

JOINT RESEARCH CENTRE
Directorate F – Health and Food

REFERENCE MATERIAL CERTIFICATE

ERM[®] - CE103

FISH TISSUE

Certified Values		
	Mass Fraction on a wet weight basis ²⁾ [µg/kg]	Uncertainty ³⁾ [µg/kg]
Pentachlorobenzene ¹⁾ (CAS RN 608-93-5)	22.7	2.7
α-Hexachlorocyclohexane ¹⁾ (CAS RN 319-84-6)	0.26	0.05
β-Hexachlorocyclohexane ¹⁾ (CAS RN 319-85-7)	0.48	0.06
γ-Hexachlorocyclohexane ¹⁾ (CAS RN 58-89-9)	0.47	0.08
1) As obtained by gas chromatography. 2) Certified values are values that fulfil the highest standards of accuracy. The given values represent the 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 value and its uncertainty are traceable to the International System of Units (SI). 3) The uncertainty of the certified value is the expanded uncertainty with a coverage factor $k = 2$ corresponding to a level of confidence of about 95 % estimated in accordance with ISO 17034:2016 and ISO Guide 35:2017.		

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 8 g.

Geel, July 2023

INFORMATION ONLY
Signed:

Dr. Robert Koeber
Head of Unit Reference Materials
European Commission, Joint Research Centre
Directorate F – Health and Food
Retieseweg 111
2440 Geel, Belgium

Indicative Value		
	Mass Fraction on a wet weight basis ²⁾ [µg/kg]	Uncertainty ³⁾ [µg/kg]
δ-Hexachlorocyclohexane ¹⁾ (CAS RN 319-86-8)	0.12	0.04
1) As obtained by gas chromatography. 2) Indicative values are values where either the uncertainty is deemed too large or where too few independent datasets are available to allow certification and are therefore less reliable than certified values. The given value is an 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 value and its uncertainty are traceable to the International System of Units (SI). 3) The uncertainty of the indicative value is the expanded uncertainty with a coverage factor $k = 2$ corresponding to a level of confidence of about 95 % estimated in accordance with ISO 17034:2016 and ISO Guide 35:2017.		

Additional Material Information	
	Mass Fraction ¹⁾ [%] ²⁾
Extractable fat	6.4
1) This value corresponds to the mean of four independent measurements of two ERM-CE103 units obtained in one laboratory following the analytical procedure in Lava <i>et al.</i> Trends Anal. Chem. 59 (2014) 103-111. It is stated without an uncertainty, and merely give information about a material property that may be of interest to the user. The value is traceable to the International System of Units (SI). 2) Mass fractions expressed as % are equivalent to g/100 g.	

DESCRIPTION OF THE MATERIAL

ERM-CE103 is a fish tissue homogenate prepared from naturally contaminated wild wels catfish (*Silurus glanis*) and pike perch (*Sander lucioperca*). The filleted fish was cut, cryogenically milled, pre-cooked and sterilised by heat treatment in autoclave. The certified reference material is available in glass jars, containing at least 40 g of fish paste, fitted with twist-off lids (featuring an indicator of vacuum integrity).

ANALYTICAL METHODS USED FOR CHARACTERISATION

GC-MS/MS [pressurised liquid extraction (PLE), extraction with organic solvents or by Soxhlet; clean-up with alumina/silica gel columns, gel permeation chromatography (GPC), concentrated H₂SO₄ and solid phase extraction (SPE) cartridge; QuEChERS extraction and clean-up]

GC-HRMS (ultrasonic extraction, extraction with organic solvents or by Soxhlet; clean-up with concentrated H₂SO₄ and acidic silica gel column, by GPC and SPE cartridge)

GC-ECD (extraction by Soxhlet, clean-up on multilayer column alumina/silica/acidic silica gel)

GC-MS (PLE; clean-up on silica gel column)

PARTICIPANTS

The following laboratories performed measurements in the scope of the homogeneity, stability and or characterisation study.

Aarhus University, Department of Environmental Science, Roskilde, DK (accred. ISO/IEC 17025 DANAK reg. no. 411)

ALS Italia S.r.l., Zoppola (PN), IT (accred. ISO/IEC 17025 ACCREDIA 0157L)

Empa - Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Advanced Analytical Technologies, Dübendorf, CH

GBA Gesellschaft für Bioanalytik mbH, Pinneberg, DE (accred. ISO/IEC 17025 DAkkS D-PL-14170-01-00)

IDAEA-CSIC, Department of Environmental Chemistry and Laboratory of Mass Spectrometry/Organic Pollutants, Barcelona, ES

International Atomic Energy Agency, Department of Nuclear Sciences and Applications, Marine Environment Laboratories, Section of Marine Environmental Studies Laboratory, Monaco, MC

Umweltbundesamt GmbH, Wien, AT (accred. ISO/IEC 17025 Akkreditierung Austria 0200)

University of Barcelona, Department of Analytical Chemistry, Barcelona, ES

Vrije Universiteit Amsterdam, Faculty of Sciences, Environment and Health (E&H), Amsterdam, NL

Wageningen University & Research, Wageningen Food Safety Research (WFSR), Wageningen, NL (accred. ISO/IEC 17025 Dutch Accreditation Council RvA L014).

SAFETY INFORMATION

The usual laboratory safety precautions apply.

INTENDED USE

The intended use of this material is to assess method performance, i.e. for checking accuracy of measurement results. The material can be used for quality control charts and trueness control.

INSTRUCTIONS FOR USE

Before analysis, ERM-CE103 should be left to equilibrate to room temperature. To make it ready for use and before taking samples, the material must be manually and thoroughly re-homogenised with the help of a spatula. In case that a small quantity of oxidised material is observed attached to the lid, it is advisable not to include it. The certified values do not apply if the CRM is freeze-dried before analysis.

The repeated use study results indicate that the certified values of ERM-CE103 are valid within 12 days from the opening of a CRM unit, if the jar is immediately and tightly closed and stored at $4\text{ °C} \pm 3\text{ °C}$ in the dark. Repeated sampling is permitted under the stated conditions.

Dispose in accordance with good laboratory practice.

For general information on handling of reference materials, please see ERM Application Note 6, available on <https://crm.jrc.ec.europa.eu/e/132/User-support-Application-Notes>.

STORAGE

The material should be stored at $4\text{ °C} \pm 3\text{ °C}$ in the dark. The user should tightly close any unit immediately after taking a sample.

For more information regarding the shelf life of reference materials please see ERM Application Note 7, available on <https://crm.jrc.ec.europa.eu/e/132/User-support-Application-Notes>.

The European Commission cannot be held responsible for changes that happen when the material is stored differently from the stated storage conditions at the customer's premises.

LEGAL NOTICE

Neither the European Commission, 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 the Joint Research Centre of the European Commission.

No right other than what is explicitly granted herein may be deemed to have been granted by implication. Any use other than for the purpose specified under the intended use, including but not limited to acts impinging on the intellectual property rights of third parties, shall be under the sole responsibility of the recipient/purchaser.

NOTE

A detailed certification report is available at <https://crm.jrc.ec.europa.eu/>.



European Commission – Joint Research Centre
Directorate F – Health and Food
Retieseweg 111, 2440 Geel (Belgium)
Telephone: +32-(0)14-571.705
jrc-rm-distribution@ec.europa.eu