JOINT RESEARCH CENTRE
Directorate F – Health, Consumers and Reference Materials

CERTIFICATE OF ANALYSIS

IRMM-010

Pt		
	Certified value [1] [mol/mol]	Certified uncertainty [2] [mol/mol]
$n(^{190}Pt)/n(^{195}Pt)$	0.000 347	0.000 034
$n(^{192}Pt)/n(^{195}Pt)$	0.023 15	0.000 48
$n(^{194}Pt)/n(^{195}Pt)$	0.973	0.011
$n(^{196}Pt)/n(^{195}Pt)$	0.746 4	0.008 2
$n(^{198}Pt)/n(^{195}Pt)$	0.217 8	0.002 4

1) The certified values were obtained by isotopic ratio measurements using a isotope-dilution ICP-MS. The values are traceable to the International System of Units (SI).

2) The uncertainty is the expanded uncertainty of the certified value with a coverage factor k = 2 corresponding to a level of confidence of about 95 % in accordance with ISO/IEC Guide 98-3, Guide to the Expression of Uncertainty in Measurement (GUM:1995), ISO, 2008.

This certificate is valid for five years after purchase.

Sales date:

The material is pure material and is therefore regarded homogeneous.

Geel, June 1999
Latest revision: August 2018

Signed:

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Indicative Values

	Value	Uncertainty [3]	Unit
Isotope amount fractions [1]			
$n(^{190}Pt)/n(Pt)$	0.000 117	0.000 011	mol/mol
$n(^{192}Pt)/n(Pt)$	0.007 82	0.000 17	mol/mol
$n(^{194}Pt)/n(Pt)$	0.328 6	0.002 7	mol/mol
$n(^{195}Pt)/n(Pt)$	0.337 8	0.001 6	mol/mol
$n(^{196}Pt)/n(Pt)$	0.252 1	0.002 3	mol/mol
$n(^{198}Pt)/n(Pt)$	0.073 56	0.000 82	mol/mol
Isotope mass fractions [2]			
$m(^{190}Pt)/m(Pt)$	0.000 114	0.000 011	g/g
$m(^{192}Pt)/m(Pt)$	0.007 69	0.000 16	g/g
$m(^{194}Pt)/m(Pt)$	0.326 7	0.002 7	g/g
$m(^{195}Pt)/m(Pt)$	0.337 6	0.001 6	g/g
$m(^{196}Pt)/m(Pt)$	0.253 2	0.002 3	g/g
$m(^{198}Pt)/m(Pt)$	0.074 65	0.008 4	g/g

1) Calculated from certified amount ratios.

2) Calculated from the certified amount ratios and the atomic masses given in "Additional Material Information".

3) The uncertainty is the expanded uncertainty with a coverage factor *k* = 2corresponding to a level of confidence of about 95 % estimated in accordance with ISO/IEC Guide 98-3, Guide to the Expression of Uncertainty in Measurement (GUM:1995), ISO, 2008.

Additional Material Information

	Molar mass [g/mol]	Uncertainty [g/mol]
Pt	195.084 4	0.005 4
^{190}Pt	189.959 930	0.000 014
^{192}Pt	191.961 035 0	0.000 008 0
^{194}Pt	193.962 663 0	0.000 006 0
^{195}Pt	194.964 774 0	0.000 006 0
^{196}Pt	195.964 934 0	0.000 006 0
^{198}Pt	197.967 875	0.000 001 0

The molar mass and uncertainty of Pt was calculated from 1) and the certified isotopic amount composition. Molar masses of the individual isotopes were taken from: G Audi and A H Wapstra, The 1993 atomic mass evaluation, Nucl Phys A565 (1993) 1-65.

Uncertainties given are two times the standard deviation error listed in Nucl Phys A565 (1993) 1-65.

DESCRIPTION OF THE SAMPLE

The Isotopic Reference Material IRMM-010 comes in a septum sealed glass vial containing 3 pieces (1 cm long, 0.026 mm diameter) of metallic platinum. More information on the production can be found in the PhD thesis of C. Briche (C Briche, Isotopic measurement procedures for a calibrated isotopic composition an atomic weight of a natural platinum isotopic reference material, University of Antwerp, June 1998).

ANALYTICAL METHODS USED FOR CERTIFICATION

Isotope-dilution inductively coupled plasma mass spectrometry (ID-ICP-MS)

PARTICIPANTS

European Commission, Joint Research Centre (JRC), Institute for Reference Materials and Measurements (IRMM), Geel, Belgium

SAFETY INFORMATION

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

H334, Resp. Sens. category 1: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H317, Skin Sens. category 1: May cause an allergic skin reaction.

P-statements

P280: Wear protective gloves.
P261: Avoid breathing dust.
P321: Specific treatment (see information on this label).
P304 + P341: IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.

INSTRUCTIONS FOR USE AND INTENDED USE

This material is intended to be used as isotopic spike for isotope-dilution mass spectrometry.
Dispose in accordance with good laboratory practice.

STORAGE

The material should be stored at 18 °C ± 5 °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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