EUROPEAN COMMISSION
JOINT RESEARCH CENTRE
Institute for Reference Materials and Measurements

CERTIFIED REFERENCE MATERIAL
BCR® – 646

CERTIFICATE OF ANALYSIS

FRESH WATER SEDIMENT		
	Mass fraction based on dry mass	
	Certified value [1] [µg/kg]	Uncertainty [2] [µg/kg]
TBT: $Sn(C_4H_9)_3^+$	480	80
DBT: $Sn(C_4H_9)_2^{2+}$	770	90
MBT: $Sn(C_4H_9)^{3+}$	610	120
TPhT: $Sn(C_6H_5)_3^+$	29	11
DPhT: $Sn(C_6H_9)_2^{2+}$	36	8
MPhT: $Sn(C_6H_5)^{3+}$	69	18

1) Unweighted mean value of the means of 6-14 accepted sets of data. The certified value is valid for the cation indicated. Unweighted mean of accepted mean values, independently obtained by 6 - 14 laboratories. The value is traceable to the International System of Units (SI).
2) The certified uncertainty is the expanded uncertainty with a coverage factor k = 2, corresponding to a level of confidence of about 95 %, comprising uncertainties from the characterisation and inhomogeneity studies .

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 600 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 2000
Latest revision: May 2007

Signed: 

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

DESCRIPTION OF THE SAMPLE

The material consists of a dried and ground sediment sample with a particle size < 90 micrometer stored in an amber glass bottle. The bottle contains about 40 g of powder. Additional information on the preparation and the certified values is given in the certification report.

ANALYTICAL METHOD USED FOR CERTIFICATION

- Gas chromatography-quartz furnace atomic absorption spectrometry, (GC-QTAAS)
- Gas chromatography-flame photometric detection, (GC-FPD)
- Gas chromatography-mass spectrometry, (GC-MS)
- Gas chromatography-microwave induced plasma atomic emission spectrometry, (GC-MIP-AES)
- Gas chromatography-inductively coupled plasma mass spectrometry, GC-ICP-MS)
- High performance liquid chromatography-inductively coupled plasma mass spectrometry, (HPLC-ICP-MS)
- High performance liquid chromatography-fluorescence spectrometry, (HPLC-FLD)
- Polarography

PARTICIPANTS

- CEFAS, Burnham-on-Crouch (GB)
- CID-CSIC, Department of Environmental Chemistry, Barcelona (ES)
- CNRS, Laboratoire de Chimie Bio-inorganique & Environnement, Pau (FR)
- ENEA, Casaccia, Divisione di Chimica Ambientale, Roma (IT)
- GALAB, Geesthacht (DE)
- International Tin Research Institute, Uxbridge (GB)
- Natl.Technical University of Athens, Lab of Inorganic and Analytical Chem., Athens (GR)
- Rijkswaterstaat, RIKZ, Haren (NL)
- Technische Universität Wien, Institut für analytische Chemie, Wien (AT)
- Universitaire Instelling Antwerpen, MITAC, Wilrijk (BE)
- Universidad de Barcelona, Departamento de Química Analítica, Barcelona (ES)
- Universidad de Huelva, Departamento de Química, Huelva (ES)
- Universidad de Oviedo, Departemento de Química-Física y Analítica, Oviedo (ES)
- Université de Pau et des Pays de l'Adour, Laboratoire de Chimie Analytique, Pau (FR)
- University of Plymouth, Department of Environmental Sciences, Plymouth, UK
- Universidad de Santiago, Depto. de Química Analítica, Santiago de Compostela (ES)
- Vrije Universiteit Amsterdam, Instituut voor Milieuvraagstukken, Amsterdam (NL)
- European Commission, Joint Research Centre, Institute for Reference Materials and Measurements, Geel (BE)

SAFETY INFORMATION

The usual laboratory safety precautions apply.

INSTRUCTIONS FOR USE

The material is intended for analytical purposes. The sample can be used as is from the bottle. Before a bottle is opened, it should be shaken manually for 5 min so that the material is thoroughly re-mixed. The correction to dry mass should be made on a separate portion of 100 mg which should be dried in an oven at 105 ºC for 3-4 h until constant mass is attained. The reuse of the material after opening of the bottle is under the responsibility of the user, i.e. the certified values are not guaranteed in bottles that have been opened and further stored. Moreover, taking into account the potential instability of the tin compounds, it is recommended that no bottles be used if the history of the storage conditions in the laboratory is not known in detail. Care has been taken to ensure that the certified value represents the "true" value at the time of arrival at the customer as closely as possible. When the reference material is used to assess the performance of a procedure, the user should refer to the recommendations of the certification report.

STORAGE

The tightly closed bottles should be kept at - 30 ºC in the dark for long term storage periods. Before closing the bottle after use, it is advisable to flush the bottle with a dry, inert gas. 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-646 is available on the internet (http://www.irmm.jrc.be). A paper copy can be obtained from IRMM on request.

European Commission – Joint Research Centre
Institute for Reference Materials and Measurements (IRMM)
Retieseweg 111, 2440 Geel (Belgium)
Telephone: +32-(0)14-571.722 - Telefax: +32-(0)14-590.406