



EUROPEAN COMMISSION  
JOINT RESEARCH CENTRE

Institute for Reference Materials and Measurements (Geel)

# CERTIFIED REFERENCE MATERIAL BCR<sup>®</sup> – 355

## CERTIFICATE OF ANALYSIS

ZINC ALLOY ZnAl4			
	Mass fraction		Number of accepted sets of data (p)
	Certified value <sup>1)</sup>	Uncertainty <sup>2)</sup>	
Al	34.43 g/kg	0.13 g/kg	10
Cd	58.1 mg/kg	0.4 mg/kg	10
Cu	1035 mg/kg	6 mg/kg	13
In	24.6 mg/kg	1.4 mg/kg	7
Mg	786 mg/kg	6 mg/kg	10
Ni	268 mg/kg	8 mg/kg	11
Pb	56.9 mg/kg	1.9 mg/kg	11
Sn	29.1 mg/kg	2.0 mg/kg	8
Tl	23.25 mg/kg	0.28 mg/kg	9
<p>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).</p> <p>2) The uncertainty is taken as the half-width of the 95% confidence interval of the certified mean defined in 1).</p>			

This certificate is valid for five years after purchase.

Sales date:

### 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  
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## 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.

## ANALYTICAL METHODS USED FOR CERTIFICATION

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

## PARTICIPANTS

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## SAFETY INFORMATION

The usual lab safety precautions apply.

## STORAGE

The samples have to be stored at +18 °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.

## LEGAL NOTICE

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## NOTE

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