



CERTIFIED REFERENCE MATERIAL BCR[®] – 277R

CERTIFICATE OF ANALYSIS

ESTUARINE SEDIMENT		
	Mass Fraction	
	Certified value ¹⁾ [mg/kg]	Uncertainty ²⁾ [mg/kg]
As	18.3	1.8
Cd	0.61	0.07
Co	22.5	1.4
Cr	188	14
Cu	63	7
Hg	0.128	0.017
Ni	130	8
Zn	178	20
<p>1) Unweighted mean value of the means of accepted sets of data, each set being obtained in a different laboratory and/or with a different method of determination. The certified values are traceable to the SI.</p> <p>2) Expanded uncertainty with a coverage factor $k = 2$ according to the Guide for the Expression of Uncertainty in Measurement, corresponding to a level of confidence of about 95 %.</p>		

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 300 mg.

Geel, July 2006
Latest Revision: May 2007

Signed: 

Prof. Dr. Hendrik Emons
Unit for Reference Materials
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Indicative Values		
	Mass Fraction	
	Indicative value ¹⁾ [mg/kg]	Uncertainty ²⁾ [mg/kg]
Se	0.58	0.11
Sn	6.5	1.8
<p>1) Unweighted mean value of the means of accepted sets of data, each set being obtained in a different laboratory and/or with a different method of determination. The indicative values are traceable to the SI, while it should be noted that the indicative value for Sn has been obtained using only ICP-MS methods.</p> <p>2) Expanded uncertainty with a coverage factor $k = 3.18$ according to the Guide for the Expression of Uncertainty in Measurement, corresponding to a level of confidence of about 95 %.</p>		

DESCRIPTION OF THE SAMPLE

The material consists of 40 g of powder, bottled in amber glass bottles, packaged under argon and closed with polyethylene inserts and plastic screw caps.

ANALYTICAL METHOD USED FOR CERTIFICATION

- Atomic fluorescence spectrometry (AFS)
- Cold vapour atomic absorption spectrometry (CVAAS)
- Differential pulse anodic stripping voltammetry (DPASV)
- Electrothermal atomic absorption spectrometry (ETAAS)
- Flame atomic absorption spectrometry (FAAS)
- Inductively coupled plasma atomic emission spectrometry (ICPAES)
- Inductively coupled plasma mass spectrometry (ICPMS)
- Inductively coupled plasma mass spectrometry using isotope dilution (ICPMS-ID)
- Instrumental neutron activation analysis (INAA)
- k_0 -neutron activation analysis (k_0 -NAA)
- Radiochemical neutron activation analysis (RNAA)
- Thermal ionisation mass spectrometry using isotope dilution (IDTIMS)

PARTICIPANTS

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- Vlaamse Instelling voor Technologisch Onderzoek (VITO), Diagnostiek, Mol (BE)
- Wageningen Agricultural University (WEPA), Wageningen (NL)

SAFETY INFORMATION

Not applicable.

INSTRUCTIONS FOR USE

The certified values refer to dry mass. A dry mass determination should always be carried out on separate subsamples.

The dry mass determination should be carried out by drying a sample of at least 1 g in a ventilated oven at 105 ± 2 °C for at least 3 hours, until constant weight is achieved. Samples should be cooled down in a desiccator.

Bottles should be thoroughly shaken before opening to rehomogenise the material.

The minimum amount of sample to be used is 300 mg.

The main purpose of the material is to assess method performance, i.e. for checking accuracy of analytical results. As any reference material, it can also be used for control charts or validation studies.

STORAGE

Samples can be stored at room temperature. Care should be taken to avoid moisture pick up once the bottles are opened.

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-277R is supplied on the internet (<http://www.irmm.jrc.be>). A paper copy can be obtained from IRMM on request.