingen (NL)

The statistical analysis was carried out by the Community Bureau of Reference (BCR).

SAFETY INFORMATION

Not applicable.

INSTRUCTIONS FOR USE

Once the bottle has been opened, it should be stored in a dry desiccator. The moisture content should be determined on a separate portion by a Karl Fischer titration. The portion for analysis should be taken as it is from the same sample.

STORAGE

Storage should take place at 18 °C, in the dark and protected from humidity.

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 is available on the internet (<http://www.irmm.jrc.be>). A paper copy can be obtained from IRMM on request.