JOINT RESEARCH CENTRE
Institute for Reference Materials and Measurements

CERTIFICATE OF ANALYSIS

ERM®- AE638

Mg in 0.1 M subboiled nitric acid			
		Certified value (1)	Uncertainty (2)
amount content	mol (^{26}Mg) · g^{-1} (solution)	$8.574 \cdot 10^{-7}$	$0.034 \cdot 10^{-7}$
amount ratios of Mg	$n(^{24}Mg)/n(^{26}Mg)$	0.003 104	0.000 026
	$n(^{25}Mg)/n(^{26}Mg)$	0.001 084	0.000 011

1) The values reported in this certificate result from measurements performed at IRMM, and are traceable to the SI via the values of the isotopic reference material NIST SRM 980.

2) Estimated expanded uncertainty U with a coverage factor k=2, corresponding to a level of confidence of about 95 %, as defined in the Guide to the Expression of Uncertainty in Measurement (GUM), ISO, 1995.

This certificate is valid for three years after purchase.

Sales date:

The material can be regarded as a homogenous solution.

Accepted as CRM, Geel, April 2000

Signed: _____

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Accepted as an ERM®, Geel, November 2003
Latest revision: November 2013

Signed: _____

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NOTE

European Reference Material ERM®-AE638 was originally certified as IRMM-638. It was produced and certified under the responsibility of the IRMM according to the principles laid down in the technical guidelines of the European Reference Materials® co-operation agreement between BAM-IRMM-LGC. Information on these guidelines is available on the Internet (http://www.erm-crm.org). A detailed technical report on the certification procedure can be found in IRMM Internal Report GE/R/SIM/25/97, available from IRMM on explicit request.

DESCRIPTION OF THE SAMPLE

The Spike Isotopic Reference Material ERM®-AE638 is supplied with a certified isotope amount content of ^{26}Mg. The samples are supplied in flame-sealed glass ampoules containing approximately 4 mL solution of magnesium in nitric acid. The solution matrix is 0.1 M subboiled nitric acid.

From the certified values, the following amount and mass contents, the isotopic composition of Mg and the molar mass of Mg are derived:

		Certified value	Uncertainty [1]
amount content	mol (Mg) · g^{-1} (solution)	$8.610 \cdot 10^{-7}$	$0.034 \cdot 10^{-7}$
mass content	g (^{26}Mg) · g^{-1} (solution)	$2.227\,8 \cdot 10^{-5}$	$0.009\,0 \cdot 10^{-5}$
	g (Mg) · g^{-1} (solution)	$2.236\,5 \cdot 10^{-5}$	$0.009\,0 \cdot 10^{-5}$
isotope amount fractions of Mg (·100)	$n(^{24}\text{Mg})/n(\text{Mg})$ $n(^{25}\text{Mg})/n(\text{Mg})$ $n(^{26}\text{Mg})/n(\text{Mg})$	0.309 1 0.107 9 99.583 0	0.002 6 0.001 1 0.003 6
isotope mass fractions of Mg (·100)	$m(^{24}\text{Mg})/m(\text{Mg})$ $m(^{25}\text{Mg})/m(\text{Mg})$ $m(^{26}\text{Mg})/m(\text{Mg})$	0.285 4 0.103 8 99.610 8	0.002 4 0.001 0 0.003 4
molar mass Mg in this sample		25.975 343 g·mol^{-1}	0.000 062

[1] Estimated expanded uncertainty U with a coverage factor k=2, corresponding to a level of confidence of about 95 %, as defined in the Guide to the Expression of Uncertainty in Measurement (GUM), ISO, 1995.

Atomic masses used for calculation of the derived values:*

* G. Audi and A.H. Wapstra, The 1993 atomic mass evaluation, *Nucl Phys* A565 (1993) 1-65.

Isotope	g · mol^{-1}	U (k=2)
^{24}Mg	23.985 041 87	0.000 000 52
^{25}Mg	24.985 837 00	0.000 000 52
^{26}Mg	25.982 593 00	0.000 000 52

ANALYTICAL METHOD USED FOR CERTIFICATION

The magnesium mass fraction has been determined by gravimetric preparation.

PARTICIPANTS

Not applicable

SAFETY INFORMATION

Not applicable

INSTRUCTIONS FOR USE

This is a ^{26}Mg isotopically enriched spike material for isotope dilution mass spectrometry.

LEGAL NOTICE

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