

JOINT RESEARCH CENTRE  
Directorate F – Health, Consumers and Reference Materials

# CERTIFICATE OF ANALYSIS

ERM®- CE102

FISH TISSUE		
Mass Fraction (relative to wet weight)		
	Certified value <sup>2)</sup> [µg/kg]	Uncertainty <sup>3)</sup> [µg/kg]
BDE-47 (2,2',4,4'-tetrabromodiphenyl ether) <sup>1)</sup>	0.227	0.019
BDE-49 (2,2',4,5'-tetrabromodiphenyl ether) <sup>1)</sup>	0.033	0.007
BDE-99 (2,2',4,4',5-pentabromodiphenyl ether) <sup>1)</sup>	0.123	0.013
BDE-100 (2,2',4,4',6-pentabromodiphenyl ether) <sup>1)</sup>	0.060	0.006
BDE-153 (2,2',4,4',5,5'-hexabromodiphenyl ether) <sup>1)</sup>	0.069	0.008
BDE-154 (2,2',4,4',5,6'-hexabromodiphenyl ether) <sup>1)</sup>	0.109	0.008
<p>1) As obtained by gas chromatography coupled to mass spectrometry.</p> <p>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 values and their uncertainties are traceable to the International System of Units (SI).</p> <p>3) The uncertainty of the certified values is the expanded uncertainty with a coverage factor <math>k = 2</math> corresponding to a level of confidence of about 95 % estimated in accordance with ISO/IEC Guide 98-3, Guide to the Expression of Uncertainty in Measurement (GUM:1995), ISO, 2008.</p>		

This certificate is valid for one year after purchase.

Sales date:

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

Geel, November 2019

Signed: 

Dr Stefanie Trapmann  
Head of Unit Reference Materials (acting)  
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Directorate F – Health, Consumers and Reference Materials  
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Indicative Values		
Mass Fraction (relative to wet weight)		
	Indicative value <sup>2)</sup> [µg/kg]	Uncertainty <sup>3)</sup> [µg/kg]
BDE-28 (2,4,4'-tribromodiphenyl ether) <sup>1)</sup>	0.0077	0.0010
BDE-183 (2,2',3,4,4',5',6-heptabromodiphenyl ether) <sup>1)</sup>	0.014	0.004
<p>1) as obtained by gas chromatography coupled to mass spectrometry.</p> <p>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. Great caution should be used when using these values. The given values are unweighted mean values 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 values and their uncertainties are traceable to the International System of Units (SI).</p> <p>3) The uncertainty of the indicative values is the expanded uncertainty with a coverage factor <math>k = 2</math> for BDE-28 and <math>k = 2.571</math> for BDE-183 corresponding to a level of confidence of about 95 % estimated in accordance with ISO/IEC Guide 98-3, Guide to the Expression of Uncertainty in Measurement (GUM:1995), ISO, 2008.</p>		

Additional Material Information	
Mass Fraction (relative to wet weight)	
	Value [%] <sup>1)</sup>
Extractable fat	6.9
<p>1) This value is stated without an uncertainty and gives merely information about a material property that may be of interest for the user. It corresponds to the mean of three independent measurements from different ERM-CE102 units obtained in one laboratory following the analytical procedure in Lava <i>et al.</i> Trends Anal. Chem. 59 (2014) 103-111. The value is traceable to the International System of Units (SI).</p> <p>Mass fractions expressed as % are equivalent to g/100g.</p>	

## DESCRIPTION OF THE MATERIAL

ERM-CE102 is a fish tissue homogenate prepared from wild Wels catfish (*Silurus glanis*) and farmed rainbow trout (*Oncorhynchus mykiss*) and sterilised by heat treatment in autoclave. The CRM is available in glass jars, containing at least 40 g of fish paste, fitted with twist-off lids (featuring an indicator of vacuum integrity) and packed in plastic aluminium sachets.

## ANALYTICAL METHODS USED FOR CERTIFICATION

- GC-MS (Soxhlet extraction and clean-up with multilayer silica gel column or a combination of silica gel, carbon and alumina columns)
- GC-HRMS (accelerated solvent extraction or extraction with organic solvents, clean-up with multilayer silica gel column and/or a combination of silica gel, carbon and alumina columns)
- GC-MS/MS (Soxhlet extraction and clean-up with multilayer silica gel column)

## PARTICIPANTS

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ALS Czech Republic, Praha, CZ

measurements under the scope of ISO/IEC 17025 CAI; 333/2018

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Eurofins GfA Lab Service GmbH, Hamburg, DE  
measurements under the scope of ISO/IEC 17025 accreditation DAkkS; D-PL-14629-01-00

European Commission, Joint Research Centre, Geel, BE  
accredited to ISO 17034 for production of certified reference materials, BELAC No. 268-RM

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## **SAFETY INFORMATION**

The usual laboratory safety precautions apply.

## **INSTRUCTIONS FOR USE AND INTENDED USE**

Before analysis, ERM-CE102 units should be left to equilibrate to room temperature. To make it ready for use and before taking aliquots, the material must be manually and thoroughly re-homogenised with the help of a spatula. In case that small quantities of material are stuck to the lid, it is advisable not to include them.

The main purpose of this material is to assess method performance, i.e. for checking accuracy of analytical results. As any reference material, it can also be used for control charts or validation studies.

## **STORAGE**

The materials should be stored at  $4 \pm 3$  °C in the dark.

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.

Nevertheless, the repeated use study results (Section 5.2 of the certification report) indicate that the certified values of ERM-CE102 are still valid within 1 day from the opening of a CRM unit, if the jar is immediately closed and stored at 4 °C in the dark.

## LEGAL NOTICE

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## NOTE

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

A paper copy is obtainable from the Joint Research Centre, Directorate F – Health, Consumers and Reference Materials on request.



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