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CERTIFICATE OF ANALYSIS

ERM®-CC017

Mineral oil contaminated soil		
	Certified value [1]	Uncertainty [2]
Compound	Mass fraction in g/kg	
Total petrol hydrocarbons (TPH)	6.6	± 0.5

[1] Unweighted mean value of 9 laboratory means using gas chromatography with flame ionisation detection (GC/FID) according to ISO 16703:2004. The TPH content is a method specific sum parameter which is defined by the analytical procedure described in ISO 16703 and therefore traceable to this standard and the calibrant BAM-K010 used by all participating laboratories.

[2] Estimated expanded uncertainty *U* with a coverage factor of *k*=2, corresponding to a level of confidence of 95 %, as defined in the Guide to the Expression of Uncertainty in Measurement, ISO, 1993.

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

The minimum sample size for one determination is 5 g. The mass fraction of TPH is related on sample intake (not on dry mass). The water content is (1.62 ± 0.03) % (*Karl Fischer* titration) and remains stable if the material is handled as indicated below. Certified TPH content was determined at minimum sample intake of 5 g.

NOTE

European Reference Material ERM®-CC017 was produced and certified under the responsibility of BAM Bundesanstalt für Materialforschung und –prüfung according to the principles laid down in the technical guidelines of the European Reference Materials® co-operation agreement between BAM-LGC-IRMM. Information on these guidelines is available via the Internet (http://www.erm-crm.org).

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BAM Berlin
Department I
Analytical Chemistry;
Reference Materials
12200 Berlin, Germany

Prof. Dr. U. Panne
(Head of Department)

BAM Berlin
Division I.2
Organic Chemical Analysis;
Reference Materials
12200 Berlin, Germany

Prof. Dr. I. Nehls
(Head of Division)

DESCRIPTION OF THE SAMPLE

The intended purpose of reference material ERM®-CC017 is the verification of analytical procedures for the determination of TPH in soils and sediments according to ISO 16703:2004 [1] by GC/FID and for quality control in analytical laboratories.
The material ERM®-CC017 is a “naturally” contaminated sandy soil from a former industrial site near Berlin, Germany. After drying, fractionation by sieving and homogenisation, the sieving fraction < 125 µm was subdivided into 289 units of ca. 81 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.
The within- and among-bottle-homogeneity of the TPH content was demonstrated by analysis of variance on 15 selected bottles (three replicate analyses per bottle).-
The initial stability study after storage of selected units of this reference material for up to 12 months at different temperatures allows guaranteeing the period of validity of the certificate. Periodical investigations on the stability of this material will be carried out in order to keep this information up to date. The tests for homogeneity and stability are described in detail in the technical report.

PARTICIPANTS

The following laboratories, including LGC and BAM, participated in the certification study using GC/FID for the determination of TPH according to ISO 16073:2004 [1]:

chemlab Gesellschaft für Analytik und Umweltberatung mbH	64625	Bensheim	DE
BAM Bundesanstalt für Materialforschung und –prüfung, Division I.2	12489	Berlin	DE
BIOLAB Umweltanalysen GmbH	38112	Braunschweig	DE
Institut für Hygiene und Umwelt	20539	Hamburg	DE
SGS Institut Fresenius GmbH	45699	Herten	DE
ICA - Institut für Chemische Analytik GmbH	04229	Leipzig	DE
PROTEKUM Umweltinstitut GmbH Oranienburg	16515	Oranienburg	DE
Limnologisches Institut Dr. Nowak	28870	Ottersberg	DE
IUS Institut für Umweltanalytik und Schadstoffchemie GmbH	70499	Stuttgart	DE
LGC Limited	TW11 0LY	Teddington	UK

SAFETY INFORMATION

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

INSTRUCTIONS FOR USE AND STORAGE

The material has to be stored at (–20 ± 5) °C in its original bottle. Before withdrawing a sub-sample the bottle has to have reached ambient temperature. Thereafter, the bottle is to be closed tightly and stored at (–20 ± 5) °C. The stability of the reference material is not affected by short periods of handling at ambient temperature during transport and use.

TECHNICAL REPORT

A detailed technical report (PDF file) describing the production, general characterisation as well as the analytical procedures applied and the treatment of the analytical data during certification of ERM®-CC017 is available on request from BAM.

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REFERENCES

[1] ISO 16703:2004, “Soil quality - Determination of content of hydrocarbon in the range C_{10} to C_{40} by gas chromatography”

Supply of Reference Materials by Bundesanstalt für Materialforschung und –prüfung:

Richard-Willstätter-Straße 11, 12489 Berlin, Germany

Phone: +49 30 8104 1121 e-mail: sales.crm@bam.de

Fax: +49 30 8104 1117 internet: www.bam.de