



EUROPEAN COMMISSION
JOINT RESEARCH CENTRE

Institute for Reference Materials and Measurements (Geel)

CERTIFIED REFERENCE MATERIAL BCR[®] – 522

CERTIFICATE OF ANALYSIS

BOVINE BLOOD LYSATE			
	Absorbance at 540 nm		Number of accepted sets of data p
	Certified value ¹⁾	Uncertainty ²⁾	
Haemoglobincyanide (HiCN)	0.5457	0.0009	13
	Mass concentration		Number of accepted sets of data p
	Certified value ³⁾	Uncertainty ²⁾	
Haemoglobincyanide	800.3 mg/L	1.3 mg/L	13
HiCN (Fe)	49.61 µmol/L	0.08 µmol/L	13
<p>¹⁾ This value is the unweighted average of p accepted (unweighted) average values, independently obtained by 13 laboratories. The certified absorbance values at 22.5 ± 2.5 °C are traceable to the SI.</p> <p>²⁾ The expanded uncertainty is taken as the half width of the 95 % confidence interval of the certified value.</p> <p>³⁾ The mass and amount-of-substance concentration have been subsequently calculated from the certified absorbance value at 540 nm as $\frac{A^{540} \cdot M}{\epsilon^{540} \cdot d}$ with A^{540} and ϵ^{540} being the absorbance and the millimolar absorption coefficient (11.01 L /mmol·cm) at 540 nm, d the path length of the cuvette (1 cm) and M the molar mass of the monomer (16 133 g/mol). Substance concentration is derived by division by M.</p>			

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 1 vial.

NOTE

This material has been certified by BCR (Community Bureau of Reference, the former reference materials programme of the European Commission). The certificate has been revised under the responsibility of IRMM.

Brussels, October 1994
Latest revision: September 2013

Signed: _____

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DESCRIPTION OF THE SAMPLE

Each sample is in the form of bovine blood lysate and a mass concentration of about 800.3 mg/L haemiglobincyanide with a volume of 10 mL. The material is kept in sealed brown neutral borosilicate glass ampoules. Molar mass and molar extinction coefficient of bovine haemoglobin and human haemoglobin have been shown to be equivalent.

ANALYTICAL METHOD USED FOR CERTIFICATION

Spectrophotometry using calibrated spectrophotometers.

PARTICIPANTS

- Academisch Ziekenhuis, Groningen (NL)
- Centers for Disease Control, Atlanta (US)
- College of American Pathologists, Gaithersburg (US)
- Diagnostic Reagents, Thame (GB)
- Finnish Red Cross Blood Transfusion Service, Helsinki (FI)
- Hospital Clinic i Provincial, Barcelona (ES)
- Instituto Nacional de Saude, Lisbon (PT)
- Instituut voor Hygiëne en Epidemiologie, Brussel (BE)
- International Council for Standardization in Haematology, Atlanta (US)
- Istituto Superiore di Sanità, Rome (IT)
- Loma Linda University Medical School, Loma Linda, CA (U)S
- Odense Universitetshospital, Odense (DK)
- Physikalisch-Technische Bundesanstalt, Berlin (DE)
- Royal Postgraduate Medical School, London (GB)
- Scheper Ziekenhuis, Emmen (NL)

SAFETY INFORMATION

The material is derived from animals that had been subjected to veterinary post-mortem inspection and showed no clinical symptoms of BSE prior to slaughter. However the material should be handled with adequate care. It is intended for *in vitro* analysis only.

INTENDED USE

The material is intended to be used for quality control and for calibration of haemoglobin measurements in human blood by spectrophotometry.

INSTRUCTIONS FOR USE

To make it ready for use the following procedure is required:

Sealed ampoules must be allowed to equilibrate for at least one hour at room temperature prior to opening. After ensuring that the contents are entirely in the body of the ampoule, the snap top is broken off. Dispense the required amount into a spectrometer cuvette for direct reading of absorbance at 540 nm. Slit width to be used is ≤ 2 nm. Absorbance at 750 nm shall be < 0.003 . The ratio of absorbances at 540 and 504 nm (A^{540}/A^{504}) shall be between 1.59 and 1.63.

The material in the ampoule can be used for up to 8 hours if covered with an airtight seal and stored at $+4$ °C prior to use, but must be discarded at the end of the working day.

Do not freeze and thaw.

Care has been taken to ensure that the certified value represents the "true" value at the time of arrival at the customer as closely as possible.

Dispose in accordance with good laboratory practice.

STORAGE

Upon arrival the material shall be stored at $+4$ °C. 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. The stability of the material will be periodically monitored.

LEGAL NOTICE

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NOTE

A technical report on the production of BCR-522 is available on the internet (<http://www.irmm.jrc.be>). A paper copy can be obtained from IRMM on request.