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Certified Reference Material

BAM-U019

Polychlorinated Biphenyls in Soil

Certified Value

Congener	Mass fraction[1)] in mg/kg	Uncertainty U[2)] in mg/kg
PCB 28	0.50	0.13
PCB 44	2.04	0.29
PCB 52	2.96	0.62
PCB 101	2.90	0.68
PCB 118	2.58	0.75
PCB 138	1.81	0.50
PCB 149	1.20	0.21
PCB 153	1.38	0.37
PCB 170	0.264	0.063
PCB 180	0.39	0.08

1) Unweighted mean value of 7 - 11 laboratory means using GC/MS or GC/ECD.

2) Estimated expanded uncertainty U with a coverage factor of $k = 2$, corresponding to a confidence level of approximately 95 %, as defined in the Guide to the Expression of Uncertainty in Measurement, ISO, 2008.

This certificate is valid for a period of 12 months beginning with the dispatch of the reference material from BAM.

Date of dispatch: Sample No.:

The minimum sample size for one determination is 5 g. The mass fraction of the individual PCB is related on sample intake (not on dry mass). The water content is 1.3% (ISO 11465) and remains stable if the material is handled as indicated below.

Material Description

The material BAM-U019 is a sandy soil sampled near the city of Berlin, Germany. The specific location displayed an aged contamination originating from unknown sources. After drying to constant mass, the bulk material was classified by means of an automatic sieving station and a total amount of

34 kg of the fraction < 125 µm was collected, homogenised and subdivided into units of 106 g which were filled in brown glass bottles with screw caps equipped with PTFE-inserts and sealed with shrinking foil. The material is stored at BAM at -20 °C until dispatch. Details on the preparation and certification procedure are described n the certification report.

Recommended Use

The intended purpose of reference material BAM-U019 is the verification of analytical procedures for the determination of PCB in soils and sediments using GC/MS or GC/ECD and for quality control in analytical laboratories.

Handling

It is strongly recommended to handle and dispose of the reference material in accordance with the guidelines for hazardous materials legally in force at the site of end use and disposal.

Transport and Storage

BAM-U019 can be shipped at ambient temperature. Upon receipt the material has to be stored at -20 °C in its original bottle. Before withdrawing a subsample the bottle has to have reached ambient temperature. Thereafter, the bottle is to be closed tightly and stored at -20°C. The stability of the reference material is not affected by short periods of handling at ambient temperature during transport and use.

Participating Laboratories

The following laboratories selected participated in the certification study using GC/MS or GC/ECD:

BAM, Laboratory 1.21	12489	Berlin
BAM, Laboratory 1.22	12489	Berlin
BIOLAB Umweltanalysen GmbH	38112	Braunschweig
Chemisches Labor Dr. Wirts + Partner	30559	Hannover
EUROFINS-AUA GmbH	09633	Halsbrücke
Gesellschaft für Analytik und Umweltberatung mbH	64625	Bensheim
Labor Dr. Döring	28357	Bremen
PORST & PARTNER	90762	Fürth
UABG GmbH	10365	Berlin
UIS Umweltinstitut	70469	Stuttgart
WESSLING Laboratorien GmbH	30625	Hannover

Metrological Traceability

The PCB calibration mixtures used in this certification study was shown to be equivalent to the certified reference material BCR-365.

Literature

R. Becker, H.-G. Buge, W. Bremser, BAM-U019, Certification report

BAM:2006 “Guidelines for the Production of BAM Reference Materials“ http://www.bam.de/en/fachthemen/referenzmaterialien/referenzmaterialien_medien/bam_rm_guidelines.pdf

ISO 10382:2002. Soil quality - Determination of organochlorine pesticides and polychlorinated biphenyls – Gas-chromatographic method with electron capture detection

EN 15308:2008 Characterization of waste - Determination of selected polychlorinated biphenyls (PCB) in solid waste by using capillary gas chromatography with electron capture or mass spectrometric detection

ISO/IEC Guide 98:2008: “Uncertainty of measurement.” ISO, Geneva 2008

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BAM Bundesanstalt für Materialforschung und -prüfung

Prof. Dr. U. Panne
Head of Department 1
Analytical Chemistry;
Reference Materials

Prof. Dr. I. Nehls
Head of Division 1.2
Organic-Chemical Analysis;
Reference Materials

This Reference Material is offered by:

BAM Bundesanstalt für Materialforschung und -prüfung

Richard-Willstätter-Straße 11, D-12489 Berlin, Germany

Tel: +49 30 8104 2061
Fax: +49 30 8104 1117
E-Mail: sales.crm@bam.de
Internet: www.webshop.bam.de