



# CERTIFIED REFERENCE MATERIAL BCR<sup>®</sup> – 129

## CERTIFICATE OF ANALYSIS

HAY POWDER					
	Mass fraction				Number of accepted sets of data p
	Certified value <sup>1)</sup>		Uncertainty <sup>2)</sup>		
Ca	6.40	g/kg	0.10	g/kg	13
I	0.167	mg/kg	0.024	mg/kg	5
K	33.8	g/kg	0.8	g/kg	9
Kjeldahl-N	34.2	g/kg	0.4	g/kg	4
Mg	1.45	g/kg	0.04	g/kg	8
N	37.2	g/kg	0.5	g/kg	7
P	2.36	g/kg	0.07	g/kg	8
S	3.16	g/kg	0.04	g/kg	8
Zn	32.1	mg/kg	1.7	mg/kg	6

1) The value is the unweighted mean of p values, each value being the mean of a set of results obtained by a different method and/or laboratory. The certified values are traceable to the SI.  
2) The uncertainty is taken as the half-width of the 95 % confidence interval of the certified mean defined in <sup>1)</sup>.

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 2 mg for N determinations and 100 mg for all other parameters.

### 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, June 1989

Revised: May 2007

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

Prof. Dr. Hendrik Emons  
Unit for Reference Materials  
EC-JRC-IRMM  
Retieseweg 111  
2440 Geel, Belgium

<b>Additional Material Information</b>		
	Mass fraction	
	Value <sup>1)</sup>	
Al	112	mg/kg
Br	10.1	mg/kg
C	452	g/kg
Cl	10	mg/kg
Co	0.121	mg/kg
Cr	2.5	mg/kg
Cu	10	mg/kg
F	2.2	mg/kg
Fe	114	mg/kg
H	63	g/kg
Mn	72	mg/kg
Mo	1	mg/kg
Na	3.49	g/kg
Rb	50	mg/kg
S	2.6	g/kg
Sc	0.017	mg/kg
Se	0.025	mg/kg
Si	2221	mg/kg
Sr	22.1	mg/kg
Ti	3.8	mg/kg

1) The values are traceable to the SI.

### DESCRIPTION OF THE SAMPLE

The material consists of dried hay powder in a brown glass bottles containing approximately 25 g.

### ANALYTICAL METHOD USED FOR CERTIFICATION

- Catharometry after chemical separation of gases
- Flame atomic absorption spectrometry
- Flame atomic emission spectrometry
- Gas chromatography with catharometric detection
- Gas volumetric measurements
- Inductively coupled plasma emission spectrometry
- Instrumental neutron activation analysis
- Ion chromatography
- Isotope dilution mass spectrometry
- Kjeldahl-type determination
- Neutron activation analysis with radiochemical separation
- UV or visible light spectrometry
- Titrimetry

## **PARTICIPANTS**

- C.N.R.S., Service Central d'Analyse, Vernaison (FR)
- Department of Chemistry, University of Thessaloniki (GR)
- Energieonderzoek Centrum Nederland (E.C.N.) Petten (NL)
- European Commission, Joint Research Centre, Central Bureau for Nuclear Measurements (CBNM), Geel (BE)
- An Foras Taluntais, Wexford (IE)
- Gesellschaft für Strahlen- und Umweltforschung, Neuherberg (DE)
- Greek Atomic Energy Commission, NCR Demokritos, Ag. Paraskevi (GR)
- Instituut voor Nucleaire Wetenschappen, Rijksuniversiteit, Gent (BE)
- Instituut voor Scheikundig Onderzoek, Tervuren (BE)
- Istituto Superiore di Sanità, Roma (IT)
- Landesanstalt für Ökologie, Landschaftsentwicklung und Forstplanung NW, Recklinhausen (DE)
- The Macaulay Land Use Research Institute, Aberdeen (GB)
- NOVO Industri A/S, Bagsværd (DK)
- Risoe National Laboratory, Isotope Division, Roskilde (DK)
- The Queen's University, Dept. of Chemistry, Belfast (GB)
- T.N.O., Instituut voor Toegepaste Chemie, Zeist (NL)
- Universidad Complutense, Departamento de Química Analítica de la Facultad de Ciencias Químicas, Madrid (ES)
- Università di Pavia, Dipartimento di Chimica Generale, Pavia (IT)

## **SAFETY INFORMATION**

The usual laboratory safety precautions apply.

## **INSTRUCTIONS FOR USE**

For analysis the sample should be taken as it is. Before a bottle is opened, it should be shaken manually for 2 min so that the material is re-homogenised. The correction for dry mass should be obtained on a separate portion of 2 g from the bottle by drying at  $75 \pm 5$  °C for 18 h. The bottle once opened should be closed and stored in a dry desiccator.

The reference material is intended for the verification of the methods and not for calibration purposes. If the material is used for calibration purposes or to assess the performance of a procedure, the user should refer to the recommendations in the certification report.

## **STORAGE**

Upon arrival, the material can be stored at ambient temperature (ranging between 4 and 25 °C). 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.

## **LEGAL NOTICE**

Neither IRMM, its subsidiaries, its contractors nor any person acting on their behalf,

(a) make any warranty or representation, express or implied that the use of any information, material, apparatus, method or process disclosed in this document does not infringe any privately owned intellectual property rights; or

(b) assume any liability with respect to, or for damages resulting from, the use of any information, material, apparatus, method or process disclosed in this document save for loss or damage arising solely and directly from the negligence of IRMM or any of its subsidiaries.

## **NOTE**

A technical report on the production of BCR-129 is available on the internet (<http://www.irmm.jrc.be>). A paper copy can be obtained from IRMM on request.