EUROPEAN COMMISSION
JOINT RESEARCH CENTRE

Institute for Reference Materials and Measurements (Geel)

CERTIFIED REFERENCE MATERIAL
BCR® – 356

CERTIFICATE OF ANALYSIS

ZINC ALLOY ZnAl4Cu1					
	Mass fraction				Number of accepted sets of data (p)
	Certified value [1]		Uncertainty [2]		
Al	44.34	g/kg	0.11	g/kg	12
Cd	0.73	mg/kg	0.09	mg/kg	8
Cu	3.944	g/kg	0.022	g/kg	13
Fe	31.5	mg/kg	0.6	mg/kg	12
In	< 0.2	mg/kg [3]			8
Mg	132.3	mg/kg	1.8	mg/kg	11
Ni	3.43	mg/kg	0.19	mg/kg	13
Pb	9.87	mg/kg	0.23	mg/kg	13
Tl	0.79	mg/kg	0.05	mg/kg	10

1) Unweighted mean value of the means of p sets of data, each set being obtained in a different laboratory and/or with a different method of determination. The certified value is traceable to the International System of Units (SI).
2) The uncertainty is taken as the half-width of the 95% confidence interval of the certified mean defined in 1).
3) Upper limit supported by p sets of data, each set being obtained in a different laboratory and/or with a different method of determination. The true value is below the certified value with a probability of about 95%.

This certificate is valid for five years after purchase.

Sales date:

DESCRIPTION OF THE SAMPLE

The samples are discs with 80 mm diameter and 20 mm thickness. For the numbering of the samples see Annex I.

INSTRUCTIONS FOR USE

The material is mainly intended for calibration in emission spectrometry with solid samples; the usual mechanical cleaning should be applied prior to the measurement (the CRM and the user's samples should be treated in the same way).
It is recommended not to use the centre of the sample (approx. 10 mm diameter)
In case the material is used for method validation including dissolution of the material, the minimum amount of sample to be used is 1 g.

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, March 1990
Latest revision: August 2015

Signed:

Prof. Dr. Hendrik Emons
European Commission
Joint Research Centre
Institute for Reference Materials and Measurements
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Indicative Values			
	Mass fraction		Number of accepted sets of data (p)
	Indicative value [1] [mg/kg]	Uncertainty [2] [mg/kg]	
Sn	0.32	0.16	4

1) Unweighted mean value of the means of p sets of data, each set being obtained in a different laboratory and/or with a different method of determination. The indicative value is traceable to the International System of Units (SI).
2) The uncertainty is taken as the half-width of the 95% confidence interval of the indicative mean defined in 1).

ANALYTICAL METHODS USED FOR CERTIFICATION

Differential pulse anodic stripping voltammetry
Differential pulse polarography
Electrogravimetry
Electrothermal atomic absorption spectrometry
Flame atomic absorption spectrometry
Inductively coupled plasma emission spectrometry
Inverse polarography
Spectrophotometry
Titrimetry

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SAFETY INFORMATION

The usual lab safety precautions apply.

STORAGE

The samples have to be stored at 18 ºC 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.

LEGAL NOTICE

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NOTE

A technical report on the production of BCR®-356 is available on the internet (http://www.irmm.jrc.be). A paper copy can be obtained from IRMM on request.

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Annex I

Certified reference materials BCR-351, BCR-352, BCR-353, BCR-354, BCR-355, BCR-356, BCR-357, BCR-358, BCR-359, BCR-360 and BCR-361 (Zinc alloys)

Numbering of samples

Each sample has two different numbers:

- a five digit code, marked on the metal by the producer of the materials, defining the exact position of the sample in the original batch of rods;
- the "normal" identification (different CRM number for each material + consecutive numbering of samples within a CRM), marked on the label of the samples.

This is clearly explained in the certification report (Table 126) which is available on the internet (http://www.irmm.jrc.be).

Table 126: Original sample numbers (marked on the metal) corresponding with individual identification numbers on labels (see end of chapter 4)

ZnAl4			ZnAl4Cu1		
CRM nr	Individual identification	Original sample number (*)	CRM nr	Individual identification	Original sample number (*)
BCR-351	001 to 060 061 to 120 121 to 180 181 to 240	21101 to 21160 21201 to 21260 21301 to 21360 21401 to 21460	BCR-356	001 to 060 061 to 120 121 to 180 181 to 240	31101 to 31160 31201 to 31260 31301 to 31360 31401 to 31460
BCR-352	001 to 060 061 to 120 121 to 180 181 to 240	22101 to 22160 22201 to 22260 22301 to 22360 22401 to 22460	BCR-357	001 to 060 061 to 120 121 to 180 181 to 240	32101 to 32160 32201 to 32260 32301 to 32360 32401 to 32460
BCR-353	001 to 060 061 to 120 121 to 180 181 to 240	23101 to 23160 23201 to 23260 23301 to 23360 23401 to 23460	BCR-358	001 to 060 061 to 120 121 to 180 181 to 240	33101 to 33160 33201 to 33260 33301 to 33360 33401 to 33460
BCR-354	001 to 060 061 to 120 121 to 180 181 to 240	24101 to 24160 24201 to 24260 24301 to 24360 24401 to 24460	BCR-359	001 to 060 061 to 120 121 to 180 181 to 240	34101 to 34160 34201 to 34260 34301 to 34360 34401 to 34460
BCR-355	001 to 060 061 to 120 121 to 180 181 to 240	25101 to 25160 25201 to 25260 25301 to 25360 25401 to 25460	BCR-360	001 to 060 061 to 120 121 to 180 181 to 240	35101 to 35160 35201 to 35260 35301 to 35360 35401 to 35460
			BCR-361	001 to 060 061 to 120 121 to 180 181 to 240	36101 to 36160 36201 to 36260 36301 to 36360 36401 to 36460

(*) First digit : 2 for ZnAl4; 3 for ZnAl4Cu1
Second digit : 1 to 5 for BCR-351 to BCR-355; 1 to 6 for BCR-356 to BCR-361
Third digit : rod number within one CRM
Last two digits : disk number within one rod (01 = bottom, 60 = top)