



# CERTIFIED REFERENCE MATERIAL BCR<sup>®</sup> – 276

## CERTIFICATE OF ANALYSIS

ZIRCONIUM ALLOY		
	Mass fraction	
	Certified value [g/kg]	Uncertainty <sup>4)</sup> [g/kg]
C	0.108 <sup>1)</sup>	0.011
N	0.041 <sup>2)</sup>	0.009
O	1.54 <sup>3)</sup>	0.08
<p>1) This value is the unweighted mean of the pooled results obtained with 2 different methods at 4 independent laboratories. The value is traceable to the International System of Units (SI).</p> <p>2) This value is the unweighted mean of the pooled results obtained with 3 different methods at 7 independent laboratories. The value is traceable to the International System of Units (SI).</p> <p>3) This value is the unweighted mean of the pooled results obtained with 2 different methods at 5 independent laboratories. The value is traceable to the International System of Units (SI).</p> <p>4) The uncertainty is taken as the half-width of the 95 %/95 % tolerance interval. It gives the limits within which, at the 95 % level of confidence, at least 95 % of the measurement values are included. This uncertainty contains contributions from the differences between laboratories, as well as material inhomogeneity.</p>		

This certificate is valid for five years after purchase.

Sales date:

### DESCRIPTION OF THE SAMPLE

The material is available in glass bottles containing 100 cylinders of nominally 4.5 mm diameter and 2 mm thickness (about 0.2 g each). The minimum amount of sample to be used is 200 mg for the analysis of carbon and oxygen, and 500 mg for the analysis of nitrogen.

### 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, November 1983  
Latest revision: August 2015

Signed: \_\_\_\_\_

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European Commission  
Joint Research Centre  
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## **ANALYTICAL METHODS USED FOR CERTIFICATION**

Kjeldahl method  
Reducing fusion  
Combustion  
Charged particle activation analysis  
Photon activation analysis  
Surface analysis by nuclear methods

## **PARTICIPANTS**

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## **SAFETY INFORMATION**

The usual laboratory safety precautions apply.

## **INSTRUCTIONS FOR USE**

With time, the samples will develop a surface layer of different composition than the bulk. Therefore, before analysis, the samples must be etched as follows:

- dip the sample for 50 seconds in a mixture of 10 volumes of nitric acid ( $\rho = 1.4 \text{ kg/L}$ ), 1 volume of hydrofluoric acid (40 %) and 10 volumes of water at 20 °C;
- immerse successively in 3 vessels with distilled water and 3 vessels with methanol;
- dry in a stream of warm air (60 °C).

## **STORAGE**

Samples should be stored dry and at room temperature. 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-276 is supplied on Internet (<http://www.irmm.jrc.be>). A paper copy can be obtained from IRMM on explicit request.