

ERM[®] catalogue
12 December 2008

www.erm-crm.org

European Commission

Directorate-General Joint Research Centre
Institute for Reference Materials and Measurements

Contact information

European Commission
Directorate-General Joint Research Centre
Institute for Reference Materials and Measurements
Retieseweg 111
B-2440 Geel • Belgium

<http://www.erm-crm.org>

Legal Notice

Neither the European Commission nor any person acting on behalf of the Commission, BAM or LGC is responsible for the use which might be made of the following information.

© European Communities, 2008

Contents

Introduction to ERM	IV
ERM [®] coding convention	V
How to order	VI
Materials listed by group	VII
Environmental and related matrix materials certified for composition	1- 4
Food/Agriculture and related matrix materials certified for composition	5-13
Health-related matrix materials certified for composition	14-16
Industrial and engineering materials certified for composition	17-25
Materials certified for physical properties	26-28
Non-matrix materials certified for purity and concentration, activity	29-34

Introduction to ERM[®]

Introducing a new brand of certified reference materials

Three major European producers have combined forces to introduce a new brand of certified reference materials to ensure reliability and comparability of the results of measurements.

ERM[®] are certified reference materials, which undergo uncompromising peer evaluation and offer highest quality and reliability.

They are a major tool for improving the confidence in, and the mutual recognition of test results and certificates in a global market. ERM[®] branded materials comply with modern metrological requirements, thus ensuring traceability of measurement results.

What is the ERM[®] concept?

The ERM[®] concept is a joint collaboration of three European reference materials producers who guarantee to:

- Use the most advanced principles currently available described in ISO Guides 34 and 35 for the production of certified reference materials (CRMs)
- Demonstrate rigorous homogeneity and stability for all materials and guarantee the certified value for every single unit over the complete shelf life of the materials
- Be transparent in their approaches to the production of certified reference materials.

Who are the partners?

Present partners of the ERM[®] concept are three major European reference materials producers:

- Joint Research Centre, Institute for Reference Materials and Measurements (JRC-IRMM) of the European Commission's Directorate General Joint Research Centre, Belgium
<http://irmm.jrc.ec.europa.eu>
- Bundesanstalt für Materialforschung und -prüfung (BAM), Germany
www.bam.de
- LGC Standards, United Kingdom
www.lgcstandards.com

What are the key benefits of the ERM[®] concept for CRM users?

- Uncompromising peer-review of CRMs by the ERM[®] Technical Committee ensures highest quality and reliability
- Full transparency of the certification principles and the evaluation report provides valuable insight to help analysts get the maximum benefit from the use of the material
- Clearly defined and stated traceability of the certified values ensures applicability of the materials to the respective analytical problem
- Internationally recognised values underpinned through the participation of the producing institutes in key comparisons organised by the Bureau International des Poids et Mesures.

How to find out more about ERM[®]

Please visit www.erm-crm.org

Register online to receive up to date email news from ERM[®]

ERM[®] coding convention

ERM[®] materials are organised into six different categories (groups) that in turn contain several subcategories.

Each group has been assigned a letter and a second letter defines each subgroup in the main groups. The following table summarises the different ERM[®] groups and subgroups:

General Category	Letter	Subcategory	Letter	ERM [®] code
Non-matrix materials certified for purity and concentration, activity	A	Solid or liquid inorganic compounds and elements (pure and solutions)	A	AAXXX
		Gases (pure and mixtures)	B	ABXXX
		Solid or liquid small organic molecules (pure and solutions)	C	ACXXX
		Organic macromolecules	D	ADXXX
		Isotopically labeled materials	E	AEXXX
		Others	Z	AZXXX
Food/Agriculture and related matrix materials certified for composition	B	Potable water and beverages	A	BAXXX
		Animal matter	B	BBXXX
		Plant/vegetation matter	C	BCXXX
		Processed food and foodstuffs not covered above	D	BDXXX
		Animal feeding stuffs	E	BEXXX
		GM materials	F	BFXXX
		Others	Z	BZXXX
Environmental and related matrix materials certified for composition	C	Waters (river, sea, ground)	A	CAXXX
		Waste, effluents and leachates	B	CBXXX
		Soils, sediments, sludges	C	CCXXX
		Plant/vegetation matter	D	CDXXX
		Animal bioindicator matter	E	CEXXX
		Fly ash, fuel ash, incinerator ash	F	CFXXX
		Others	Z	CZXXX
Health-related matrix materials certified for composition	D	Human body fluids: serum, urine, etc	A	DAXXX
		Human tissue: hair, bone, teeth, etc	B	DBXXX
		Medicinal plants certified for composition	C	DCXXX
		Others	Z	DZXXX
Industrial and engineering materials certified for composition	E	Ferrous alloys	A	EAXXX
		Non-ferrous alloys	B	EBXXX
		Polymers, plastics	C	ECXXX
		Glasses, ceramics	D	EDXXX
		Minerals, ores, rocks, clays	E	EEXXX
		Fuels, coal, diesel	F	EFXXX
		Semiconductors	G	EGXXX
		Others	Z	EZXXX
Materials certified for physical properties	F	Mechanical properties (e.g. hardness, impact toughness, viscosity)	A	FAXXX
		Optical properties (e.g. wavelength and absorbance materials)	B	FBXXX
		Thermal properties (e.g. thermal conductivity, calorific value)	C	FCXXX
		Morphological properties (e.g. particle size, surface area)	D	FDXXX
		Others	Z	FZXXX

How to order

To order materials or for further information please contact the relevant organisation below.

ERM[®] produced by BAM

Angelika Selmke
Tel: +49 30 8104 2061
Fax: +49 30 8104 1117
Email: angelika.selmke@bam.de
www.webshop.bam.de

LGC Standards
Tel: +44 (0)20 8943 8482
Fax: +44 (0)20 8943 7554
www.lgcstandards.com

ERM[®] produced by IRMM

Directly from JRC-IRMM

European Commission - Joint Research Centre
Institute for Reference Materials and Measurements
Reference Materials Unit
attn. CRMs sales
Retieseweg 111
B-2440 Geel
Belgium
Tel: +32 14 571 705
Fax: +32 14 590 406
Email: jrc-irrm-rm-sales@ec.europa.eu
<http://irrm.jrc.ec.europa.eu>

ERM[®] produced by LGC

LGC Standards
Tel: +44 (0)20 8943 8482
Fax: +44 (0)20 8943 7554
www.lgcstandards.com

From JRC-IRMM authorised distributors

LGC Standards
Tel: +44 (0)20 8943 8482
Fax: +44 (0)20 8943 7554
www.lgcstandards.com

SIGMA ALDRICH CHEMIE GmbH
Industriestrasse 25
CH-9471 Buchs
Switzerland
Tel: +41 81 755 2828
Fax: +41 81 755 2815
Email: flukatec@sial.com
www.sigma-aldrich.com

RTC
PO Box 1346
2931 Soldier Springs Road
Laramie, WY 82070
USA
Tel: +1 307 742 5452
Fax: +1 307 745 7936
Email: orders@rt-corp.com
www.RT-corp.com

How to find out more about ERM[®]

Please visit www.erm-crm.org

Register online to receive up to date email news from ERM[®]

Materials listed by group

Environmental and related matrix materials certified for composition

Animal bioindicator matter

ERM-CE194 available from IRMM

Matrix: Bovine blood

Form: Powder **unit size:** 5,75 mL when reconstituted

Lyophilised blood for validating Pb and Cd determinations in blood.

Cd	0,20	± 0,05	µg/L
Pb	126	± 4	µg/L

ERM-CE195 available from IRMM

Matrix: Bovine blood

Form: Powder **unit size:** 5,75 mL when reconstituted

Lyophilised blood for validating Pb and Cd determinations in blood.

Pb	416	± 9	µg/L
Cd	5,06	± 0,15	µg/L

ERM-CE196 available from IRMM

Matrix: Bovine blood

Form: Powder **unit size:** 5,75 mL when reconstituted

Lyophilised blood for validating Pb and Cd determinations in blood.

Cd	12,33	± 0,20	µg/L
Pb	772	± 11	µg/L

ERM-CE278 available from IRMM

Matrix: Mussel tissue

Form: Powder **unit size:** 8 g

Material for method performance control and validation

Hg	0,196	± 0,009	mg/kg
Cd	0,348	± 0,007	mg/kg
Cr	0,78	± 0,06	mg/kg
Se	1,84	± 0,10	mg/kg
Pb	2,00	± 0,04	mg/kg
As	6,07	± 0,13	mg/kg
Mn	7,69	± 0,23	mg/kg
Zn	83,1	± 1,7	mg/kg
Cu	9,45	± 0,13	mg/kg

ERM-CE464 available from IRMM

Matrix: Tuna fish

Form: Powder **unit size:** 15 g

Material for method performance control and validation

Hg, total	5,24	± 0,10	mg/kg
Methylmercury	5,50	± 0,17	mg/kg

Animal bioindicator matter

ERM-CE477 available from IRMM

Matrix: Mussel tissue

Form: Powder **unit size:** 14 g

Material for method performance control and validation

Monobutyltin	1,50	± 0,28	mg/kg
Dibutyltin	1,54	± 0,12	mg/kg
Tributyltin	2,20	± 0,19	mg/kg

Soils, sediments, sludges

ERM-CC007 available from BAM

Matrix: Soil

Form: Powder **unit size:** 41 g

Intended to assure the correct implementation of the own analytical method or of the analytical method according to E DIN ISO 10382 or to verify the performance of method modifications.

p,p'-DDT	153,5	± 14,8	µg/kg
a-HCH	32	± 5,5	µg/kg
o,p'-DDT	35,7	± 6,6	µg/kg
β-HCH	386	± 40	µg/kg
p,p'-DDE	56,3	± 5,8	µg/kg

ERM-CC008 available from BAM

Matrix: Soil

Form: Powder **unit size:** 30 g

Pentachlorophenol in soil

PCP	2,04	± 0,18	mg/kg
-----	------	--------	-------

ERM-CC009 available from BAM

Matrix: Soil

Form: Powder **unit size:** 30 g

Intended for research, validation of analytical procedures for the determination of Pentachlorophenol (PCP) in soil according to E DIN ISO 14154 by GC-ECD or alternative methods and for quality assurance in analytical laboratories.

Pentachlorophenol	2,91	± 0,23	mg/kg
-------------------	------	--------	-------

ERM-CC010 available from BAM

Matrix: Soil

Form: Powder **unit size:** 5,7 g

absorbed organically bound halogens

AOX	1349	± 59	mg/kg
-----	------	------	-------

Environmental and related matrix materials certified for composition

Soils, sediments, sludges

ERM-CC011 available from BAM

Matrix: Soil

Form: Powder **unit size:** 4,2 g

absorbed organically bound halogens

AOX	80,4	± 6,9	mg/kg
-----	------	-------	-------

ERM-CC012 available from BAM

Matrix: Soil

Form: Powder **unit size:** 6,5 g

absorbed organically bound halogens

AOX	102,3	± 7,8	mg/kg
-----	-------	-------	-------

ERM-CC013a available from BAM

Matrix: Soil

Form: Powder **unit size:** 81 g

Intended for validation of analytical procedures for the determination of polycyclic aromatic hydrocarbons (PAH) in soil according to ISO 13877 by HPLC and alternative procedures using GC-MS, and quality assurance in analytical laboratories.

Fluorene	1.14	± 0,11	mg/kg
Anthracene	1.41	± 0,22	mg/kg
Phenanthrene	12.0	± 0,6	mg/kg
Fluoranthene	12.9	± 0,7	mg/kg
Naphthalene	2.4	± 0,5	mg/kg
Benzo[k]fluoranthene	3.4	± 0,4	mg/kg
Benzo[g,h,i]perylene	4.6	± 0,5	mg/kg
Benzo[a]pyrene	4.9	± 0,7	mg/kg
Indeno[1,2,3-cd]pyrene	5.2	± 1,0	mg/kg
Chrysene	5.3	± 0,8	mg/kg
Benzo[a]anthracene	5.6	± 0,5	mg/kg
Benzo[b]fluoranthene	7.1	± 1,0	mg/kg
Pyrene	9.6	± 0,3	mg/kg

ERM-CC015 available from BAM

Matrix: Sediment

Form: Powder **unit size:** 82 g

The reference material can be used for the confirmation of the laboratory's results for the determination of the hydrocarbons according to ISO /DIS 16703: 2001.

TPH	2000	± 161	mg/kg
-----	------	-------	-------

Soils, sediments, sludges

ERM-CC016 available from BAM

Matrix: Waste

Form: Powder **unit size:** 83 g

Dried, homogenised and sieved waste mixture consisting of different real-world contaminated constituents. Certified for the mineral oil hydrocarbon content according to EN 14039 and ISO 16709 by means of gas chromatography GC-FID.

Total petrol hydrocarbons (TPH)	3010	± 220	mg/kg
---------------------------------	------	-------	-------

ERM-CC135 available from LGC

Matrix: Contaminated soil

Form: Powder **unit size:** 50 g

A naturally contaminated soil from a UK brickworks site.

Be - extractable	1,4 (ind.)	± 0,4	mg/kg
Cu - total	107 (ind.)	± 5	mg/kg
V - total	139 1520	± 18	mg/kg
K - total	16300 (ind.)	± 2600	mg/kg
Na - total	1700 (ind.)	± 270	mg/kg
Hg - total	2,9 (ind.)	± 0,6	mg/kg
Co - extractable	20 (ind.)	± 4	mg/kg
Ca - extractable	21900 (ind.)	± 520	mg/kg
Al - extractable	22700 (ind.)	± 4600	mg/kg
Ca - total	23400 (ind.)	± 2900	mg/kg
Ni - total	291 (ind.)	± 22	mg/kg
Ba - total	305 (ind.)	± 37	mg/kg
Zn total	345 (ind.)	± 45	mg/kg
Na - extractable	362 (ind.)	± 44	mg/kg
Mn - total	390 (ind.)	± 40	mg/kg
Pb - extractable	391 (ind.)	± 16	mg/kg
Fe - extractable	40900 (ind.)	± 2700	mg/kg
Pb - total	411 (ind.)	± 26	mg/kg
Cr - total	455 (ind.)	± 59	mg/kg
Fe - total	47500 (ind.)	± 4600	mg/kg
K - extractable	5100 (ind.)	± 920	mg/kg
Mg - extractable	7000 (ind.)	± 580	mg/kg
V - extractable	78 (ind.)	± 11	mg/kg
Mg - total	9400 (ind.)	± 1200	mg/kg
Se - extractable	0,9	± 0,3	mg/kg
Cu - extractable	105	± 5	mg/kg
Ba - extractable	134	± 10	mg/kg
Ni - extractable	277	± 13	mg/kg
Hg - extractable	3,2	± 0,4	mg/kg
Zn - extractable	316	± 41	mg/kg
Cr - extractable	336	± 28	mg/kg
Mn - extractable	348	± 18	mg/kg

Environmental and related matrix materials certified for composition

Soils, sediments, sludges

ERM-CC136 available from LGC

Matrix: Sewage sludge

Form: Powder **unit size:** 25 g

This material is an aged sewage sludge obtained from a disused sewage works site at Heathrow, London, UK

Al - extractable	15100 (ind.)	± 5400	mg/kg
K - extractable	2030 (ind.)	± 844	mg/kg
Co - extractable	23,2 (ind.)	± 3,6	mg/kg
Mg - extractable	2820 (ind.)	± 540	mg/kg
Na - extractable	397 (ind.)	± 64	mg/kg
Ba - extractable	633 (ind.)	± 195	mg/kg
Zn - extractable	890 (ind.)	± 140	mg/kg
Ni - extractable	130	± 10	mg/kg
Fe - extractable	22200	± 780	mg/kg
Pb - extractable	341	± 18	mg/kg
Cr - extractable	399	± 32	mg/kg
Cu - extractable	464	± 21	mg/kg
Mn - extractable	544	± 32	mg/kg

ERM-CC580 available from IRMM

Matrix: Estuarine sediment

Form: Powder **unit size:** 40 g

Material for method performance control and validation

Methylmercury	0,0755	± 0,003 7	mg/kg
Hg, total	132	± 3	mg/kg

Soils, sediments, sludges

ERM-CC690 available from IRMM

Matrix: Calcareous soil

Form: Powder **unit size:** 70 g

Material for method performance control and validation

Lu	0,234 (ind.)		mg/kg
Ho	0,571 (ind.)		mg/kg
Ta	0,728 (ind.)		mg/kg
Eu	0,762 (ind.)		mg/kg
Au	0,767 (ind.)		mg/kg
Er	1,69 (ind.)		mg/kg
Zn	1040 (ind.)		mg/kg
Cr	129 (ind.)		mg/kg
Y	14,1 - 21,2 (ind.)		mg/kg
Pb	181 (ind.)		mg/kg
Fe	2,36 (ind.)		mass %
Cu	274 (ind.)		mg/kg
W	3,11 (ind.)		mg/kg
Hf	3,14 (ind.)		mg/kg
Pr	4,91 (ind.)		mg/kg
Cs	4,94 (ind.)		mg/kg
Ni	43,7 (ind.)		mg/kg
Sb	5,63 (ind.)		mg/kg
As	6,55 (ind.)		mg/kg
Co	9,67 (ind.)		mg/kg
Tm	0,232	± 0,026	mg/kg
Tb	0,503	± 0,063	mg/kg
Yb	1,57	± 0,19	mg/kg
U	1,90	± 0,23	mg/kg
Nd	19,1	± 2,2	mg/kg
Dy	2,90	± 0,28	mg/kg
La	24,4	± 1,7	mg/kg
Gd	3,25	± 0,33	mg/kg
Sm	3,50	± 0,37	mg/kg
Ce	49,1	± 2,5	mg/kg
Th	7,64	± 0,73	mg/kg
Sc	7,89	± 0,83	mg/kg

Environmental and related matrix materials certified for composition

Waters (river, sea, ground)

ERM-CA011a available from LGC

Matrix: Drinking water

Form: Solution **unit size:** 250 mL

Certified reference material for analysis of elements in drinking waters.

Arsenic	10,1	± 0.6	µg/L
Selenium	10,7	± 0.7	µg/L
Barium	120	± 6	µg/L
Nickel	19,4	± 1	µg/L
Aluminium	197	± 13	µg/L
Copper	1970	± 67	µg/L
Iron	207	± 6	µg/L
Lead	24,7	± 0.5	µg/L
Magnesium	4,9	± 0.16	mg/L
Cadmium	4,94	± 0.23	µg/L
Sodium	40	± 1.3	mg/L
Manganese	47	± 2.3	µg/L
Chromium	48	± 3	µg/L
Antimony	5,2	± 0.3	µg/L
Zinc	586	± 20	µg/L
Potassium	7,5	± 0.22	mg/L
Calcium	89	± 2	mg/L
Boron	950	± 67	µg/L

ERM-CA022a available from LGC

Matrix: Soft drinking water

Form: Solution **unit size:** 250 mL

A soft drinking water certified for a range of metals at levels close to the drinking water regulation limits.

Se	10,6 (ind.)	± 1,2	µg/L
B	1070 (ind.)	± 50	µg/L
K	370 (ind.)	± 31	µg/L
Mg	1,01	± 0,04	mg/L
As	10,3	± 1,3	µg/L
Ba	127	± 13	µg/L
Ni	20,5	± 1,6	µg/L
Fe	201	± 2	µg/L
Al	204	± 10	µg/L
Cu	2100	± 70	µg/L
Pb	26,0	± 0,9	µg/L
Cd	5,26	± 0,21	µg/L
Na	5,84	± 0,14	mg/L
Cr	50,8	± 2,7	µg/L
Mn	52,5	± 3,9	µg/L
Zn	628	± 4	µg/L
Ca	7,33	± 0,25	mg/L

Food/Agriculture and related matrix materials certified for composition

Animal matter

ERM-BB124 available from IRMM

Matrix: Lyophilised pork muscle

Form: Powder **unit size:** 10 g

Lyophilised pork muscle from pigs that have been administered nitroimidazole drugs. The material is certified by intercomparison of expert laboratories for its content of the parent drugs or their hydroxi metabolites. This material is intended to be used for method performance control and validation purposes (trueness determination).

Dimetridazole	<0,25		µg/kg
2-hydroxymethyl-1-methyl-5-nitroimidazole	0,69	± 0,09	µg/kg
Hydroxyipronidazole	1,67	± 0,12	µg/kg
Metronidazole	1,93	± 0,15	µg/kg
Ronidazole	2,09	± 0,25	µg/kg
Hydroxymetronidazole	6,2	± 0,9	µg/kg

ERM-BB444 available from IRMM

Matrix: Natural pork fat

Form: Solid fat **unit size:** 5 g

PBDE 47	3,7 (ind.)		µg/kg
Gamma-HCH	5,7 (ind.)		µg/kg
Sum PCB	< 14		µg/kg
PCB 153	< 2		µg/kg
PCB 180	< 2		µg/kg
PCB 28	< 2		µg/kg
PCB 52	< 2		µg/kg
PCB 118	< 2		µg/kg
PCB 138	< 2		µg/kg
PCB 138	< 2		µg/kg
PCB 101	< 2		µg/kg

ERM-BB445 available from IRMM

Matrix: Spiked pork fat

Form: Solid fat **unit size:** 5 g

PBDE 47	3,9 (ind.)		µg/kg
Gamma-HCH	5,6 (ind.)		µg/kg
PCB 101	12,5	± 1,2	µg/kg
PCB 180	12,6	± 0,9	µg/kg
PCB 118	12,7	± 1,3	µg/kg
PCB 52	12,9	± 0,9	µg/kg
PCB 153	13,1	± 1,1	µg/kg
PCB 138	14,6	± 1,6	µg/kg
PCB 28	14,8	± 1,3	µg/kg
Sum PCB	93	± 7	µg/kg

Animal matter

ERM-BB446 available from IRMM

Matrix: Spiked pork fat

Form: Solid fat **unit size:** 5 g

Gamma-HCH	4,6 (ind.)		µg/kg
PBDE 47	6,1 (ind.)		µg/kg
Sum PCB	207	± 11	µg/kg
PCB 52	25,5	± 1,8	µg/kg
PCB 28	29,6	± 2,1	µg/kg
PCB 180	29,8	± 2,5	µg/kg
PCB 101	30	± 4	µg/kg
PCB 118	30,2	± 2,7	µg/kg
PCB 153	30,8	± 2,4	µg/kg
PCB 138	32	± 4	µg/kg

ERM-BB501a available from LGC

Matrix: Processed meat

Form: Fresh **unit size:** 180 g

Certified reference material for analysis of proximates, chloride, nitrate and hydroxyproline in meat products.

Sodium Nitrate	0,286 (ind.)	± 0.043	g/kg
Salt	23,9 (ind.)	± 0.7	g/kg
Nitrate	0,209	± 0.032	g/kg
Chloride	14,5	± 0.5	g/kg
Total Fat	151	± 7	g/kg
Nitrogen	23,0	± 0.7	g/kg
Hydroxyproline	3,3	± 0.3	g/kg
Ash	33,2	± 0.9	g/kg
Moisture	618	± 7	g/kg

GM materials

ERM-BF410a available from IRMM

Matrix: Soya bean

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Roundup-Ready (TM) < 0,3 g/kg soybean content,

ERM-BF410b available from IRMM

Matrix: Soya bean

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Roundup-Ready (TM) 1,0 ± 0,5 g/kg soybean content,

Food/Agriculture and related matrix materials certified for composition

GM materials

ERM-BF410c available from IRMM

Matrix: Soya bean

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Roundup-Ready (TM) 5,0 ± 1,0 g/kg
soybean content,

ERM-BF410d available from IRMM

Matrix: Soya bean

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Roundup-Ready (TM) 10,0 ± 1,6 g/kg
soybean content,

ERM-BF410dk available from IRMM

Matrix: Soya bean

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Roundup-Ready soya 10,0 ± 1,0 g/kg
bean content

ERM-BF410e available from IRMM

Matrix: Soya bean

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Roundup-Ready (TM) 20,0 ± 2,6 g/kg
soybean content,

ERM-BF410gk available from IRMM

Matrix: Soya bean

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Roundup-Ready (TM) 100 ± 7 g/kg
soya bean content

ERM-BF411a available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Bt-176 maize content, < 0,14 g/kg

ERM-BF411b available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Bt-176 maize content, 1,00 ± 0,29 g/kg

GM materials

ERM-BF411c available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Bt-176 maize content, 5,0 ± 0,6 g/kg

ERM-BF411d available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Bt-176 maize content, 10,0 ± 0,8 g/kg

ERM-BF411e available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Bt-176 maize content, 20,0 ± 1,1 g/kg

ERM-BF411f available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Bt-176 maize content, 50,0 ± 1,8 g/kg

ERM-BF412a available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Bt-11 maize content, < 0,12 g/kg

ERM-BF412b available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Bt-11 maize content, 0,98 ± 0,29 g/kg

ERM-BF412c available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Bt-11 maize content, 4,9 ± 0,6 g/kg

ERM-BF412d available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods
Bt-11 maize content, 9,8 ± 0,9 g/kg

Food/Agriculture and related matrix materials certified for composition

GM materials

ERM-BF412e available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 Bt-11 maize content, 19,6 ± 1,3 g/kg

ERM-BF412f available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 Bt-11 maize content, 48,9 ± 2,1 g/kg

ERM-BF413a available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 810 maize < 0,2 g/kg content,

ERM-BF413b available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 810 maize 1,00 ± 0,26 g/kg content,

ERM-BF413c available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 810 maize 5,0 ± 0,4 g/kg content,

ERM-BF413d available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 810 maize 0,57 ± 0,17 % content,
 MON 810 maize 10,0 ± 0,5 g/kg content,

ERM-BF413e available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 810 maize 20,0 ± 0,6 g/kg content,

GM materials

ERM-BF413f available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 810 maize 50,0 ± 1,1 g/kg content,

ERM-BF414a available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 GA21 maize content < 0,8 g/kg

ERM-BF414b available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 GA21 maize content 1,0 ± 0,8 g/kg

ERM-BF414c available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 GA21 maize content 4,9 ± 1,0 g/kg

ERM-BF414d available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 GA21 maize content 9,9 ± 1,1 g/kg

ERM-BF414e available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 GA21 maize content 17,2 ± 1,2 g/kg

ERM-BF414f available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 GA21 maize content 42,9 ± 1,4 g/kg

ERM-BF415a available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 NK 603 maize content < 0,4 g/kg

Food/Agriculture and related matrix materials certified for composition

GM materials

ERM-BF415b available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 NK 603 maize content 1,0 ± 0,4 g/kg

ERM-BF415c available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 NK 603 maize content 4,9 ± 0,5 g/kg

ERM-BF415d available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 NK 603 maize content 9,8 ± 0,7 g/kg

ERM-BF415e available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 NK 603 maize content 19,6 ± 0,9 g/kg

ERM-BF415f available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 NK 603 maize content 49,1 ± 1,3 g/kg

ERM-BF416a available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 863 maize content < 1 g/kg

ERM-BF416b available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 863 maize content < 1 -0,3; +1,0 g/kg

GM materials

ERM-BF416c available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 863 maize content 9,8 -0,7; +1,2 g/kg

ERM-BF416d available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 863 maize content 98,5 -2,2; +2,5 g/kg

ERM-BF417a available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 863 x MON 810 maize content < 1 g/kg

ERM-BF417b available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 863 x MON 810 maize content 1 -0,2; +1,0 g/kg

ERM-BF417c available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 863 x MON 810 maize content 9,8 -0,7; +1,2 g/kg

ERM-BF417d available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 MON 863 x MON 810 maize content 98,5 -2,0; +2,4 g/kg

ERM-BF418a available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 1507 maize content < 0,5 g/kg

Food/Agriculture and related matrix materials certified for composition

GM materials

ERM-BF418b available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 1507 maize 1 -0,2 / +0,6 g/kg

ERM-BF418c available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 1507 maize 9,9 -0,6; +0,8 g/kg

ERM-BF418d available from IRMM
Matrix: Maize
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 1507 maize 98,6 -1,7; +2,0 g/kg

ERM-BF419a available from IRMM
Matrix: Sugar beet
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 H7-1 sugar beet 0 0 g/kg

ERM-BF419b available from IRMM
Matrix: Sugar beet
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 H7-1 sugar beet 1000 0 g/kg

ERM-BF420a available from IRMM
Matrix: Maize seed powder
Form: Powder **unit size:** 1 g
 Event 3272 maize Mass fraction genetically modified organisms
 Event 3272 maize <1,3 g/kg

ERM-BF420b available from IRMM
Matrix: Maize seed powder
Form: Powder **unit size:** 1 g
 Event 3272 maize Mass fraction genetically modified organisms
 Event 3272 maize 9,8 ± 1,2 g/kg

GM materials

ERM-BF420c available from IRMM
Matrix: Maize seed powder
Form: Powder **unit size:** 1 g
 Event 3272 maize Mass fraction genetically modified organisms
 Event 3272 maize 98 ± 8 g/kg

ERM-BF421a available from IRMM
Matrix: Potato
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 Number fraction of EH92-527-1 potato 0,0 ± 0 n/a
 Identity Potato without the EH92-5

ERM-BF421b available from IRMM
Matrix: Potato
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 Number fraction of EH92-527-1 potato 100,0 ± 0 n/a
 Identity EH92-527-1 potato

ERM-BF422a available from IRMM
Matrix: Cotton seed
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 Number fraction of 281-24-236 x 3006-210-23 cotton seed <0,5 n/a g/kg

ERM-BF422b available from IRMM
Matrix: Cotton seed
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 Number fraction of 281-24-236 x 3006-210-23 cotton seed >975 n/a g/kg

ERM-BF422c available from IRMM
Matrix: Cotton seed
Form: Powder **unit size:** 1 g
 CRM for the quality assurance of GMO detection methods
 Number fraction of 281-24-236 x 3006-210-23 cotton seed 10,0 ± 1,7 g/kg

Food/Agriculture and related matrix materials certified for composition

GM materials

ERM-BF422d available from IRMM

Matrix: Cotton seed

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

Number fraction of 281-24-236 x 3006-210-23 cotton seed 100 ± 16 g/kg

ERM-BF423a available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

MIR604, < 0,9 g/kg

ERM-BF423b available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

MIR604, 1,0 -0.3 ;+1.0 g/kg

ERM-BF423c available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

MIR604, 9,8 -0.9 ;+1.3 g/kg

ERM-BF423d available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

MIR604, 98,5 -2,6 ;+2,9 g/kg

ERM-BF424a available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

59122 maize, <1,2 n/a g/kg

ERM-BF424b available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

59122 maize, 1.0 0,2 - 1,2 g/kg

GM materials

ERM-BF424c available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

59122 maize, 9.9 0,8 - 1,4 g/kg

ERM-BF424d available from IRMM

Matrix: Maize

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

59122 maize, 98.7 5,8 - 5,9 g/kg

ERM-BF425a available from IRMM

Matrix: Soya

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

356043 soya, <0,5 g/kg

ERM-BF425b available from IRMM

Matrix: Soya

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

356043 soya, 1,0 ± 0,4 g/kg

ERM-BF425c available from IRMM

Matrix: Soya

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

356043 soya, 10,0 ± 1,1 g/kg

ERM-BF425d available from IRMM

Matrix: Soya

Form: Powder **unit size:** 1 g

CRM for the quality assurance of GMO detection methods

356043 soya, 100 ± 9 g/kg

ERM-BF426a available from IRMM

Matrix: Soya seed powder

Form: Powder **unit size:** 1 g

305423 Soya Mass fraction of genetically modified organisms

305423 soya < 0.8 g/kg

Food/Agriculture and related matrix materials certified for composition

GM materials

ERM-BF426b available from IRMM

Matrix: Soya seed powder

Form: Powder **unit size:** 1 g

305423 Soya Mass fraction of genetically modified organisms

305423 soya	5,0	± 0,8	g/kg
-------------	-----	-------	------

ERM-BF426c available from IRMM

Matrix: Soya seed powder

Form: Powder **unit size:** 1 g

305423 Soya Mass fraction of genetically modified organisms

305423 soya	10,0	± 1,0	g/kg
-------------	------	-------	------

ERM-BF426d available from IRMM

Matrix: Soya seed powder

Form: Powder **unit size:** 1 g

305423 Soya Mass fraction of genetically modified organisms

305423 soya	100	± 7	g/kg
-------------	-----	-----	------

Plant/vegetation matter

ERM-BC084a available from LGC

Matrix: Tomato paste

Form: **unit size:** 50 g

Material intended for use in the validation of methods for the determination of tin lead and cadmium in a fruit or vegetable based material.

Total Solids	290 (ind.)		g/kg
Cadmium	0,112	± 0,007	mg/kg
Lead	0,316	± 0,021	mg/kg
Tin	225	± 11	mg/kg

ERM-BC190 available from IRMM

Matrix: Rapeseed

Form: Whole **unit size:** 20 g

Material for validating methods for the determination of glucosinolates and calibration of XRF method according to the ISO procedure.

Glucosinolate, total	23	± 4	mmol/kg
S	4,72	± 0,22	g/kg

Plant/vegetation matter

ERM-BC366 available from IRMM

Matrix: Rapeseed

Form: Whole **unit size:** 20 g

Material for validating methods for the determination of glucosinolates and calibration of XRF method according to the ISO procedure.

Glucosinolate, total	11,9	± 1,3	mmol/kg
S	3,31	± 0,17	g/kg

ERM-BC367 available from IRMM

Matrix: Rapeseed

Form: Whole **unit size:** 20 g

Material for validating methods for the determination of glucosinolates and calibration of XRF method according to the ISO procedure.

S	10,3	± 0,5	g/kg
Glucosinolate, total	99	± 9	mmol/kg

ERM-BC402a available from LGC

Matrix: Potato powder

Form: Powder **unit size:** 110 g

"Material primarily intended for use in the validation of methods of analysis for iodine in foodstuffs. It can also be used for monitoring the performance of a method.

Iodine	1,86	± 0,24	mg/kg
--------	------	--------	-------

ERM-BC514 available from IRMM

Matrix: Haricot beans

Form: Powder **unit size:** 25 g

Materials for proofing the accuracy of dietary fibre determinations according to various standard methods.

Dietary fibre, Englyst (GC)	19,8	± 1,0	g/ 100 g
Dietary fibre, Englyst (colorimetry)	20,1	± 0,6	g/ 100 g
Dietary fibre, Upsala	23,7	± 1,5	g/ 100 g
Dietary fibre, AOAC 1990	25,6	± 0,5	g/ 100 g
Dietary fibre, AOAC 1992 MES-TRIS	25,9	± 1,5	g/ 100 g

Food/Agriculture and related matrix materials certified for composition

Plant/vegetation matter

ERM-BC515 available from IRMM

Matrix: Carrot

Form: Powder **unit size:** 25 g

Materials for proofing the accuracy of dietary fibre determinations according to various standard methods.

Dietary fibre, Englyst (colorimetry)	25,2	± 1,2	g/ 100 g
Dietary fibre, Englyst (GC)	27,1	± 0,6	g/ 100 g
Dietary fibre, AOAC 1992 MES-TRIS	29,5	± 0,4	g/ 100 g
Dietary fibre, Upsala	29,8	± 1,1	g/ 100 g
Dietary fibre, AOAC 1990	31,1	± 0,6	g/ 100 g

ERM-BC516 available from IRMM

Matrix: Apple

Form: Powder **unit size:** 25 g

Materials for proofing the accuracy of dietary fibre determinations according to various standard methods.

Dietary fibre, Englyst (colorimetry)	13,4	± 0,5	g/ 100 g
Dietary fibre, Englyst (GC)	13,7	± 0,5	g/ 100 g
Dietary fibre, AOAC 1992 MES-TRIS	14,9	± 1,0	g/ 100 g
Dietary fibre, Upsala	16,2	± 0,8	g/ 100 g
Dietary fibre, AOAC 1990	16,4	± 0,4	g/ 100 g

ERM-BC517 available from IRMM

Matrix: Full fat soya flour

Form: Powder **unit size:** 25 g

Materials for proofing the accuracy of dietary fibre determinations according to various standard methods.

Dietary fibre, Englyst (GC)	11,9	± 0,7	g/ 100 g
Dietary fibre, Englyst (colorimetry)	12,3	± 0,8	g/ 100 g
Dietary fibre, AOAC 1992 MES-TRIS	12,4	± 2,1	g/ 100 g
Dietary fibre, AOAC 1990	12,6	± 0,5	g/ 100 g
Dietary fibre, Upsala	12,8	± 0,9	g/ 100 g

ERM-BC716 available from IRMM

Matrix: Maize

Form: Ground **unit size:** 60 g

Material for method performance control and validation

Zearalenone	< 5	µg/kg
-------------	-----	-------

Plant/vegetation matter

ERM-BC717 available from IRMM

Matrix: Maize

Form: Ground **unit size:** 60 g

Material for method performance control and validation

Zearalenone	83	± 9	µg/kg
-------------	----	-----	-------

Potable water and beverages

ERM-BA005 available from LGC

Matrix: Lager

Form: Liquid **unit size:** 330 mL

% ABV (alcohol by volume). Material for analytical quality control and method validation.

Alcoholic strength	5,07	± 0,03	% ABV
--------------------	------	--------	-------

ERM-BA006a available from LGC

Matrix: Brandy

Form: Liquid **unit size:** 50 mL

% ABV (alcohol by volume). Material for analytical quality control and method validation.

Actual alcoholic strength	37,83	± 0,05	% ABV
Actual alcoholic strength	40,12	+0,009 / -0,11%	ABV
Apparent density in air of the obscured spirit	950,38	± 0,07	kg/m ³

Processed food and foodstuffs not covered above

ERM-BD011 available from LGC

Matrix: Orange juice

Form: Solution **unit size:** 3 mL

A solution to enable analysts to carry out accurate, traceable calibration of analytical instrumentation used to measure the sucrose content of fruit juices

Degrees Brix	1,26	± 0,08
Refractive Index	1,3348	± 0,0002

ERM-BD012 available from LGC

Matrix: Orange juice

Form: Solution **unit size:** 3 mL

A solution to enable analysts to carry out accurate, traceable calibration of analytical instrumentation used to measure the sucrose content of fruit juices

Refractive Index	1,3521	± 0,0002
Degrees Brix	12,72	± 0,08

Food/Agriculture and related matrix materials certified for composition

Processed food and foodstuffs not covered above

ERM-BD013 available from LGC

Matrix: Orange juice

Form: Solution **unit size:** 3 mL

A solution to enable analysts to carry out accurate, traceable calibration of analytical instrumentation used to measure the sucrose content of fruit juices

Refractive Index 1,3673 ± 0,0002

Degrees Brix 22,07 ± 0,08

ERM-BD014 available from LGC

Matrix: Orange juice

Form: Solution **unit size:** 3 mL

A solution to enable analysts to carry out accurate, traceable calibration of analytical instrumentation used to measure the sucrose content of fruit juices

Refractive Index 1,432 ± 0,0005

Degrees Brix 55,55 ± 0,19

ERM-BD015 available from LGC

Matrix: Orange juice

Form: Solution **unit size:** 3 mL

A solution to enable analysts to carry out accurate, traceable calibration of analytical instrumentation used to measure the sucrose content of fruit juices

Refractive Index 1,4529 ± 0,0006

Degrees Brix 64,73 ± 0,22

ERM-BD272 available from BAM

Matrix: Crispbread

Form: Solid **unit size:** 68 g

Acrylamide in crispbread. Intended for analytical quality control and method validation.

Acrylamide mass content 0,98 ± 0,09 mg/kg

ERM-BD273 available from IRMM

Matrix: Toasted bread

Form: Powder **unit size:** 30 g

Method validation and quality control processes

Acrylamide 425 ± 29 ng/g

ERM-BD282 available from IRMM

Matrix: Whole milk powder

Form: Powder **unit size:** 30 g

Material for demonstration of method performance for the determination of aflatoxin M1 in mil powder.

Aflatoxin M1 < 0,02 µg/kg

Processed food and foodstuffs not covered above

ERM-BD283 available from IRMM

Matrix: Whole milk powder

Form: Powder **unit size:** 30 g

Material for demonstration of method performance for the determination of aflatoxin M1 in mil powder.

Aflatoxin M2 0,111 ± 0,018 µg/kg

ERM-BD284 available from IRMM

Matrix: Whole milk powder

Form: Powder **unit size:** 30 g

Material for demonstration of method performance for the determination of aflatoxin M1 in mil powder.

Aflatoxin M3 0,44 ± 0,06 µg/kg

ERM-BD518 available from IRMM

Matrix: Breakfast cereal

Form: Powder **unit size:** 25 g

Materials for proofing the accuracy of dietary fibre determinations according to various standards

Dietary fibre, Englyst (GC) 24,1 ± 0,8 g/ 100 g

Dietary fibre, Englyst (colorimetry) 25 ± 1,1 g/ 100 g

Dietary fibre, Upsala 27,6 ± 1,8 g/ 100 g

Dietary fibre, AOAC 1990 30,2 ± 0,8 g/ 100 g

Dietary fibre, AOAC 1992 MES-TRIS 30,5 ± 0,6 g/ 100 g

Health-related matrix materials certified for composition

Human body fluids: serum, urine, etc

ERM-DA192 available from IRMM

Matrix: Human serum

Form: Powder **unit size:** 1,25 mL when reconstituted

Lyophilised serum for controlling and optimising the performance of cortisol assays.

Cortisol	273	± 6	nmol/L
Cortisol	98,8	± 2,0	µg/L

ERM-DA193 available from IRMM

Matrix: Human serum

Form: Powder **unit size:** 1,25 mL when reconstituted

Lyophilised serum for controlling and optimising the performance of cortisol assays.

Cortisol	277	± 5	µg/L
Cortisol	763	± 14	nmol/L

ERM-DA250a available from LGC

Matrix: Human serum

Form: Liquid **unit size:** 1 mL

Creatinine and electrolytes (Ca, Mg, Li, K, Na) in frozen human serum. The material is intended for use in the validation and ongoing monitoring of analytical methods for the determination of creatinine and electrolytes in human blood samples. This material has been produced and certified according to the requirements of ISO Guide 34.

Calcium	123	± 5	mg/kg
Potassium	277	± 13	mg/kg
Sodium	3370	± 100	mg/kg
Creatinine	39	± 2	mg/kg
Magnesium	47	± 3	mg/kg
Lithium	6,6	± 0,4	mg/kg

ERM-DA251a available from LGC

Matrix: Human serum

Form: Liquid **unit size:** 1 mL

Creatinine and electrolytes (Ca, Mg, Li, K, Na) in frozen human serum. The material is intended for use in the validation and ongoing monitoring of analytical methods for the determination of creatinine and electrolytes in human blood samples. This material has been produced and certified according to the requirements of ISO Guide 34.

Potassium	136	± 6	mg/kg
Magnesium	19	± 3	mg/kg
Creatinine	22	± 2	mg/kg
Sodium	2740	± 120	mg/kg
Lithium	4,5	± 0,4	mg/kg
Calcium	71	± 3	mg/kg

Human body fluids: serum, urine, etc

ERM-DA252a available from LGC

Matrix: Human serum

Form: Liquid **unit size:** 1 mL

Creatinine in frozen human serum (low level - 3ppm). The material is intended for use in the validation and ongoing monitoring of analytical methods for the determination of creatinine in human blood samples. This material has been produced and certified according to the requirements of ISO Guide 34.

Lithium	0,19 (ind.)		mmol/L
Magnesium	0,34 (ind.)		mmol/L
Calcium	1,5 (ind.)		mmol/L
Potassium	1,7 (ind.)		mmol/L
Sodium	106 (ind.)		mg/kg
Creatinine	3,1	± 0,2	mg/kg

ERM-DA253a available from LGC

Matrix: Human serum

Form: Liquid **unit size:** 1 mL

Creatinine in frozen human serum (high level - 50 ppm). The material is intended for use in the validation and ongoing monitoring of analytical methods for the determination of creatinine in human blood samples. This material has been produced and certified according to the requirements of ISO Guide 34.

Lithium	1,2 (ind.)		mmol/L
Magnesium	1,5 (ind.)		mmol/L
Sodium	145 (ind.)		mg/kg
Calcium	2,5 (ind.)		mmol/L
Potassium	6,2 (ind.)		mmol/L
Creatinine	50	± 2	mg/kg

ERM-DA345a available from LGC

Matrix: Human serum

Form: Frozen liquid **unit size:** 0.8 mL

Certified reference material for male level testosterone in frozen human serum, for use in clinical analysis

Testosterone	18,9 (ind.)	± 0.7	nmol/L
Testosterone	5,58	± 0.20	µg/kg

ERM-DA346a available from LGC

Matrix: Human serum

Form: Frozen liquid **unit size:** 0.8 mL

Certified reference material for female level testosterone in frozen human serum, for use in clinical analysis

Testosterone	0,86 (ind.)	± 0.12	nmol/L
Testosterone	0,25	± 0.04	µg/kg

Health-related matrix materials certified for composition

Human body fluids: serum, urine, etc

ERM-DA347 available from IRMM

Matrix: Human serum

Form: Powder **unit size:** 1 mL when reconstituted

Lyophilised serum for controlling and optimising the performance of progesteron assays.

Progesterone	10,13	± 0,21	nmol/L
Progesterone	3,19	± 0,07	µg/L

Human body fluids: serum, urine, etc

ERM-DA451 available from IRMM

Matrix: Human serum

Form: Fresh frozen **unit size:** 34 x 1 mL

Fresh sera intended for the evaluation/verification of in vitro test systems for serum cortisol by method comparison with the ID-GC/MS method. Each serum is certified for its cortisol content.

Serum 30	114	± 5	nmol/L
Serum 18	146	± 6	nmol/L
Serum 04	152	± 6	nmol/L
Serum 08	163	± 7	nmol/L
Serum 19	166	± 7	nmol/L
Serum 22	180	± 7	nmol/L
Serum 16	211	± 8	nmol/L
Serum 26	215	± 9	nmol/L
Serum 10	230	± 9	nmol/L
Serum 15	246	± 10	nmol/L
Serum 12	261	± 10	nmol/L
Serum 33	264	± 10	nmol/L
Serum 29	265	± 11	nmol/L
Serum 06	278	± 11	nmol/L
Serum 09	287	± 11	nmol/L
Serum 03	288	± 11	nmol/L
Serum 28	299	± 12	nmol/L
Serum 25	315	± 12	nmol/L
Serum 05	329	± 13	nmol/L
Serum 11	334	± 13	nmol/L
Serum 01	361	± 14	nmol/L
Serum 17	366	± 14	nmol/L
Serum 24	384	± 15	nmol/L
Serum 23	387	± 15	nmol/L
Serum 34	390	± 15	nmol/L
Serum 13	430	± 17	nmol/L
Serum 02	432	± 17	nmol/L
Serum 27	497	± 19	nmol/L
Serum 07	515	± 20	nmol/L
Serum 32	623	± 24	nmol/L
Serum 14	626	± 24	nmol/L
Serum 31	764	± 29	nmol/L
Serum 20	83	± 4	nmol/L
Serum 21	89	± 4	nmol/L

Health-related matrix materials certified for composition

Human body fluids: serum, urine, etc

ERM-DA470k available from IRMM

Matrix: Human serum

Form: Powder **unit size:** 1 mL when reconstituted

The material can be used for calibration of immunochemical tests and for testing method performance

Complement 4	0,162	± 0,007	g/L
Transthyretin	0,220	± 0,018	g/L
alpha1-acid glycoprotein	0,617	± 0,013	g/L
Immunoglobulin M	0,723	± 0,027	g/L
Haptoglobin	0,889	± 0,021	g/L
Complement 3c	1,00	± 0,04	g/L
alpha1-antitrypsin	1,12	± 0,03	g/L
alpha2-macroglobulin	1,43	± 0,06	g/L
Immunoglobulin A	1,80	± 0,05	g/L
Transferrin	2,36	± 0,08	g/L
Albumin	37,2	± 1,2	g/L
Immunoglobulin G	9,17	± 0,18	g/L

Medicinal plants

ERM-DC020a available from LGC

Matrix: Plant root powder

Form: Powder **unit size:** 5 g

Certified reference material for analysis of kavain and identification of other kavalactones in herbal root powders.

Trans-5,6-Dihydro-4-methoxy-6-(2-phenylethenyl)-2H-pyran-2-one	12,9	± 2.0	g/kg
--	------	-------	------

Industrial and engineering materials certified for composition

Fuels, coal, diesel

ERM-EF104 available from IRMM

Matrix: Gas oil

Form: Solution **unit size:** 8 mL

Material for check method performance in connection with Directive 94/62/EC (Packaging Directive).

S	1,019	± 0,019	g/kg
---	-------	---------	------

ERM-EF211 available from IRMM

Matrix: Petrol

Form: Liquid **unit size:** 19 mL

Petrol certified for its S mass fraction. The material is intended assure the correct implementation of one's own or standardised analytical method in connection with the legislation for S in petrol.

S	48,8	± 1,7	mg/kg
---	------	-------	-------

ERM-EF212a available from LGC

Matrix: Petrol

Form: Liquid **unit size:** 19 mL

Petrol certified for its S mass fraction. The material is intended assure the correct implementation of one's own or standardised analytical method in connection with the legislation for S in petrol.

S	20,2	± 1,1	mg/kg
---	------	-------	-------

ERM-EF213 available from BAM

Matrix: Petrol

Form: Liquid **unit size:** 19 mL

Petrol certified for its S mass fraction. The material is intended assure the correct implementation of one's own or standardised analytical method in connection with the legislation for S in petrol.

S	9,1	± 0,8	mg/kg
---	-----	-------	-------

ERM-EF317 available from IRMM

Matrix: Gas oil

Form: Liquid **unit size:** 20 mL

The main purpose of the material is to assess method performance, i.e. for checking accuracy of analytical results. As any reference material, it can also be used for control charts or validation studies.

SY124 content	0,117 (ind.)	± 0,015	mg/L
SY124 content	0,141	± 0,018	mg/kg

Fuels, coal, diesel

ERM-EF318 available from IRMM

Matrix: Gas oil

Form: Liquid **unit size:** 20 mL

The main purpose of the material is to assess method performance, i.e. for checking accuracy of analytical results. As any reference material, it can also be used for control charts or validation studies.

SY124 content	5,84 (ind.)	± 0,28	mg/L
SY124 content	7	± 0,4	mg/kg

ERM-EF671 available from IRMM

Matrix: Gas oil

Form: Liquid **unit size:** 8 mL

Material for check method performance in connection with Directive 94/62/EC (Packaging Directive).

S	0,452	± 0,009	g/kg
---	-------	---------	------

ERM-EF672 available from IRMM

Matrix: Gas oil

Form: Liquid **unit size:** 8 mL

Material for check method performance in connection with Directive 94/62/EC (Packaging Directive).

S	0,203	± 0,006	g/kg
---	-------	---------	------

ERM-EF673a available from LGC

Matrix: Gas oil

Form: Liquid **unit size:** 100 mL

Diesel fuel certified for sulfur at 50 ppm level. The material is intended for use in the development, validation or quality control of analytical methods for the determination of sulfur in diesel. This material has been produced and certified according to the requirements of ISO Guide 34.

S	52,4	± 1,3	mg/kg
---	------	-------	-------

ERM-EF674a available from LGC

Matrix: Gas oil

Form: Liquid **unit size:** 100 mL

Diesel fuel certified for sulfur at 10 ppm level. The material is intended for use in the development, validation or quality control of analytical methods for the determination of sulfur in diesel. This material has been produced and certified according to the requirements of ISO Guide 34.

S	11,0	± 0,9	mg/kg
---	------	-------	-------

Industrial and engineering materials certified for composition

Glasses, ceramics

ERM-ED101 available from IRMM

Matrix: Silicon nitride powder

Form: Powder **unit size:** 50 g

Impurities and beta-phase fraction in silicon nitride.

O	19,10 (ind.)	± 0,07	mass %
C	0,162	± 0,024	mass %
Ca	14,1	± 0,5	mg/kg
N	38,1	± 0,2	mass %
Mg	4,3	± 0,4	mg/kg
W	41,3	± 1,3	mg/kg
Co	43,5	± 0,8	mg/kg
Al	469	± 12	mg/kg
Beta-phase	7,43	± 0,09	mass %
Na	7,59	± 0,27	mg/kg
Fe	79,5	± 1,3	mg/kg

Non-ferrous alloys

ERM-EB101 available from BAM

Matrix: PbCaSnAl

Form: Disc **unit size:** 5 x 3 cm

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Al	0,0257	± 0,0006	%
Ca	0,1436	± 0,0016	%
Sn	0,293	± 0,007	%
Bi	165	± 4	µg/g
Cu	17,3	± 1,7	µg/g
Ag	28,8	± 0,7	µg/g

ERM-EB102 available from BAM

Matrix: PbCaSn

Form: Disc **unit size:** 5 x 3 cm

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Ca	0,0705	± 0,0011	%
Sn	0,895	± 0,011	%
Cu	10,9	± 0,7	µg/g
Al	124	± 4	µg/g
Bi	148	± 5	µg/g
Ag	24,8	± 0,7	µg/g

Non-ferrous alloys

ERM-EB103 available from BAM

Matrix: PbSb1,6

Form: Disc **unit size:** 40 mm diameter, 30 mm thickness

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Te	1,9 (ind.)	± 0,6	mg/kg
S	5,4 (ind.)	± 1,2	mg/kg
As	0,097	± 0,004	%
Sn	0,183	± 0,026	%
Cd	0,20	± 0,08	mg/kg
Sb	1,64	± 0,06	%
Tl	15,2	± 0,7	mg/kg
Bi	158	± 4	mg/kg
Se	180	± 10	mg/kg
Ni	3,02	± 0,27	mg/kg
Ag	66	± 6	mg/kg
Cu	9,7	± 0,9	mg/kg

Industrial and engineering materials certified for composition

Non-ferrous alloys

ERM-EB313 available from BAM

Matrix: AlMg3

Form: Disc **unit size:** 6 x 2,5 cm

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Ni	0,0278	± 0,0006	%
Cu	0,0931	± 0,0014	%
Ti	0,0947	± 0,0014	%
Cr	0,1224	± 0,0012	%
Zn	0,1580	± 0,0015	%
Si	0,363	± 0,007	%
Fe	0,391	± 0,003	%
Mn	0,495	± 0,003	%
Ga	121	± 5	µg/g
Sn	197	± 6	µg/g
V	290	± 6	µg/g
Mg	3,40	± 0,04	%
Zr	359	± 19	µg/g
Na	37,0	± 2,4	µg/g
Hg	4,1	± 0,4	µg/g
Pb	43,3	± 2,8	µg/g
Mo	5,3	± 1,2	µg/g
Be	5,5	± 0,2	µg/g
Ca	5,7	± 0,8	µg/g
Li	6,04	± 0,10	µg/g
Tl	6,4	± 0,4	µg/g
As	7,2	± 0,7	µg/g
Cd	7,4	± 0,4	µg/g
Sb	8,7	± 1,9	µg/g
Bi	95	± 8	µg/g

ERM-EB322 available from IRMM

Matrix: Zinc

Form: Disc **unit size:** 6 x 3 cm

Material for the calibration of optical emission spectrometry.

Pb	15,0	± 0,5	mg/kg
Cd	15,08	± 0,30	mg/kg
Fe	19,1	± 0,8	mg/kg
Tl	5,28	± 0,30	mg/kg
Sn	5,6	± 0,6	mg/kg
Cu	5,89	± 0,15	mg/kg

Non-ferrous alloys

ERM-EB323 available from IRMM

Matrix: Zinc

Form: Disc **unit size:** 6 x 3 cm

Material for the calibration of optical emission spectrometry.

Tl	10,8	± 0,5	mg/kg
Fe	11,3	± 0,7	mg/kg
Sn	18,7	± 0,7	mg/kg
Cu	18,9	± 0,4	mg/kg
Pb	48,6	± 0,9	mg/kg
Cd	6,51	± 0,21	mg/kg

ERM-EB324 available from IRMM

Matrix: Zinc

Form: Disc **unit size:** 6 x 3 cm

Material for the calibration of optical emission spectrometry.

Tl	19,9	± 0,5	mg/kg
Pb	26,1	± 0,5	mg/kg
Cd	48,6	± 1,1	mg/kg
Fe	58,5	± 1,6	mg/kg
Sn	9,8	± 0,5	mg/kg
Cu	9,87	± 0,18	mg/kg

ERM-EB325 available from IRMM

Matrix: Zinc

Form: Disc **unit size:** 6 x 3 cm

Material for the calibration of optical emission spectrometry.

Pb	142	± 9	mg/kg
Tl	36,8	± 1,2	mg/kg
Sn	46,1	± 2,0	mg/kg
Cu	47,5	± 2,0	mg/kg
Fe	56,1	± 3,3	mg/kg
Cd	94,7	± 2,5	mg/kg

Industrial and engineering materials certified for composition

Non-ferrous alloys

ERM-EB374 available from BAM

Matrix: CuSn8

Form: Disc **unit size:** 4 x 3 cm

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Al	<1 (ind.)		µg/g
Cd	<1 (ind.)		µg/g
Co	<1 (ind.)		µg/g
Cr	<1 (ind.)		µg/g
Mg	<1 (ind.)		µg/g
Te	<1 (ind.)		µg/g
Ti	<1 (ind.)		µg/g
Zr	<1 (ind.)		µg/g
Si	<10 (ind.)		µg/g
Se	<2 (ind.)		µg/g
S	13 (ind.)	± 5	µg/g
Bi	2,2 (ind.)	± 1,3	µg/g
As	4,3 (ind.)	± 1,2	µg/g
Sb	6,3 (ind.)	± 1,4	µg/g
P	0,1697	± 0,0023	%
Ag	12,1	± 1,3	µg/g
Ni	32,7	± 1,3	µg/g
Mn	4,3	± 0,3	µg/g
Fe	40	± 4	µg/g
Zn	40,4	± 1,9	µg/g
Sn	7,6	± 0,13	%
Pb	8,3	± 0,9	µg/g
Cu	92,22	± 0,04	%

Non-ferrous alloys

ERM-EB375 available from BAM

Matrix: CuZn39Pb3

Form: Disc **unit size:** 4 x 3 cm

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Ni	0,1053	± 0,0015	%
Fe	0,207	± 0,004	%
Sn	0,2090	± 0,0024	%
Sb	122	± 4	µg/g
Ag	166	± 4	µg/g
Co	196,4	± 2,8	µg/g
Pb	2,90	± 0,03	%
Si	211	± 14	µg/g
Mn	222	± 3	µg/g
As	231	± 4	µg/g
Al	270	± 5	µg/g
Zn	38,02	± 0,08	%
Te	53,8	± 2,4	µg/g
Cu	58,32	± 0,05	%
Bi	68,6	± 2,5	µg/g
Cd	85,9	± 2,1	µg/g

Industrial and engineering materials certified for composition

Non-ferrous alloys

ERM-EB377

available from BAM

Matrix: CuSn6

Form: Disc

unit size: 4 x 3 cm

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Cd	<1 (ind.)		µg/g
Mg	<1 (ind.)		µg/g
Te	<1 (ind.)		µg/g
Ti	<1 (ind.)		µg/g
As	<10 (ind.)		µg/g
P	<10 (ind.)		µg/g
Co	<2 (ind.)		µg/g
Si	134 (ind.)		µg/g
S	6,8 (ind.)	± 0,8	µg/g
Zn	100,6	± 3,0	µg/g
Fe	104,2	± 2,7	µg/g
Ni	107,4	± 1,5	µg/g
Sb	13,0	± 1,3	µg/g
Bi	42,2	± 1,5	µg/g
Pb	44,9	± 2,3	µg/g
Al	45,1	± 1,2	µg/g
Sn	5,92	± 0,13	%
Se	55	± 4	µg/g
Ag	64,4	± 1,1	µg/g
Cr	66,9	± 2,1	µg/g
Mn	92,1	± 2,1	µg/g
Cu	94,04	± 0,05	%

Non-ferrous alloys

ERM-EB378

available from BAM

Matrix: CuSn6

Form: Disc

unit size: 4 x 3 cm

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Al	<1 (ind.)		µg/g
Bi	<1 (ind.)		µg/g
Si	<10 (ind.)		µg/g
Se	<2 (ind.)		µg/g
Mn	0,74 (ind.)	± 0,24	µg/g
Zr	1,70 (ind.)	± 0,09	µg/g
Ti	29,4 (ind.)	± 4	µg/g
Pb	4,2 (ind.)	± 0,7	µg/g
Zn	7,3 (ind.)	± 1,0	µg/g
S	9,1 (ind.)	± 1,9	µg/g
Cd	100,7	± 2,2	µg/g
Ni	18,3	± 0,9	µg/g
Fe	182	± 7	µg/g
Ag	26,6	± 1,3	µg/g
Mg	28,7	± 0,8	µg/g
Cr	311	± 5	µg/g
Sn	5,74	± 0,21	%
P	602	± 23	µg/g
Sb	86,1	± 2,6	µg/g
Co	89	± 5	µg/g
Cu	94,13	± 0,04	%
As	99,5	± 2,5	µg/g

Industrial and engineering materials certified for composition

Non-ferrous alloys

ERM-EB383

available from BAM

Matrix: Pure copper

Form: disc

unit size: 4 x 3 cm

non-ferrous alloy

Si/mass fraction	< 10		mg/kg
Zr/mass fraction	< 9		mg/kg
Se/mass fraction	1,16	± 0,9	mg/kg
Al/mass fraction	2,3	± 0,6	mg/kg
S/mass fraction	2,8	± 0,14	mg/kg
Zn/mass fraction	7,8	± 0,4	mg/kg
Bi/mass fraction	1,02	± 0,09	mg/kg
Cr/mass fraction	1,03	± 0,09	mg/kg
Mn/mass fraction	1,24	± 0,05	mg/kg
Pb/mass fraction	1,31	± 0,20	mg/kg
Co/mass fraction	1,37	± 0,05	mg/kg
Te/mass fraction	1,40	± 0,16	mg/kg
Sb/mass fraction	1,44	± 0,17	mg/kg
Cd/mass fraction	1,48	± 0,015	mg/kg
Ti/mass fraction	1,56	± 0,16	mg/kg
As/mass fraction	1,93	± 0,15	mg/kg
Fe/mass fraction	10,9	± 0,5	mg/kg
Mg/mass fraction	2,37	± 0,29	mg/kg
Ni/mass fraction	3,59	± 0,21	mg/kg
Sn/mass fraction	4,7	± 0,6	mg/kg
Ag/mass fraction	4,70	± 0,20	mg/kg

Non-ferrous alloys

ERM-EB384

available from BAM

Matrix: Pure copper

Form: disc

unit size: 4 x 3 cm

non-ferrous alloy

Zr/mass fraction	< 9		mg/kg
Sn/mass fraction	10,2	± 0,9	mg/kg
Zn/mass fraction	12,7	± 2,1	mg/kg
Ti/mass fraction	2,10	± 0,23	mg/kg
S/mass fraction	4,1	± 1,0	mg/kg
Si/mass fraction	5,0	± 0,7	mg/kg
Ag/mass fraction	10,3	± 0,4	mg/kg
Sb/mass fraction	12,0	± 0,4	mg/kg
Al/mass fraction	13,0	± 0,8	mg/kg
Mg/mass fraction	14,6	± 0,5	mg/kg
Bi/mass fraction	3,34	± 0,22	mg/kg
Co/mass fraction	3,88	± 0,16	mg/kg
Cd/mass fraction	3,95	± 0,09	mg/kg
Fe/mass fraction	32,8	± 1,9	mg/kg
Se/mass fraction	4,24	± 0,19	mg/kg
As/mass fraction	5,0	± 0,4	mg/kg
Ni/mass fraction	5,7	± 0,4	mg/kg
Pb/mass fraction	5,7	± 0,5	mg/kg
Cr/mass fraction	6,53	± 0,21	mg/kg
Mn/mass fraction	6,88	± 0,15	mg/kg
Te/mass fraction	7,0	± 0,5	mg/kg

Industrial and engineering materials certified for composition

Non-ferrous alloys

ERM-EB385

available from BAM

Matrix: Copper

Form: Disc

unit size: 4 x 3 cm

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Zr	<7 (ind.)		µg/g
Si	7,2 (ind.)	± 1,5	µg/g
Te	10,0	± 0,4	µg/g
Mn	10,1	± 0,2	µg/g
Pb	11,3	± 0,5	µg/g
As	11,4	± 0,8	µg/g
Ni	11,9	± 0,8	µg/g
P	12,9	± 1,0	µg/g
Sn	18,0	± 0,9	µg/g
Sb	19,9	± 0,8	µg/g
Ag	28,6	± 0,8	µg/g
Al	28,6	± 2,5	µg/g
Mg	29,1	± 1,3	µg/g
Ti	3,83	± 0,17	µg/g
S	31,3	± 1,5	µg/g
Fe	45,4	± 1,4	µg/g
Cd	5,8	± 0,3	µg/g
Bi	5,81	± 0,17	µg/g
Zn	57,9	± 4,0	µg/g
Co	6,93	± 0,15	µg/g
Se	7,2	± 0,5	µg/g
Cr	9,81	± 0,20	µg/g

Non-ferrous alloys

ERM-EB386

available from BAM

Matrix: Copper

Form: Disc

unit size: 4 x 3 cm

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Si	14,3 (ind.)	± 4,3	µg/g
Zr	8,9 (ind.)	± 1,7	µg/g
Se	11,6	± 0,3	µg/g
Cr	12,4	± 0,7	µg/g
Mn	13,3	± 0,2	µg/g
S	21,9	± 2,1	µg/g
Pb	23,4	± 1,2	µg/g
As	24,2	± 1,0	µg/g
Ni	25,0	± 1,0	µg/g
Sn	28,3	± 0,8	µg/g
Sb	31,2	± 1,1	µg/g
Ti	33,1	± 1,3	µg/g
Mg	36,1	± 1,2	µg/g
Al	36,5	± 2,5	µg/g
Te	38,3	± 0,9	µg/g
Ag	47,4	± 1,2	µg/g
Zn	49,5	± 1,6	µg/g
Co	5,2	± 0,14	µg/g
Fe	64,7	± 1,8	µg/g
P	7,2	± 0,7	µg/g
Cd	7,8	± 0,4	µg/g
Bi	9,6	± 0,5	µg/g

ERM-EB387

available from BAM

Matrix: CuZn20Ni5

Form: Disc

unit size: 4 x 3 cm

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Pb	10,8	± 2,1	µg/g
Zn	19,57	± 0,19	%
Sn	30,1	± 2,8	µg/g
Ni	5,02	± 0,09	%
Fe	617	± 22	µg/g
Cu	75,18	± 0,16	%
Mn	796	± 9	µg/g

Industrial and engineering materials certified for composition

Non-ferrous alloys

ERM-EB388 available from BAM

Matrix: CuAl5Zn5Sn

Form: Disc **unit size:** 4 x 3 cm

Cylindrical samples in block form have been especially designed for spark and X-ray fluorescence spectrometers.

Sn	0,86	± 0,06	%
Fe	303	± 15	µg/g
Zn	4,81	± 0,12	%
Al	4,97	± 0,05	%
Mn	512	± 15	µg/g
Ni	73,6	± 6,9	µg/g
Cu	89,27	± 0,17	%
Pb	9,7	± 2,0	µg/g

ERM-EB389 available from BAM

Matrix: CuNi25

Form: Disc **unit size:** 4 x 3 cm

Non-ferrous alloy

Al/mass fraction	123 (ind.)	± 10	mg/kg
C/mass fraction	216 (ind.)	± 24	mg/kg
B/mass fraction	23 (ind.)	± 6	mg/kg
S/mass fraction	308 (ind.)	± 23	mg/kg
Si/mass fraction	349 (ind.)	± 37	mg/kg
Mg/mass fraction	0.067	± 0.009	%
Zr/mass fraction	0.098	± 0.011	%
Fe/mass fraction	0.107	± 0.006	%
Zn/mass fraction	0.1125	± 0.0026	%
Mn/mass fraction	0.415	± 0.011	%
Cr/mass fraction	153	± 6	mg/kg
Cd/mass fraction	16	± 3	mg/kg
Ni/mass fraction	24.7	± 0.5	%
Sn/mass fraction	262	± 34	mg/kg
Bi/mass fraction	44	± 10	mg/kg
Sb/mass fraction	46	± 5	mg/kg
Ti/mass fraction	660	± 18	mg/kg
Cu/mass fraction	74.3	± 0.5	%
Co/mass fraction	770	± 28	mg/kg
P/mass fraction	93	± 17	mg/kg
Pb/mass fraction	98	± 23	mg/kg

Non-ferrous alloys

ERM-EB503a available from LGC

Matrix: Unused automobile catalyst

Form: Powder **unit size:** 100 g

An unused automobile catalyst certified for concentration of platinum and palladium and with an indicative value for rhodium.

Rhodium	220 (ind.)		mg/kg
Platinum	1880	± 30	mg/kg
Palladium	2780	± 80	mg/kg

ERM-EB504 available from BAM

Matrix: Car catalyst

Form: Powder **unit size:** 250 g

Industrial and engineering materials certified for composition.

Pt/mass fraction	1777	± 15	mg/kg
Pd/mass fraction	279	± 6	mg/kg
Rh/mass fraction	338	± 4	mg/kg

Polymers, plastics

ERM-EC680k available from IRMM

Matrix: Low-density polyethylene

Form: Granulate **unit size:** 100 g

LDPE granulate fortified with inorganic pigments. The materials is intended for method validation and demonstration of analytical proficiency.

Zn	137 (ind.)	± 20	mg/kg
Sn	15,3 (ind.)	± 2,8	mg/kg
Sb	10,1	± 1,6	mg/kg
Cl	102,2	± 3,0	mg/kg
Pb	13,6	± 0,5	mg/kg
Cd	19,6	± 1,4	mg/kg
Cr	20,2	± 1,1	mg/kg
As	4,1	± 0,5	mg/kg
Hg	4,64	± 0,20	mg/kg
S	76	± 4	mg/kg
Br	96	± 4	g/kg

Industrial and engineering materials certified for composition

Polymers, plastics

ERM-EC681 available from IRMM

Matrix: Polyethylene

Form: Granulate **unit size:** 100 g

Material for check method performance in connection with Directive 94/62/EC (Packaging Directive).

Pb	13,8	± 0,7	mg/kg
Cr	17,7	± 0,6	mg/kg
Cd	21,7	± 0,7	mg/kg
As	3,93	± 0,15	mg/kg
Hg	4,50	± 0,15	mg/kg
S	78	± 17	mg/kg
Cl	92,9	± 2,8	mg/kg
Br	98	± 5	mg/kg

ERM-EC681k available from IRMM

Matrix: Low-density polyethylene

Form: Granulate **unit size:** 100 g

LDPE granulate fortified with inorganic pigments. The materials is intended for method validation and demonstration of analytical proficiency.

Zn	1,25 (ind.)	± 0,07	g/kg
Sn	86 (ind.)	± 6	mg/kg
S	0,63	± 0,04	g/kg
Br	0,77	± 0,04	g/kg
Cl	0,80	± 0,05	g/kg
Cr	100	± 5	mg/kg
Cd	137	± 4	mg/kg
Hg	23,7	± 0,8	mg/kg
As	29,1	± 1,8	mg/kg
Pb	98	± 6	mg/kg
Sb	99	± 6	mg/kg

Semiconductors

ERM-EG001 available from BAM/IRMM

Matrix: Silicon

Form: Piece **unit size:** 1 piece

Antimony implanted silicon

Area density of the sum Si, O and Sb atoms in oxide layer	5,9 (ind.)	± 0,7	atoms/10 cm ²
Area density of the sum of Si and Sb in the layer corresponding to the width of the Sb distribution (full width at half maximum)	6,5 (ind.)	± 0,8	atoms/10 cm ²
Area density of the sum of Si, O and Sb in the layer corresponding to the projected range of Sb distribution	9,9 (ind.)	± 1,1	atoms/10 cm ²
n(121Sb)/n(123Sb)	1,435	± 0,006	mol/mol
Sb	4,81	± 0,06	atoms/10 cm ²

Materials certified for physical properties

Mechanical properties (e.g hardness, impact toughness, viscosity)

ERM-FA001	available from BAM		
Matrix: Polystyrene			
Form: Granulate	unit size: 1 g		
Polymer			
Polystyrene/viscosity	42,37	± 0,83	mL/g
Polystyrene/molar mass	87600	± 2245	g/mol

ERM-FA002	available from BAM		
Matrix: Polystyrene			
Form: Granulate	unit size: 1 g		
Polymer			
Polystyrene/molar mass	205600	± 3075	g/mol
Polystyrene/viscosity	68,38	± 0,79	mL/g

ERM-FA003	available from BAM		
Matrix: Polymethylmethacrylate			
Form: Powder	unit size: 1 g		
Polymer			
Polymethylmethacrylate/molar mass	107050	± 2500	g/mol
Polymethylmethacrylate/viscosity	31,48	± 1,21	mL/g

ERM-FA004	available from BAM		
Matrix: Polyethyleneoxide			
Form: Powder	unit size: 1 g		
Polymer			
Polyethyleneoxide/viscosity	14,28	± 0,54	mL/g
Polyethyleneoxide/molar mass	6065	± 90	g/mol

ERM-FA005	available from BAM		
Matrix: Polystyrene			
Form: Granulate	unit size: 1 g		
Polymer			
Polystyrene/viscosity	104,28	± 2,3	mL/g
Polystyrene/molar mass	349800	± 9700	g/mol

ERM-FA006	available from BAM		
Matrix: Polymethylmethacrylate			
Form: Powder	unit size: 1 g		
Polymer			
Polymethylmethacrylate/molar mass	365500	± 10800	g/mol
Polymethylmethacrylate/viscosity	90,63	± 1,05	mL/g

Mechanical properties (e.g hardness, impact toughness, viscosity)

ERM-FA007	available from BAM		
Matrix: Polymethylmethacrylate			
Form: Powder	unit size: 1 g		
Polymer			
Polymethylmethacrylate/molar mass	360200	± 9800	g/mol
Polymethylmethacrylate/viscosity	84,80	± 1,82	mL/g

ERM-FA008	available from BAM		
Matrix: Polyethyleneoxide			
Form: Powder	unit size: 1 g		
Polymer			
Polyethyleneoxide/molar mass	11400	± 150	g/mol
Polyethyleneoxide/viscosity	20,91	± 1,12	mL/g

ERM-FA013az	available from IRMM		
Matrix: Charpy specimens for 30 J			
Form: Set of five bars	unit size: Set of five bars		
Material for instrument qualification according to EN 10045-2			
Impact toughness	27,2 (nominal)	± 0,9	J

ERM-FA014o	available from IRMM		
Matrix: Charpy specimens for 60 J			
Form: Set of five bars	unit size: Set of five bars		
Material for instrument qualification according to EN 10045-2			
Impact toughness	58,7 (nominal)	± 1,5	J

ERM-FA014p	available from IRMM		
Matrix: Charpy specimens for 60 J			
Form: Set of five bars	unit size: Set of five bars		
Material for instrument qualification according to EN 10045-2			
Impact toughness	66,6 (nominal)	± 1,6	J

ERM-FA015u	available from IRMM		
Matrix: Charpy specimens for 60 J			
Form: Set of five bars	unit size: Set of five bars		
Material for instrument qualification according to EN 10045-2			
Impact toughness	79,8 (nominal)	± 2,4	J

Materials certified for physical properties

Mechanical properties (e.g hardness, impact toughness, viscosity)

ERM-FA016av available from IRMM

Matrix: Charpy specimens for 120 J

Form: Set of five bars **unit size:** Set of five bars

Material for instrument qualification according to EN 10045-2

Impact toughness 131 (nominal) ± 3,6 J

ERM-FA016aw available from IRMM

Matrix: Charpy specimens for 120 J

Form: Set of five bars **unit size:** Set of five bars

Material for instrument qualification according to EN 10045-2

Impact toughness 125,7 (nominal) ± 4,0 J

ERM-FA016az available from IRMM

Matrix: Charpy specimens for 120 J

Form: Set of five bars **unit size:** Set of five bars

Material for instrument qualification according to EN 10045-2

Impact toughness 121,6 (nominal) ± 4,3 J

ERM-FA415 available from IRMM

Matrix: Charpy specimens for 160 J

Form: Set of five bars **unit size:** Set of five bars

Material for instrument qualification according to EN 10045-2

Impact toughness 160 (nominal) J

Morphological properties (e.g Particle size, surface area)

ERM-FD107 available from BAM

Matrix: Zeolite

Form: Pellets **unit size:** 10 g

Intended for calibration and checking of instruments for the determination of the specific surface area, the specific pore volume, and the pore radius by means of the gas adsorption method.

Specific micropore volume 0,217 ± 0,004 cm³/g

Median pore width 0,86 ± 0,03 nm

Morphological properties (e.g Particle size, surface area)

ERM-FD120 available from BAM

Matrix: Alumina

Form: Beads **unit size:** 15 g

Intended for the calibration and checking of porosimeters by means of the whole pressure volume curves of the Hg intrusion method.

Pressure-volume curve (mercury intrusion curve) Null (ind.)

between 0.1 MPa and 400 MPa

Diameter-volume curve (cumulative pore volume curve) Null (ind.)

between 3.7 nm and 14708 nm

Mean pore diameter d₅₀ 228,0 ± 5,9 nm

Most frequent pore diameter d_{p,m} 232,2 ± 8,8 nm

Pore volume at 100 MPa 545,0 ± 12,2 mm³/g

Pore volume at 195 MPa 546,7 ± 12,7 mm³/g

Pore volume at 200 MPa 546,8 ± 12,7 mm³/g

Pore volume at 395 MPa 548,1 ± 13,1 mm³/g

ERM-FD121 available from BAM

Matrix: Glass

Form: Beads **unit size:** 15 g

Intended for the calibration and checking of porosimeters by means of the whole pressure volume curves of the Hg intrusion method.

Pressure-volume curve (mercury intrusion curve) Null (ind.)

between 0.1 MPa and 400 Mpa

Diameter-volume curve (cumulative pore volume curve) Null (ind.)

between 3.7 nm and 14708 nm

Mean pore diameter d₅₀ 15,1 ± 0,2 nm

Most frequent pore diameter d_{p,m} 15,3 ± 0,2 nm

Pore volume at 100 MPa 621,8 ± 12,9 mm³/g

Pore volume at 200 MPa 621,9 ± 12,9 mm³/g

Pore volume at 195 MPa 621,9 ± 12,9 mm³/g

Pore volume at 395 MPa 624,6 ± 13,4 mm³/g

Materials certified for physical properties

Morphological properties (e.g. Particle size, surface area)

ERM-FD122	available from BAM		
Matrix: Glass			
Form: Beads	unit size: 10 g		
Intended for the calibration and checking of porosimeters by means of the whole pressure volume curves of the Hg intrusion method.			
Pressure-volume curve (mercury intrusion curve) between 0.1 MPa and 400 MPa	Null (ind.)		
Diameter-volume curve (cumulative pore volume curve) between 3.7 nm and 14708 nm	Null (ind.)		
Mean pore diameter d50	139,0	± 3,7	nm
Most frequent pore diameter dp,m	140,2	± 3,9	nm
Pore volume at 100 MPa	919,7	± 16,8	mm ³ /g
Pore volume at 195 MPa	922,5	± 17,5	mm ³ /g
Pore volume at 200 MPa	922,6	± 17,5	mm ³ /g
Pore volume at 395 MPa	924,4	± 17,2	mm ³ /g

ERM-FD123	available from BAM		
Matrix: Alpha-alumina ceramics			
Form: Tubes	unit size: 6 pieces		
Material intended for the calibration and checking of porosimeters by means of the whole pressure volume curves of the Hg intrusion method.			
Pressure-volume curve between 0.28-1.41 MPa	Null (ind.)		
Pressure p50	0,483	± 0,024	MPa
Diameter d50	3,05	± 0,16	nm
Specific pore volume VP,1.4MPa at 1.4 MPa	99,5	± 3,5	mm ³ /g

Optical properties (e.g. Wavelength and absorbance materials)

ERM-FB010	available from LGC		
Matrix: Holmium/neodymium oxides solution			
Form: Solution	unit size: 1 cuvette		
UV/visible wavelength location of 16 peaks in the spectral range 219 to 865 nm at three spectral bandwidths (0.5, 1 and 2 nm)			

Optical properties (e.g. Wavelength and absorbance materials)

ERM-FB011	available from LGC		
Matrix: Sodium nitrate/cobalt chloride/nickel chloride solution			
Form: Solution	unit size: 4 cuvettes		
UV-visible absorbance at four wavelengths (299, 395, 512.5 and 719 nm) at a 1 nm bandwidth			

ERM-FB012	available from LGC		
Matrix: Polystyrene in hexane			
Form: Solution	unit size: 5 x 1 mL		
IR wavelength positions of positions of four peaks (3026, 1601.1, 1028.8 and 698 cm ⁻¹) at 1nm bandwidth			
True peak position	1028,8	± 0,4	cm ⁻¹
True peak position	1601,1	± 0,4	cm ⁻¹
True peak position	3026,0	± 0,4	cm ⁻¹
True peak position	698,0	± 0,4	cm ⁻¹

ERM-FB020	available from LGC		
Matrix: Holmium/neodymium oxides solution (for HPLC calibr)			
Form: Solution	unit size: 2 x 3 mL		
UV/visible wavelength location of 7 peaks in the spectral range 241 to 797 nm at four spectral bandwidths (1, 4, 7 and 10 nm)			

ERM-FB021	available from LGC		
Matrix: Sodium nitrate/cobalt chloride/nickel chloride solution			
Form: Solution	unit size: 8 x 3 mL		
UV/visible absorbance for four wavelengths (299, 395, 512 and 719 nm) at four bandwidths (1,4, 7 and 10 nm)			

Thermal properties (e.g. thermal conductivity, calorific value)

ERM-FC032	available from LGC		
Matrix: n-nonane			
Form: Liquid	unit size: 120 mL		
This material is primarily intended for checking the performance of closed cup flash point apparatus.			
Flash Point	32,5	± 0,5	C

ERM-FC033	available from LGC		
Matrix: n-decane			
Form: Liquid	unit size: 120 mL		
This material is primarily intended for checking the performance of closed cup flash point apparatus.			
Flash Point	50,0	± 0,9	C

Non-matrix -materials certified for purity and concentration, activity

Organic macromolecules

ERM-AD148 available from IRMM

Matrix: Purified material

Form: Powder **unit size:** 2,2 g when reconstituted

The material was calibrated against the WHO reference materials and can be used to calibrate any batch of thromboplastin used for the determination of the coagulation time of blood plasma.

Thromboplastin	1,011	± 0,015	slope
----------------	-------	---------	-------

ERM-AD149 available from IRMM

Matrix: Purified material

Form: Powder **unit size:** 0.5 mL when reconstituted

The material was calibrated against the WHO reference materials and can be used to calibrate any batch of thromboplastin used for the determination of the coagulation time of blood plasma.

Thromboplastin	1,257	± 0,013	slope
----------------	-------	---------	-------

ERM-AD413 available from IRMM

Matrix: Pure materials and synthetic mixtures

Form: Frozen solution **unit size:** 0.5 mL

The CRM is intended to be used for the calibration of the method ISO 21570:2005(E) D 2 for the quantification of the MON 810 event.

Plasmid DNA fragments of MON 810 maize, ratio between 2 fragments in plasmid	1,00 (ind.)	± 0,06	
--	-------------	--------	--

Plasmid DNA fragments of MON 810 maize, ratio between 2 fragments in plasmid	1,04 (ind.)	± 0,06	
--	-------------	--------	--

Plasmid DNA fragments of MON 810 maize, fragment of 5' plant-P35S junction DNA / plasmid	1	uncertainty negligible	
--	---	------------------------	--

Plasmid DNA fragments of MON 810 maize, fragment of hmg DNA / plasmid	1	uncertainty negligible	
---	---	------------------------	--

Organic macromolecules

ERM-AD452 available from IRMM

Matrix: Lyophilised enzyme

Form: Powder **unit size:** 1 mL when reconstituted

Material to be used to standardise commercial testkits to the IFCC primary reference method.

Gamma-Glutamyltransferase	1,90	± 0,04	µkat/L
Gamma-Glutamyltransferase	114,1	± 2,4	U/L

ERM-AD453 available from IRMM

Matrix: Lyophilised enzyme

Form: Powder **unit size:** 1 mL when reconstituted

Material to be used to standardise commercial testkits to the IFCC primary reference method.

Human lactate dehydrogenase isoenzyme	502	± 7	U/L
Human lactate dehydrogenase isoenzyme	8,37	± 0,12	µkat/L

ERM-AD454 available from IRMM

Matrix: Lyophilised enzyme

Form: Powder **unit size:** 1 mL when reconstituted

Material to be used to standardise commercial testkits to the IFCC primary reference method.

Alanine aminotransferase	186	± 4	U/L
Alanine aminotransferase	3,09	± 0,07	µkat/L

ERM-AD455 available from IRMM

Matrix: Lyophilised enzyme

Form: Powder **unit size:** 1 mL when reconstituted

Material to be used to standardise commercial testkits to the IFCC primary reference method.

Creatine kinase CK-MB	1,68	± 0,07	µkat/L
Creatine kinase CK-MB	101	± 4	U/L

Non-matrix -materials certified for purity and concentration, activity

Solid or liquid inorganic compounds and elements (pure and solutions)

ERM-AC020a available from LGC
Matrix: trans-5,6-Dihydro-4-methoxy-6-(2-phenylethenyl)-2H-
Form: Powder **unit size:** 10 mg
 Kavain certified for purity. The primary use of this material is for the calibration of methods for the determination of kavain in herbal products, foodstuffs and other relevant matrices. This material has been produced and certified according to the requirements of ISO Guide 34.
 Purity 99.8 ± 0,2 mass %

ERM-AC057 available from IRMM
Matrix: Acetonitrile
Form: Solution **unit size:** 4 mL
 Material intended for the calibration of instrument (e.g. external calibration, standard addition). This material can also be used to assess own calibrants.
 Aflatoxin B1 2,97 (ind.) ± 0,09 µg/mL
 Aflatoxin B1 3,79 ± 0,11 µg/g

ERM-AC058 available from IRMM
Matrix: Acetonitrile
Form: Solution **unit size:** 4 mL
 Material intended for the calibration of instrument (e.g. external calibration, standard addition). This material can also be used to assess own calibrants.
 Aflatoxin B2 2,98 (ind.) ± 0,06 µg/mL
 Aflatoxin B2 3,80 ± 0,08 µg/g

ERM-AC059 available from IRMM
Matrix: Acetonitrile
Form: Solution **unit size:** 4 mL
 Material intended for the calibration of instrument (e.g. external calibration, standard addition). This material can also be used to assess own calibrants.
 Aflatoxin G1 2,96 (ind.) ± 0,10 µg/mL
 Aflatoxin G1 3,78 ± 0,13 µg/g

ERM-AC060 available from IRMM
Matrix: Acetonitrile
Form: Solution **unit size:** 4 mL
 Material intended for the calibration of instrument (e.g. external calibration, standard addition). This material can also be used to assess own calibrants.
 Aflatoxin G2 2,98 (ind.) ± 0,06 µg/mL
 Aflatoxin G2 3,80 ± 0,07 µg/g

Solid or liquid inorganic compounds and elements (pure and solutions)

ERM-AC303a available from LGC
Matrix: Leucomalachite Green
Form: Powder **unit size:** 100 mg
 A pure material intended for use as a calibration standard for the determination of leucomalachite green in fish and other relevant matrices.
 Mass fraction 98,8 ± 0,8 mass %

ERM-AC316a available from LGC
Matrix: Solvent yellow 124
Form: Liquid **unit size:** 200 mg
 A pure material intended for use as a calibration standard for the determination of solvent yellow 124 in fuel
 Mass fraction 95 ± 0,05 mass %

ERM-AE042 available from IRMM
Matrix: Nitric acid
Form: Solution **unit size:** 10 mL

244Pu 3,7490E-09 ± 0,0076 E-9 mol/g

ERM-AE101 available from BAM
Matrix: Boric acid solution
Form: Solution **unit size:** 30 mL
 Intended for calibration and validation of ICP-MS procedures for the determination of boron isotope amount ratios.
 w(B) 1000 (ind.) ± 20 mg/kg
 n(10B)/n(11B) 0,28197 ± 0,00040 mol/mol
 M(B) 10,790 ± 0,00024 g/mol
 m(10B)/m(B) 20,411 ± 0,022 mass %
 n(10B)/n(B) 21,995 ± 0,024 %
 n(11B)/n(B) 78,005 ± 0,024 %
 m(11B)/m(B) 79,589 ± 0,022 mass %

ERM-AE102 available from BAM
Matrix: Boric acid solution
Form: Solution **unit size:** 30 mL
 Intended for calibration and validation of ICP-MS procedures for the determination of boron isotope amount ratios.
 w(B) 999 (ind.) ± 20 mg/kg
 n(10B)/n(11B) 0,42485 ± 0,00060 mol/mol
 M(B) 10,712 ± 0,00030 g/mol
 m(10B)/m(B) 27,871 ± 0,028 mass %
 n(10B)/n(B) 29,817 ± 0,030 %
 n(11B)/n(B) 70,183 ± 0,030 %
 m(11B)/m(B) 72 ± 0,028 mass %

Non-matrix -materials certified for purity and concentration, activity

Solid or liquid inorganic compounds and elements (pure and solutions)

ERM-AE103 available from BAM

Matrix: Boric acid solution

Form: Solution **unit size:** 30 mL

Intended for calibration and validation of ICP-MS procedures for the determination of boron isotope amount ratios.

w(B)	1000 (ind.)	± 20	mg/kg
n(10B)/n(11B)	0,9895	± 0,0014	mol/mol
M(B)	10,514	± 0,00034	g/mol
m(10B)/m(B)	47,368	± 0,034	mass %
n(10B)/n(B)	49,737	± 0,034	%
n(11B)/n(B)	50,263	± 0,034	%
m(11B)/m(B)	52,632	± 0,034	mass %

ERM-AE104 available from BAM

Matrix: Boric acid solution

Form: Solution **unit size:** 30 mL

Intended for calibration and validation of ICP-MS procedures for the determination of boron isotope amount ratios.

w(B)	999 (ind.)	± 20	mg/kg
n(10B)/n(11B)	0,45966	± 0,00062	mol/mol
M(B)	10,696	± 0,00029	g/mol
m(10B)/m(B)	29,481	± 0,028	mass %
n(10B)/n(B)	31,491	± 0,029	%
n(11B)/n(B)	68,509	± 0,029	%
m(11B)/m(B)	70,519	± 0,028	mass %

ERM-AE633 available from IRMM

Matrix: Nitric acid

Form: Solution **unit size:** 4 mL

63Cu 5,998E-06 ± 0,036 E-6 mol/g

ERM-AE637 available from IRMM

Matrix: Nitric acid

Form: Solution **unit size:** 4 mL

24Mg 7,9137E-07 ± 0,0030 E-7 mol/g

ERM-AE638 available from IRMM

Matrix: Nitric acid

Form: Solution **unit size:** 4 mL

26Mg 8,574E-07 ± 0,034 E-7 mol/g

Solid or liquid inorganic compounds and elements (pure and solutions)

ERM-AE639 available from IRMM

Matrix: Hydrochloric acid

Form: Solution **unit size:** 5 mL

202Hg 1,1891E-08 ± 0,0050 E-8 mol/g

ERM-AE640 available from IRMM

Matrix: Hydrochloric acid

Form: Solution **unit size:** 5 mL

202Hg 1,471E-08 ± 0,011 E-8 mol/g

ERM-AE641 available from IRMM

Matrix: Water

Form: Solution **unit size:** 4 mL

35Cl 1,8959E-05 ± 0,015 E-6 mol/g

ERM-AE642 available from IRMM

Matrix: Water

Form: Solution **unit size:** 4 mL

37Cl 4,375E-06 ± 0,0026 E-4 mol/g

ERM-AE647 available from IRMM

Matrix: Nitric acid

Form: Solution **unit size:** 4 mL

63Cu 1,34974E-04 ± 0,0073 E-4 mol/g

ERM-AE649 available from IRMM

Matrix: Nitric acid

Form: Solution **unit size:** 5 mL

205Tl 8,3688E-04 ± 0,0027E-4 mol/g

Non-matrix -materials certified for purity and concentration, activity

Solid or liquid inorganic compounds and elements (pure and solutions)

ERM-AE670 available from IRMM

Matrix: Ethanol/water

Form: Solution **unit size:** 5 g

Ethanol/water mixture, liquide (Methyl Hg), CH₃ 202HgCl in 2 % ethanol/water. Isotopic enriched spike for use in calibration in the determination of methylmercury.

Amount content CH ₃ 202HgCl	0,000000171	± 0,061 E-7	mol/g
Amount ratio n(196Hg)/n(202Hg)	0,000018	± 0,000 013	mol/mol
Amount ratio n(198Hg)/n(202Hg)	0,000623	± 0,000 050	mol/mol
Amount ratio n(199Hg)/n(202Hg)	0,001603	± 0,000 096	mol/mol
Amount ratio n(204Hg)/n(202Hg)	0,00260	± 0,000 16	mol/g
Amount ratio n(200Hg)/n(202Hg)	0,005050	± 0,000 22	mol/mol
Amount ratio n(201Hg)/n(202Hg)	0,01335	± 0,000 53	mol/mol

ERM-AE701 available from IRMM

Matrix: Nitric acid

Form: Solution **unit size:** 25 mL

ERM AE701 is a set of calcium isotope mixtures with certified isotope amount ratios.

n(41Ca)/n(40Ca)	1,01140E-06	± 1,011 E-6	mol %
n(41Ca)/n(40Ca)	1,0181E-08	± 1,018 E-8	mol %
n(41Ca)/n(40Ca)	1,0235E-07	± 1,023 E-7	mol %
n(41Ca)/n(40Ca)	1,0479E-09	± 1,047 E-9	mol %
n(41Ca)/n(40Ca)	1,0520E-10	± 1,052 E-10	mol %
n(41Ca)/n(40Ca)	1,0524E-13	± 1,052 E-13	mol %
n(41Ca)/n(40Ca)	1,0549E-12	± 1,054 E-12	mol %
n(41Ca)/n(40Ca)	1,0913E-11	± 1,091 E-11	mol %

Solid or liquid small organic molecules (pure and solutions)

ERM-AC110 available from LGC

Matrix: p,p'-DDE

Form: Crystalline Powder **unit size:** 0.25 g

Primarily intended to enable analysts to carry out accurate, traceable calibration of analytical instrumentation

Purity	99,6	± 0,4	mass %
--------	------	-------	--------

Solid or liquid small organic molecules (pure and solutions)

ERM-AC301 available from LGC

Matrix: Butylated hydroxyanisole (BHA)

Form: Powder **unit size:** 0.5 g

Primarily intended to enable analysts to carry out accurate, traceable calibration of analytical instrumentation

Purity	99,2	± 0,6	mass %
--------	------	-------	--------

ERM-AC302 available from LGC

Matrix: Saccharin

Form: Crystalline solid **unit size:** 0.5 g

Primarily intended to enable analysts to carry out accurate, traceable calibration of analytical instrumentation

Purity	99,6	+ 0,4 / -0,6	mass %
--------	------	--------------	--------

ERM-AC401 available from LGC

Matrix: Aqueous Ethanol - 80mg/100mL

Form: Solution **unit size:** 50 mL

Primarily intended for the calibration of instruments for the determination of ethanol in breath or blood.

Ethanol content	79,9	± 0,6	mg/100m
-----------------	------	-------	---------

ERM-AC401e available from LGC

Matrix: Aqueous Ethanol - 80mg/100mL

Form: Solution **unit size:** 25 mL

Primarily intended for the calibration of instruments for the determination of ethanol in breath or blood.

Ethanol content	79,6	± 0,6	mg/100m
-----------------	------	-------	---------

ERM-AC402 available from LGC

Matrix: Aqueous ethanol - 107mg/100mL

Form: Solution **unit size:** 50 mL

Primarily intended for the calibration of instruments for the determination of ethanol in breath or blood.

Ethanol content	106,9	± 0,6	mg/100m
-----------------	-------	-------	---------

ERM-AC403 available from LGC

Matrix: Aqueous Ethanol - 200mg/100mL

Form: Solution **unit size:** 50 mL

Primarily intended for the calibration of instruments for the determination of ethanol in breath or blood.

Ethanol content	199,5	± 0,9	mg/100m
-----------------	-------	-------	---------

Non-matrix -materials certified for purity and concentration, activity

Solid or liquid small organic molecules (pure and solutions)

ERM-AC404 available from LGC

Matrix: Reference spirit - 5%ABV

Form: Solution **unit size:** 5 x 50 mL

The primary intended use of this material is to validate analytical capability for determining alcoholic strength by densimetry and gas chromatography

Alcoholic Strength	4,97	± 0,03	%ABV
Density in Air	990,04	± 0,04	kg/m3

ERM-AC405 available from LGC

Matrix: Reference spirit - 15%ABV

Form: Solution **unit size:** 5 x 50 mL

The primary intended use of this material is to validate analytical capability for determining alcoholic strength by densimetry and gas chromatography

Alcoholic Strength	14,99	± 0,03	%ABV
Density in Air	977,93	± 0,05	kg/m3

ERM-AC406 available from LGC

Matrix: Reference spirit - 40%ABV

Form: Solution **unit size:** 5 x 50 mL

The primary intended use of this material is to validate analytical capability for determining alcoholic strength by densimetry and gas chromatography

Alcoholic Strength	40,01	± 0,04	%ABV
Density in Air	946,96	± 0,06	kg/m3

ERM-AC407 available from LGC

Matrix: Reference spirit - 70%ABV

Form: Solution **unit size:** 5 x 50 mL

The primary intended use of this material is to validate analytical capability for determining alcoholic strength by densimetry and gas chromatography

Alcoholic Strength	70,03	± 0,03	%ABV
Density in Air	884,43	± 0,07	kg/m3

ERM-AC408 available from LGC

Matrix: Reference spirit - 90%ABV

Form: Solution **unit size:** 5 x 50 mL

The primary intended use of this material is to validate analytical capability for determining alcoholic strength by densimetry and gas chromatography

Density in Air	828,27	± 0,08	kg/m3
Alcoholic Strength	89,95	± 0,03	%ABV

Solid or liquid small organic molecules (pure and solutions)

ERM-AC409a available from LGC

Matrix: Aqueous ethanol - 20mg/100mL

Form: Solution **unit size:** 50 mL

Primarily intended for the calibration of instruments for the determination of ethanol in breath or blood.

Ethanol content	19,9	± 0,6	mg/100m
-----------------	------	-------	---------

ERM-AC699 available from IRMM

Matrix: Acetonitrile

Form: Solution **unit size:** 4 mL

Calibrant

Zearalenone	9,95	± 0,30	µg/mL
-------------	------	--------	-------

ERM-AC802b available from LGC

Matrix: Nicotine

Form: Liquid **unit size:** 0.6 mL

Pure nicotine certified for purity.

Purity	99,7	± 0,3	mass %
--------	------	-------	--------

ERM-AC820 available from LGC

Matrix: PCB77

Form: Crystalline Powder **unit size:** 0.02 g

Primarily intended to enable analysts to carry out accurate, traceable calibration of analytical instrumentation

Purity	99,8	+0,2 / -0,3	mass %
--------	------	-------------	--------

ERM-AC821 available from LGC

Matrix: PCB126

Form: Crystalline Powder **unit size:** 0,02 g

Primarily intended to enable analysts to carry out accurate, traceable calibration of analytical instrumentation

Purity	98,9	± 0,3	mass %
--------	------	-------	--------

ERM-AC822 available from LGC

Matrix: PCB169

Form: Crystalline Powder **unit size:** 0.02 g

Primarily intended to enable analysts to carry out accurate, traceable calibration of analytical instrumentation

Purity	99,4	+0,6 / -1,4	mass %
--------	------	-------------	--------

Non-matrix -materials certified for purity and concentration, activity

*Solid or liquid small organic molecules
(pure and solutions)*

ERM-AC823 available from LGC

Matrix: 2,2,4-trimethylpentane

Form: Liquid **unit size:** 1,2 mL

Intended for methods validation purposes and for checking instrument calibration for the measurement of polychlorinated biphenyls.

2,3,3',4',5,6-hexachlorobiphenyl	689 (ind.)		µg/kg
2,3,3',4',6-pentachlorobiphenyl	690 (ind.)		µg/kg
2,2',3,3',4,4',5-heptachlorobiphenyl	693 (ind.)		µg/kg
2,2',3,4',5,5',6-heptachlorobiphenyl	693 (ind.)		µg/kg
2,2',3,3',4,4',5,5'-octachlorobiphenyl	693 (ind.)		µg/kg
2,2',3,4',5',6-hexachlorobiphenyl	695 (ind.)		µg/kg
2,4',5-trichlorobiphenyl	697 (ind.)		µg/kg
3,3',4,4'-tetrachlorobiphenyl	697 (ind.)		µg/kg
2,2',3,4,4',5'-hexachlorobiphenyl	676	± 30	µg/kg
2,2',4,5,5'-pentachlorobiphenyl	696	± 7	µg/kg
2,4,4'-trichlorobiphenyl	698	± 10	µg/kg
2,2',3,4,4',5,5'-heptachlorobiphenyl	698	± 13	µg/kg
2,2',4,4',5,5'-hexachlorobiphenyl	702	± 8	µg/kg
2,2',5,5'-tetrachlorobiphenyl	705	± 10	µg/kg
2,3',4,4',5-pentachlorobiphenyl	712	± 9	µg/kg