



CERTIFIED REFERENCE MATERIAL BCR[®] – 274

CERTIFICATE OF ANALYSIS

SINGLE CELL PROTEIN			
Element	Mass fraction (based on dry mass)		Number of accepted sets of results p
	Certified value ¹⁾ [µg/g]	Uncertainty ²⁾ [µg/g]	
As	0.132	0.014	10
Cd	0.030	0.002	10
Co	0.039	0.003	6
Cu	13.1	0.4	25
Mn	51.9	1.2	18
Pb	0.044	0.010	8
Se	1.03	0.05	14
Zn	42.7	1.0	22

¹⁾ This value is the unweighted mean of the means of p accepted sets of results obtained by different sample preparation procedures and analytical techniques. The values are traceable to the International System of Units (SI).
²⁾ The uncertainty is taken as the half-width of the 95 % confidence interval of the mean defined in (1).

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 100 mg.

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: February 2007

Signed: 

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DESCRIPTION OF THE SAMPLE

The material consists of about 10 g single cell protein powder in a sealed argon filled ampoule. Additional information on the F-, Hg-, and Ni- content is given in the certification report.

ANALYTICAL METHOD USED FOR CERTIFICATION

A wide range of sample preparation techniques was used prior to analysis, amongst those digestion with mixtures of oxidising acids at normal or elevated pressure, and dry ashing. The following measurement methods were applied:

- Hydride generation atomic absorption spectrometry (As, Se)
- Hydride generation inductively coupled plasma emission spectrometry (As, Se)
- Instrumental neutron activation analysis (As, Co, Mn, Se, Zn)
- Neutron activation analysis with radiochemical separation (As, Cu, Se)
- Voltammetry (Cd, Co, Cu, Pb, Zn)
- Electrothermal atomic absorption spectrometry (Cd, Cu, Mn, Pb, Se)
- Isotope dilution mass spectrometry (Cd, Cu, Pb, Zn)
- Potentiometric stripping analysis (Cu)
- Flame atomic absorption spectrometry (Cu, Mn, Zn)
- Suspension electrothermal atomic absorption spectrometry (Cu, Mn, Pb, Zn)
- Inductively coupled plasma emission spectrometry (Cu, Mn, Zn)
- UV- or visible light spectrometry (Cu, Zn)
- Electrothermal atomic emission spectrometry (Mn)
- Fluorimetry (Se)

PARTICIPANTS

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- University of Strathclyde, Department of Pure and Applied Chemistry, Glasgow (GB)

SAFETY INFORMATION

The usual laboratory safety measures apply.

INSTRUCTIONS FOR USE

The material is intended to be used to check the performance of analytical methods and for calibration purposes. The correction for dry mass can be obtained by drying an aliquote of the sample for about 18 hours at 105 °C (see Annex II of the certification report).

STORAGE

The ampoules should be kept at 20 °C in the dark. 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-274 is available on the internet (<http://www.irmm.jrc.be>). A paper copy can be obtained from IRMM on request.