MISSION OF THE EUROPEAN COMMUNITIE

SRM 8031

COMMUNITY BUREAU OF REFERENCE - BCR

CERTIFIED REFERENCE MATERIAL

CERTIFICATE OF ANALYSIS

BCR No 61

Trace elements in an aquatic moss (Platihypnidium riparioides)

Element	Mass fraction		Number of accepted sets of results p
	Certified value (1) expressed as $\mu g.g^{-1}$	95% confidence interval (2) expressed as $\mu g.g^{-1}$	
Cd	1.07	± 0.08	13
Cu	720	± 31	11
Hg	0.23	± 0.02	10
Mn	3 771	± 78	10
Pb	64.4	± 3.5	9
Zn	566	± 13	10

(1) *This value is the arithmetic mean of p values, each value being the mean of a set of 3 to 7 results as provided by the laboratories participating in the certification, expressed on the basis of dried material.*

(2) *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. In particular he should use the values of the within-laboratory set standard deviation (S_w) and of the between-laboratory set standard deviation (S_B), given there.*

DESCRIPTION OF THE SAMPLE

The sample consists of cleaned, dried, ground and homogenised Platihypnidium riparioides (aquatic moss) having a particle size of less than 125 µm and having the following mass fractions (uncertified) of the species mentioned:

N	33.5 $mg.g^{-1}$	SiO_2	161 $mg.g^{-1}$	Na_2O	4.0 $mg.g^{-1}$	TiO_2	1.3 $mg.g^{-1}$				
Cl	2.3 $mg.g^{-1}$	P_2O_5	21.1 $mg.g^{-1}$	CaO	23.7 $mg.g^{-1}$	Fe_2O_3	13.3 $mg.g^{-1}$				
S	2.3 $mg.g^{-1}$	K_2O	15.0 $mg.g^{-1}$	MgO	6.5 $mg.g^{-1}$	Al_2O_3	32.4 $mg.g^{-1}$				
B	77 $\mu g.g^{-1}$	Ni	420 $\mu g.g^{-1}$	Tl	0.13 $\mu g.g^{-1}$	V	6 $\mu g.g^{-1}$				
F	60 $\mu g.g^{-1}$	Sn	13 $\mu g.g^{-1}$	U	0.26 $\mu g.g^{-1}$						
As	7 $\mu g.g^{-1}$	Cr	532 $\mu g.g^{-1}$	Rb	32 $\mu g.g^{-1}$	Ta	0.5 $\mu g.g^{-1}$	Au	0.22 $\mu g.g^{-1}$		
Br	22 $\mu g.g^{-1}$	Cs	0.6 $\mu g.g^{-1}$	Sb	1 $\mu g.g^{-1}$	Tb	0.2 $\mu g.g^{-1}$	Eu	0.2 $\mu g.g^{-1}$		
Ce	12 $\mu g.g^{-1}$	La	5 $\mu g.g^{-1}$	Sc	1 $\mu g.g^{-1}$	W	239 $\mu g.g^{-1}$				
Co	43 $\mu g.g^{-1}$	Mo	11 $\mu g.g^{-1}$	Se	1 $\mu g.g^{-1}$	Ag	2 $\mu g.g^{-1}$				

The sample has been carefully homogenised and dried at 110 °C – 130 °C before bottling.
The reference material is available in units of about 25 g.

Brussels, June 1982

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INSTRUCTIONS FOR USE

Before use the sample contained in the bottle must be homogenised. For this purpose, the entire sample can be thoroughly mixed in the bottle e.g. by using an appropriate mechanical shaker. A teflon ball has been added to achieve a good homogenisation. Extreme care should be taken to avoid any sample contamination.

The minimum sample mass for the analysis should be 0.1 g.

The sample should be analysed as it is. A correction for dry mass should be made by taking an aliquot and drying over phosphorus pentoxide at room temperature at least during 24 hours until constant mass.

The bottle should be kept closed in a dry and cool atmosphere; irradiation by direct sunlight should be avoided. Special care must be exercised in taking aliquots to avoid contamination.

PARTICIPATING LABORATORIES

— Joint Research Centre, Ispra (Italy);
— Badische Anilin und Sodafabrik, Ludwigshafen (F.R. Germany);
— Gesellschaft für Strahlen und Umweltforschung, Neuherberg (F.R. Germany);
— Institut für Reinststoffanalyse, Max-Planck-Gesellschaft, Schw. Gmünd (F.R. Germany);
— Centro di Radiochimica e analisi per attivazione del CNR, Pavia (Italy);
— ECN, Netherlands Energy Research Foundation, Research Centre, Petten (Netherlands);
— Institut Fresenius, Taunusstein (F.R. Germany);
— Instituut voor Nucleaire Wetenschappen, Rijksuniversiteit, Gent (Belgium);
— Kernforschungsanlage Jülich, Institut für Angewandte Physikalische Chemie, Jülich (F.R. Germany);
— Laboratory of the Government Chemist, London (United Kingdom);
— Landwirtschaftskammer Westfalen-Lippe, Joseph-König-Institut, Münster (F.R. Germany);
— Ministry of the Environment, National Food Institute, Søborg (Denmark);
— Office de la Recherche Scientifique et Technique Outre-Mer, Services Scientifiques centraux, Bondy (France).

METHODS USED

Flame Atomic Absorption Spectrometry (Cd, Cu, Mn, Pb, Zn)

Cold Vapour Atomic Absorption Spectrometry (Hg)

Flameless Atomic Absorption Spectrometry (Cd, Cu, Mn, Pb)

Inductively Coupled Plasma Emission Spectrometry (Cd, Cu, Mn, Pb, Zn)

Neutron Activation Techniques (Cd, Cu, Hg, Mn, Zn)

Voltammetric Techniques (Cd, Pb)

Isotope Dilution Mass Spectrometry (Cd, Cu, Pb)

Cold Vapour Atomic Fluorescence Spectrometry (Hg)

These techniques of final determination were preceded by dry or wet sample treatments as appropriate.

LEGAL NOTICE

NOTE

A detailed technical report on the certification procedure, on the analytical methods used and on the treatment of the analytical data has been published and is available at the BCR (EUR 8119 EN).