JOINT RESEARCH CENTRE
Directorate F – Health and Food

REFERENCE MATERIAL CERTIFICATE

BCR® – 191

LYOPHILISED BROWN BREAD

Certified Values					
Elements	Mass fraction (based on dry mass)				Number of accepted sets of results p
	Certified value [1]		Uncertainty [2]		
Cd	28.4	µg/kg	1.4	µg/kg	12
Pb	187	µg/kg	14	µg/kg	12
Cu	2.63	mg/kg	0.07	mg/kg	8
Zn	19.5	mg/kg	0.5	mg/kg	13
Fe	40.7	mg/kg	2.3	mg/kg	12
Mn	20.3	mg/kg	0.7	mg/kg	11

1) Unweighted mean of the means of p accepted sets of results, each set being obtained in a different laboratory and/or with a different method of determination. The certified values are traceable to the SI.
2) The uncertainty is taken as the half-width of the 95 % confidence interval of the mean value defined in 1).

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 200 mg.

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 the JRC.

Brussels, December 1986
Last revision: November 2024

Signed:

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Additional Material Information

Elements	Mass fraction [1] (based on dry mass)		Number of accepted sets of results p
Ca	0.41	g/kg	3
Cl	16.5	g/kg	2
Hg	2	µg/kg	4
Mg	0.5	g/kg	3
Na	10	g/kg	4
Ni	0.44	mg/kg	3
K	3.1	g/kg	4
Se	25	µg/kg	8

1) Unweighted mean of the means of p accepted sets of results, each set being obtained in a different laboratory and/or with a different method of determination. The values are traceable to the SI.

DESCRIPTION OF THE SAMPLE

The material is a powder of lyophilised brown bread consisting of particles having passed through a 125 µm sieve. It is provided in brown glass bottles with screw caps in units of approximately 25 g.

ANALYTICAL METHOD USED FOR CERTIFICATION

A wide range of sample pre-treatment techniques was applied, including wet digestions with nitric, perchloric or sulphuric acid at atmospheric pressure boiling temperatures or in pressurised bomb, and programmed dry ashing. Methods of final determination were:
Neutron activation analysis (Zn, Mn, Fe)
Cold vapour, flame or graphite furnace atomic absorption spectrometry (Cd, Pb, Cu, Zn, Fe, Mn)
Plasma atomic emission spectrometry (Cu, Zn, Fe, Mn)
Voltammetric techniques (Pb, Cd, Cu)
Isotope dilution mass spectrometry (Pb, Cd, Cu, Zn)
Absorption spectrometry in solutions (Fe)

PARTICIPANTS

- Agricultural Institute, Wexford (IE)
- Animal and Grassland Research Institute, Maidenhead (GB)
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- CRN, Centro di Radiochimica, Pavia (IT)
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- Universität Regensburg, Institut für Chemie, Regensburg (DE)
- Vrije Universiteit Brussel, Brussels (BE)

SAFETY INFORMATION

The usual laboratory safety precautions apply.

INTENDED USE

The material is intended to be used
a) for calibration purposes
b) to check the performance of a method

INSTRUCTIONS FOR USE

The portion for analysis should be taken after mixing the contents of the bottle. The moisture content is to be determined by drying another portion of the sample at 103 ± 2 °C until constant mass is reach as described in the certification report (see Chapter 11.2, instructions for use).
The contents of the bottle should be thoroughly mixed before each test portion is taken. All care must be taken to avoid contamination during opening of the bottle and handling of the material.

STORAGE

The material should be stored in the dark at 18 °C.
Please note that the stability of samples after opening has not been tested. The European Commission cannot be held responsible for changes that happen to samples after opening or when the material is stored differently from the stated storage conditions at the customer's premises.

LEGAL NOTICE

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NOTE

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

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