CERTIFICATE OF ANALYSIS

ERM®- CE196

BOVINE BLOOD		
Parameter	Mass concentration in reconstituted blood	
	Certified value [µg/L]	Uncertainty [µg/L]
Lead	772 [1]	11 [3]
Cadmium	12.33 [2]	0.20 [4]

1) The certified value is the unweighted mean of 21 data sets. The certified value represents total content. The certified value is traceable to SI if the material is reconstituted according to the specified procedure (see overleaf).

2) The certified value is the unweighted mean of one measurement series and is based on IDMS applied as a primary ratio method of measurement. The certified value represents total content. The certified value is traceable to SI if the material is reconstituted according to the specified procedure (see overleaf).

3) The uncertainty is taken as the 95 % confidence interval (k = 2) of the mean defined in 1) and is applicable when the reference material is used for calibration purposes. When the reference material is used to assess the performance of a method, the user should refer to the recommendations laid down in the last chapter (instructions for use) of the certification report.

4) Estimated expanded uncertainty U with a coverage factor k = 2, corresponding to a level of confidence of about 95 %, as defined in the Guide to the Expression of Uncertainty in Measurement (GUM), ISO, 1995. Uncertainty contributions arising from characterisation as well as from homogeneity and stability assessment were taken into consideration.

This certificate is valid for one year after purchase.

Sales date:

The minimum sample intake is the content of one vial for reconstitution.

NOTE

European Reference Material ERM®-CE196 was originally certified as BCR-196. It was produced and certified under the responsibility of the IRMM according to the principles laid down in the technical guidelines of the European Reference Materials® co-operation agreement between BAM-IRMM-LGC. Information on these guidelines is available on the Internet (http://www.erm-crm.org).

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Signed:

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DESCRIPTION OF THE SAMPLE

Each sample is in lyophilised form and equivalent to about 5.75 mL of bovine blood. EDTA was used as anticoagulant and two preservatives (gentamycin and 4-hydroxybenzoic acid methylester) were added. Lead nitrate was used to spike the bovine blood.

The lyophilised blood is kept under nitrogen gas in rubber stoppered vials. The mass of lyophilised material contained in a vial is about 1.1 g. The residual water content of the sample is below 0.01 g/g (mass fraction).

ANALYTICAL METHOD USED FOR CERTIFICATION

Flame atomic absorption spectrometry (Delves cup)
Electrothermal atomic absorption spectrometry
Anodic stripping voltammetry
Isotope dilution mass spectrometry

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SAFETY INFORMATION

Not applicable.

INSTRUCTIONS FOR USE

To make it ready for use, the material has to be reconstituted according to the following procedure:

1. Allow vial to reach ambient temperature.
2. Tap the bottom of the vial to dislodge most of the blood particles adhering to the stopper. It may be desirable to lightly centrifuge.
3. Carefully remove the stopper from the vial.
4. Reconstitute the lyophilised sample by adding 5.00 ± 0.01 mL of water. The water to be used for the reconstitution shall be free of detectable lead and cadmium and kept at ambient temperature for at least 4 hours before use.
5. Replace the stopper.
6. Homogenise by continuous agitation with a mixing apparatus for at least 2 hours.
7. After reconstitution the material, stored at 4 °C, must be used within a week.

The reference material is intended for method validation.

STORAGE

Provided the samples are not exposed to temperatures exceeding 30 °C for more than one month, during transit, they will not suffer any degradation. Upon receipt, samples should be stored at 4 °C, preferably upright, until use.

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NOTE

A detailed technical report is available on www.erm-crm.org. A paper copy can be obtained from IRMM on explicit request.

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