LGC Standards - Newsletter

Food, Environmental and Industrial sectors

Issue 5

Isotopenmarkierte Standards - hergestellt unter ISO Guide 34 und ISO/IEC 17025
LGC Standards ist erfreut, die ersten unter ISO Guide 34 und ISO/IEC 17025 Akkreditierung hergestellten isotopenmarkierten Dioxin- und Furan Standards anbieten zu können. Diese Standards, wie auch die unmarkierten Verbindungen, wurden von Cerilliant Corporation für Cambridge Isotopes Ltd (CIL) hergestellt. Im November 2008 erlangte Cerilliant die ISO Guide 34 und ISO/IEC 17025 Akkreditierung. Falls Sie weitere Informationen über die Produkte oder Akkreditierungzertifikate wünschen, rufen Sie uns bitte an.

Hochreine ^{13}C-markierte PCB-Standards von Cambridge Isotope Laborartories (CIL)
PCB-Standards für die Analytik der mono-ortho substituierten "Dioxin-ähnlichen" PCBs können geringe Konzentrationen anderer PCB Kongenere oder polychlorierter Dibenzo-p-dioxine und Dibenzofurane (PCDD/F) enthalten. Dies kann zu falschen Analysenergebnissen führen. Der führende Hersteller von isotopenmarkierten Standards, die Firma Cambridge Isotope Laboratories (CIL), hat daher neue hochreine PCB Standards hergestellt. Die acht mono-ortho substituierten "Dioxin-ähnlichen“ PCBs (PCBs 105, 114, 118, 123, 156,157, 167, and 189) erfüllen höchsten Qualitätskriterien. Weitere Informationen finden Sie in der Produktauflistung.

Neue Produkte von ULTRA Scientific

- ULTRAgrade ICP/ ICP-MS anorganische Multi-Element Standards, rückführbar auf NIST Referenzmaterialien. Diese Standards werden in größeren Verpackungseinheiten geliefert als vergleichbare Produkte auf dem Markt und sind preislich sehr interessant.
- TOC suitability system kits zur Bestimmung von TOC (Total Organic Carbon). Ein niedriger TOC Gehalt kann die Abwesenheit von potentiell schädlichen organischen Chemikalien in Abwasser oder Wasser, welches in der Produktion eingesetzt wird, anzeigen.
- GC-Testmischungen für die Bestimmung von organischen Restlösungsmitteln in pharmazeutischen Produkten nach der aktuellen Ausgabe der USP 467 (Juli 2008).

Verunreinigung von Reismilch mit Arsen
Die nationale Lebensmittelbehörde in Großbritannien warnt davor, Babies und Kleinkindern zwischen 1 und 4 1/2 Jahren Reisgetränke als Ersatz für Kuhmilch, Muttermilch oder Säuglingsnahrung zu geben. Bereits im Jahr 2007 wurde bei einer Studie der Aberdeen University die Problematik von Arsenverunreinigungen in Reis und Reismilch erkannt. In der neuen Studie wurde bei allen untersuchten 60 Reismilchprodukten eine Verunreinigung mit Arsen festgestellt. Die gefundenen Arsenkonzentrationen lagen unter den aktuell gültigen Grenzwerten und gelten als sicher für Erwachsene. Babies und Kleinkinder sind jedoch einem erhöhten Risiko ausgesetzt, da Sie im Verhältnis zu Ihrer Größe mehr trinken. LGC Standards bietet einige Reis-Referenzmaterialien mit variierenden Arsengehalten an.

LGC Standards

Excellence through measurement

Wir liefern die verschiedensten Referenzmaterialien für Ihren Bedarf
In diesem Newsletter bieten wir eine Reihe von neuen Matrixreferenzmaterialien an, hergestellt von unseren Premium-Lieferanten. Sie finden dort Wasser und Muscheltoxine vom National Resource Canada, verschiedene Böden mit zertifizierten Gehalten an Spurenelementen und organischen Verbindungen. Die Folgecharge für das LGC Referenzmaterial Ethanol/Wasser (ERM-AC405) mit 15% Ethanol ist jetzt verfügbar. Weitere Produkte sind Aflatoxine und mikrobiologische Referenzmaterialien von IRMM sowie Vitamin- und Öl-Referenzmaterialien vom National Institute of Standards and Technology (NIST). Diese und viele weitere nützliche Referenzmaterialien finden Sie in unserem umfangreichen Angebot.

TOYTEST - Die Eignungsprüfung für Spielzeug mit neuen Probenmaterialien
Die Sicherheit von Spielzeug hat oberste Priorität. Spielzeughersteller müssen sicherstellen, dass alle Tests entsprechend der aktuellen Normen durchgeführt werden. TOYTEST ermöglicht den Teilnehmern, eigene analytische Fähigkeiten mit den Leistungen anderer Labore direkt und anonym zu vergleichen. Im Rahmen der kontinuierlichen Erweiterung des Programms bietet LGC Standards in diesem Jahr einige neue Analyten und Matrices an. Die neuen Proben beinhalten Azo-Farbstoffe, Blei in Farbaufstrichen und Phthalate. Weitere Informationen sind auf Anfrage oder im Internet unter www.lgcpt.com erhältlich.

PORTAL setzt neue Maßstäbe in der elektronischen Ergebnisübermittlung
LGC Standards setzt mit

PORTAL - **P**roficiency **O**nline **R**eporting **T**rend **A**na**L**ysis

einen neuen Maßstab in der elektronischen Ergebnisübermittlung. Die Vorteile des Systems liegen in der einheitlichen Plattform, über die sämtliche Ergebnisse aller LGC Eignungsprüfungen übermittelt werden können. Außerdem besteht die Möglichkeit, individuelle statistische Auswertungen durchzuführen wie z. B. eine Trendanalyse der gesamten Labordaten oder eines einzelnen Mitarbeiters. PORTAL ermöglicht weiter die Angabe der Messunsicherheit und kann SI Einheiten automatisch umrechnen. Die Handhabung des Systems ist deutlich einfacher und intuitiver. PORTAL (https://www.lgcpt.com/portal) ist seit dem 27. April 2009 für die ersten drei Eignungsprüfungen verfügbar. Bis Ende Juli 2009 kommen 13 weitere Programme hinzu.

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Isotope labelled standards covered by ISO Guide 34 and ISO/IEC 17025
LGC Standards is delighted to offer the first isotope labelled dioxin and furan standards covered by ISO Guide 34 and ISO/IEC 17025 accreditations. The standards, with their unlabelled counterparts, are manufactured for Cambridge Isotopes Ltd (CIL) by Cerilliant Corporation who added the accreditations of ISO Guide 34 and ISO/IEC 17025 to its arsenal of quality credentials in November 2008. Please contact us for information on the products accredited, accreditation certificates etc.

High purity 13C-labelled PCB standards from Cambridge Isotope Laboratories (CIL)
Existing PCB standards for mono-ortho substituted 'dioxin-like' PCBs can contain low levels of other PCB congeners or polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/F) which affect method detection limits. In response to this issue, CIL, the world leader in the formulation of stable isotope labelled contaminant standards, have produced new high purity PCB standards with extensive quality control specifications for the eight mono-ortho substituted "dioxin-like" PCBs (PCBs 105,114, 118, 123, 156,157, 167, and 189). See the following listing for details.

New releases from Ultra Scientific

- ULTRAgrade ICP/ ICP-MS inorganic multi-element standards, traceable to NIST SRMs. These are supplied in a larger standard size than comparable products on the market, and competitively priced too!
- TOC suitability kits for determining Total Organic Carbon. Low TOC can confirm the asence of potentially harmful organic chemicals in water for manufacture or discharge to the environment
- Test mixtures for GC analysis of residual solvents following the latest revision to US Pharmacopeia Method 467 of July 2008

Arsenic in rice milk contamination
The Food Standards Agency in UK has issued precautionary advice that toddlers and young children between one and 4.5 years old should not have rice drinks as a replacement for cows' milk, breast milk, or infant formula. Following a study from Aberdeen University in 2007, which highlighted problems of arsenic contamination in both rice and rice milk, this new study of 60 rice milk products showed all contained traces of arsenic. Levels detected were below the current legal limit, and deemed safe for adults, however children and toddlers are at greater risk because they drink more milk relative to their size. LGC Standards supplies a number of rice products with varying levels for arsenic.

Variety of reference materials to suit your needs!
In this issue, we also bring you a range of new matrix reference materials releases from many of our premier suppliers. From waters and shellfish toxins from National Resource Canada to various types of soils certified for trace elements and organics. Replacement for Ethanol/water (ERM-AC405) at 15% Ethanol from LGC is now available for sale. Look no further for aflatoxins and microbiological reference materials from IRMM and new vitamin and oil reference materials from National Institute of Standards and Technology. These and many more varied and useful reference materials can be found in our extensive range of products.

Participate in the TOYTEST safety scheme – New trial samples!
Toy safety is paramount, and toy manufacturers must ensure that tests against the current toy standards are carried out competently. LGC Standards' TOYTEST scheme allows laboratories involved in the safety testing of toys to monitor their performance and compare with that of their peers. As part of ongoing improvements to the TOYTEST scheme, we have added a number of trial samples to the scheme for 2009, with samples for the analysis of Azodyes, Total Lead in Paint Coatings and Phthalates. Please ask for details or visit www.lgcpt.com .

PORTAL - Setting new standards in PT reporting
LGC Standards Proficiency Testing (PT) has launched a new reporting software,

PORTAL- **P**roficiency **O**nline **R**eporting **T**rend **A**na**L**ysis.

Key benefits of PORTAL include:

- facility for multiple results submission
- reporting of measurement uncertainty
- automatic unit conversion
- simple, intuitive data entry
- a single system for all the schemes from LGC Standards.

PORTAL (https://www.lgcpt.com/portal) 'went live' on 27 April for three schemes, with a further 13 schemes scheduled to be transferred by the end of July.

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Standards from Cambridge Isotope Laboratories

High purity ^{13}C-labelled PCB standards

CIL QC specifications for high purity PCBs:

Chemical Identity: Unambiguous identity by GC/MS, ^{1}H-NMR, ^{13}C-NMR, and MP determination

Isotopic Enrichment: 99% by GC/MS

Chemical Purity: >98% by GC/MS, GC/ECD, and 1H-NMR

• Native Content: <0.1% by GC/MS SIM

• ^{13}C-non-ortho “dioxin-like” PCBs: <0.05% by GC/ED vs. cal-curve, or HRGC/MS

• 17 toxic (2,3,7,8-) PCDD/Fs: <0.05% for each compound by HRGC/MS

Concentration: 40±2 ug/mL by comparison assay vs. native “Certified Standard”

Uncertainty: conforming to Eurachem/CITAC Guide “Quantifying Uncertainty in Analytical Measurement”

Code	Product	Unit	Price €
CIL-EC-1420-1.2	2,3,3',4,4'-Pentachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #105) 40 µg/mL in Nonane	1.2 mL	401,00
CIL-EC-1420-3	2,3,3',4,4'-Pentachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #105) 40 µg/mL in Nonane	3 mL	929,00
CIL-EC-4902-1.2	2,3,4,4',5-Pentachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #114) 40 µg/mL in Nonane	1.2 mL	426,00
CIL-EC-4902-3	2,3,4,4',5-Pentachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #114) 40 µg/mL in Nonane	3 mL	832,00
CIL-EC-1435-1.2	2,3',4,4',5-Pentachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #118) 40 µg/mL in Nonane	1.2 mL	401,00
CIL-EC-1435-3	2,3',4,4',5-Pentachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #118) 40 µg/mL in Nonane	3 mL	929,00
CIL-EC-4904-1.2	2',3,4,4',5-Pentachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #123) 40 µg/mL in Nonane	1.2 mL	401,00
CIL-EC-4904-3	2',3,4,4',5-Pentachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #123) 40 µg/mL in Nonane	3 mL	832,00
CIL-EC-1422-1.2	2,3,3',4,4',5-Hexachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #156) 40 µg/mL in Nonane	1.2 mL	401,00
CIL-EC-1422-3	2,3,3',4,4',5-Hexachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #156) 40 µg/mL in Nonane	3 mL	929,00
CIL-EC-4051-1.2	2,3,3',4,4',5'-Hexachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #157) 40 µg/mL in Nonane	1.2 mL	426,00
CIL-EC-4051-3	2,3,3',4,4',5'-Hexachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #157) 40 µg/mL in Nonane	3 mL	791,00
CIL-EC-4050-1.2	2,3',4,4',5,5'-Hexachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #167) 40 µg/mL in Nonane	1.2 mL	401,00
CIL-EC-4050-3	2,3',4,4',5,5'-Hexachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC #167) 40 µg/mL in Nonane	3 mL	791,00
CIL-EC-1409-1.2	2,3,3',4,4',5,5-Heptachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC# 189) 40 µg/mL in Nonane	1.2 mL	426,00
CIL-EC-1409-3	2,3,3',4,4',5,5-Heptachlorobiphenyl ($^{13}C_{12}$,99%) (IUPAC# 189) 40 µg/mL in Nonane	3 mL	959,00
CIL-EC-4188	Mono-Ortho PCB Mixture Solvent: Nonane	3 mL	1947,00

Labelled PCBs	IUPAC#	Concentration
2,3,3',4,4'-PentaCB ($^{13}C_{12}$,99%)	105	1.0 µg/mL
2,3,4,4',5-PentaCB ($^{13}C_{12}$,99%)	114	1.0 µg/mL
2,3',4,4',5-PentaCB ($^{13}C_{12}$,99%)	118	1.0 µg/mL
2',3,4,4',5-PentaCB ($^{13}C_{12}$,99%)	123	1.0 µg/mL
2,3,3',4,4',5-HexaCB ($^{13}C_{12}$,99%)	156	1.0 µg/mL
2,3,3',4,4',5'-HexaCB ($^{13}C_{12}$,99%)	157	1.0 µg/mL
2,3',4,4',5,5'-HexaCB ($^{13}C_{12}$,99%)	167	1.0 µg/mL
2,3,3',4,4',5,5'-HeptaCB ($^{13}C_{12}$,99%)	189	1.0 µg/mL

High purity 13C-labelled PCB standards

Code	Product	Unit	Price €
Further CIL products			
CIL-DLM-170-D-1.2	Diethylstilbestrol (cis/trans mix) (ring-3,3',5,5'-diethyl-1,1,1',1'-D_8,98%) 100 µg/mL in Dioxane	1.2 mL	341,00
CIL-ULM-7921-1.2	Diethylstilbestrol (cis/trans mix) (unlabelled) 100 µg/mL in Dichloromethane	1.2 mL	100,00
CIL-DLM-8085-D-1.2	Testosterone (D_5,98%) 100 µg/mL in Dioxane	1.2 mL	394,00
CIL-ULM-8081-D-1.2	Testosterone (unlabelled) 100 µg/mL in Dioxane	1.2 mL	131,00
CIL-DLM-4762-D-1.2	DEET (N,N-Diethyl-m-toluamide) (dimethyl-D6, 98%) 100 µg/mL in Dioxane	1.2 mL	368,00
CIL-ULM-7975-D-1.2	DEET (N,N-Diethyl-m-toluamide) (unlabelled) 100 µg/mL in Dioxane	1.2 mL	100,00
CIL-ULM-8270-1.2	9-Chlorophenanthrene (unlabelled) 50 µg/mL in Toluene	1.2 mL	446,00
CIL-ULM-8365-1.2	9-Nitroanthracene (unlabelled) 50 µg/mL in Toluene	1.2 mL	79,00
CIL-CLM-8370-1.2	Thiabendazole (ring-$^{13}C_6$,99%) 100 µg/mL in Acetonitrile	1.2 mL	428,00
CIL-ULM-8371-1.2	Thiabendazole (unlabelled) 100 µg/mL in Acetonitrile	1.2 mL	103,00
CIL-CLM-8525-1.2	Oxybenzone (phenyl-$^{13}C_6$,99%) 100 µg/mL in Acetonitrile	1.2 mL	446,00
CIL-ULM-8531-1.2	Oxybenzone (unlabelled) 100 µg/mL in Acetonitrile	1.2 mL	131,00
CIL-CNLM-411-1.2	5,5-Diphenylhydantoin (2-13C, 99%; 1,3-15N2, 98%) 100 µg/mL in Methanol	1.2 mL	341,00
CIL-ULM-8533-1.2	5,5-Diphenylhydantoin (unlabelled) 100 µg/mL in Methanol	1.2 mL	100,00
CIL-DLM-3008-1.2	Amitriptyline:HCl ((N,N-dimethyl-D_6,98%) 100 µg/mL in Methanol	1.2 mL	203,00
CIL-ULM-8350-1.2	Amitriptyline:HCl (unlabelled) 100 µg/mL in Methanol	1.2 mL	65,00
CIL-CLM-8569-1.2	Dechlorane Plus Syn® ($^{13}C_{10}$,99%) 100 µg/mL in Nonane	1.2 mL	945,00
CIL-CNLM-4661-10X-1.2	Cyanuric acid (chemical purity: 90%+) (U-$^{13}C_3$,99%; U-$^{15}N_3$,98%+) 1000 µg/mL in Water	1.2 mL	1418,00
CIL-CNLM-8150-10X-1.2	Melamine ($^{13}C_3$,99%; amino-$^{15}N_3$,98%) 1000 µg/mL in Water	1.2 mL	1313,00
CIL-DLM-7150-1.2	Oxydemeton methyl (di-O-methyl-D_6,98%) 100 µg/mL in Acetonitrile	1.2 mL	385,00
CIL-ULM-8579-1.2	Oxydemeton methyl (chemical purity: 95%) (unlabelled) 100 µg/mL in Acetonitrile	1.2 mL	100,00
CIL-DLM-8512-1.2	Imidacloprid (4,4,5,5-D_4,98%) 100 µg/mL in Methanol	1.2 mL	394,00
CIL-ULM-8513-1.2	Imidacloprid (unlabelled) 100 µg/mL in Methanol	1.2 mL	100,00
CIL-ULM-8304-1.2	Propazine (unlabelled) 100 µg/mL in Methanol	1.2 mL	100,00
CIL-ULM-8454-1.2	Phosmet (unlabelled) 100 µg/mL in Acetonitrile	1.2 mL	100,00
CIL-EF-5082-1.2	2,4,6,8-Tetrabromodibenzofuran ($^{13}C_{12}$,99%) 5 µg/mL in Nonane	1.2 mL	1109,00
CIL-EO-5376	2,3,3',4,4',5,6-Heptabromodiphenyl ether ($^{13}C_{12}$,99%) (BDE-190) 50 µg/mL in Nonane	1.2 mL	892,00
CIL-EO-5413	2,2',4,4',6,6'-Hexabromodiphenyl ether (BDE-155) ($^{13}C_{12}$,99%) 50 µg/mL in Nonane	1.2 mL	751,00
CIL-OLM-8283-1.2	Potassium bromate ($^{18}O_3$,98%) 100 µg/mL in Water (90-95% chemical purity)	1.2 mL	428,00
CIL-ULM-8451-1.2	Potassium bromate (unlabelled) 100 µg/mL in Water	1.2 mL	103,00
CIL-PCB-11-CS	3,3'-Dichlorobiphenyl 100 µg/mL in Isooctane	1.2 mL	144,00
CIL-PCB-12-CS	3,4-DIchlorobiphenyl 100 µg/mL in Isooctane	1.2 mL	144,00
CIL-PCB-31-CS	2,4',5-Trichlorobiphenyl 100 µg/mL in Isooctane	1.2 mL	144,00
CIL-PCB-33-CS	2',3,4-Trichlorobiphenyl 100 µg/mL in Isooctane	1.2 mL	144,00
CIL-PCB-35-CS	3,3',4-Trichlorobiphenyl 100 µg/mL in Isooctane	1.2 mL	144,00
CIL-PCB-57-CS	2,3,3',5-Tetrachlorobiphenyl 100 µg/mL in Isooctane	1.2 mL	144,00
CIL-PCB-78-CS	3,3',4,5-Tetrachlorobiphenyl 100 µg/mL in Isooctane	1.2 mL	144,00
CIL-PCB-95-CS	2,2',3,5',6-Pentachlorobiphenyl 100 µg/mL in Isooctane	1.2 mL	144,00
CIL-PCB-162-CS	2,3,3',4',5,5'-Hexachlorobiphenyl 100 µg/mL in Isooctane	1.2 mL	144,00
CIL-PCB-174-CS	2,2',3,3',4,5,6'-Heptachlorobiphenyl 100 µg/mL in Isooctane	1.2 mL	144,00
CIL-PCB-199-CS	2,2',3,3',4,5,6,6'-Octachlorobiphenyl 100 µg/mL in Isooctane	1.2 mL	140,00

Code	Product	Unit	Price €
CIL-EC-5433	Comprehensive Native PCB Mixture (unlabelled)	1.2 mL	1114,00

Solvent: Isooctane

Unlabelled PCBs	IUPAC#	Concentration
2-MonoCB	1	2000 ng/mL
4-MonoCB	3	2000 ng/mL
2,2'-DiCB	4	2000 ng/mL
2,4'-DiCB	8	2000 ng/mL
2,5-DiCB	9	2000 ng/mL
2,6-DiCB	10	2000 ng/mL
3,3'-DiCB	11	2000 ng/mL
3,4-DiCB	12	2000 ng/mL
4,4'-DiCB	15	2000 ng/mL
2,2',5-TriCB	18	1000 ng/mL
2,2',6-TriCB	19	1000 ng/mL
2,4,4'-TriCB	28	1000 ng/mL
2,4',5-TriCB	31	1000 ng/mL
2',3,4-TriCB	33	1000 ng/mL
3,3',4-TriCB	35	1000 ng/mL
3,4,4'-TriCB	37	1000 ng/mL
3,4,5-TriCB	38	1000 ng/mL
2,2',3,5'-TetraCB	44	1000 ng/mL
2,2',4,5'-TetraCB	49	1000 ng/mL
2,2',5,5'-TetraCB	52	1000 ng/mL
2,2',6,6'-TetraCB	54	1000 ng/mL
2,3,3',5-TetraCB	57	1000 ng/mL
2,3',4,4'-TetraCB	66	1000 ng/mL
2,3',4',5-TetraCB	70	1000 ng/mL
2,4,4',5-TetraCB	74	1000 ng/mL
3,3',4,4'-TetraCB	77	1000 ng/mL
3,3',4,5-TetraCB	78	1000 ng/mL
3,3',4,5'-TetraCB	79	1000 ng/mL
3,4,4',5-TetraCB	81	1000 ng/mL
2,2',3,4,5'-PentaCB	87	1000 ng/mL
2,2',3,5',6-PentaCB	95	1000 ng/mL
2,2',4,4',5-PentaCB	99	1000 ng/mL
2,2',4,5,5'-PentaCB	101	1000 ng/mL
2,2',4,6,6'-PentaCB	104	1000 ng/mL
2,3,3',4,4'-PentaCB	105	1000 ng/mL
2,3,3',4',6-PentaCB	110	1000 ng/mL
2,3,3',5,5'-PentaCB	111	1000 ng/mL
2,3,4,4',5-PentaCB	114	1000 ng/mL
2,3',4,4',5-PentaCB	118	1000 ng/mL
2',3,4,4',5-PentaCB	123	1000 ng/mL
3,3',4,4',5-PentaCB	126	1000 ng/mL
2,2',3,4,4',5'-HexaCB	138	1000 ng/mL
2,2',3,4',5',6-HexaCB	149	1000 ng/mL
2,2',4,4',5,5'-HexaCB	153	1000 ng/mL
2,2',4,4',6,6'-HexaCB	155	1000 ng/mL
2,3,3',4,4',5-HexaCB	156	1000 ng/mL
2,3,3',4,4',5'-HexaCB	157	1000 ng/mL
2,3,3',4',5,5'-HexaCB	162	1000 ng/mL
2,3',4,4',5,5'-HexaCB	167	1000 ng/mL
3,3',4,4',5,5'-HexaCB	169	1000 ng/mL
2,2',3,3',4,4',5-HeptaCB	170	1000 ng/mL
2,2',3,3',4,5,6'-HeptaCB	174	1000 ng/mL
2,2',3,3',5,5',6-HeptaCB	178	1000 ng/mL
2,2',3,4,4',5,5'-HeptaCB	180	1000 ng/mL
2,2',3,4',5,5',6-HeptaCB	187	1000 ng/mL
2,2',3,4',5,6,6'-HeptaCB	188	1000 ng/mL
2,3,3',4,4',5,5'-HeptaCB	189	1000 ng/mL
2,2',3,3',4,4',5,5'-OctaCB	194	1000 ng/mL
2,2',3,3',4,4',5,6-OctaCB	195	1000 ng/mL
2,2',3,3',4,5,6,6'-OctaCB	199	1000 ng/mL
2,2',3,3',5,5',6,6'-OctaCB	202	1000 ng/mL
2,2',3,4,4',5,5',6-OctaCB	203	1000 ng/mL
2,3,3',4,4',5,5',6-OctaCB	205	1000 ng/mL
2,2',3,3',4,4',5,5',6-NonaCB	206	1000 ng/mL
2,2',3,3',4,5,5',6,6'-NonaCB	208	1000 ng/mL
DecaCB	209	1000 ng/mL

Code	Product	Unit	Price €
CIL-EC-5434	Fully Resolved Native Mono-Deca PCB Mixture (unlabelled) Solvent: Isooctane	1.2 mL	778,00

Unlabelled PCBs	IUPAC#	Concentration
2-MonoCB	1	2000 ng/mL
4-MonoCB	3	2000 ng/mL
2,4'-DiCB	8	2000 ng/mL
2,5-DiCB	9	2000 ng/mL
2,6-DiCB	10	2000 ng/mL
3,4-DiCB	12	2000 ng/mL
4,4'-DiCB	15	2000 ng/mL
2,2',5-TriCB	18	1000 ng/mL
2,2',6-TriCB	19	1000 ng/mL
2',3,4-TriCB	33	1000 ng/mL
3,3',4-TriCB	35	1000 ng/mL
3,4,4'-TriCB	37	1000 ng/mL
3,4,5-TriCB	38	1000 ng/mL
2,2',3,5'-TetraCB	44	1000 ng/mL
2,2',5,5'-TetraCB	52	1000 ng/mL
2,2',6,6'-TetraCB	54	1000 ng/mL
2,3,3',5-TetraCB	57	1000 ng/mL
2,4,4',5-TetraCB	74	1000 ng/mL
3,3',4,4'-TetraCB	77	1000 ng/mL
3,3',4,5-TetraCB	78	1000 ng/mL
3,3',4,5'-TetraCB	79	1000 ng/mL
3,4,4',5-TetraCB	81	1000 ng/mL
2,2',4,4',5-PentaCB	99	1000 ng/mL
2,2',4,6,6'-PentaCB	104	1000 ng/mL
2,3,4,4',5-PentaCB	114	1000 ng/mL
2,3',4,4',5-PentaCB	118	1000 ng/mL
2',3,4,4',5-PentaCB	123	1000 ng/mL
3,3',4,4',5-PentaCB	126	1000 ng/mL
2,2',4,4',5,5'-HexaCB	153	1000 ng/mL
2,2',4,4',6,6'-HexaCB	155	1000 ng/mL
2,3,3',4,4',5-HexaCB	156	1000 ng/mL
2,3,3',4,4',5'-HexaCB	157	1000 ng/mL
2,3,3',4',5,5'-HexaCB	162	1000 ng/mL
2,3',4,4',5,5'-HexaCB	167	1000 ng/mL
3,3',4,4',5,5'-HexaCB	169	1000 ng/mL
2,2',3,4',5,6,6'-HeptaCB	188	1000 ng/mL
2,3,3',4,4',5,5'-HeptaCB	189	1000 ng/mL
2,2',3,3',4,4',5,5'-OctaCB	194	1000 ng/mL
2,2',3,3',4,4',5,6-OctaCB	195	1000 ng/mL
2,2',3,3',5,5',6,6'-OctaCB	202	1000 ng/mL
2,3,3',4,4',5,5',6-OctaCB	205	1000 ng/mL
2,2',3,3',4,4',5,5',6-NonaCB	206	1000 ng/mL
2,2',3,3',4,5,5',6,6'-NonaCB	208	1000 ng/mL
DecaCB	209	1000 ng/mL

Environmental reference materials

Code	Product	Unit	Price €
NWLETHBRIDG-03	Drinking water - Major ions and nutrients Certified values	500 mL	228,00

Alkalinity, Total (as $CaCO_3$)	118 mg/L
Ammonia (as N)	0.386 mg/L
Calcium	38.5 mg/L
Chloride	12.5 mg/L
Conductivity (25°C)	337 µS/cm
Dissolved Inorganic Carbon (DIC)	27.9 mg/L
Dissolved Organic Carbon (DOC)	1.72 ml/L
Fluoride	0.682 mg/L
Magnesium	13.5 mg/L
Hardness, Total (as $CaCO_3$)	153 mg/L
Nitrate + Nitrite (as N)	0.18 mg/L
pH	8.18
Potassium	1.5 mg/L
Silica (as Si)	1.3 mg/L
Sodium	9.48 mg/L
Sulfate (as SO_4)	34.9 mg/L
Total Kjeldahl Nitrogen (TKN)	0.522
Total Nitrogen	0.688

Indicative values for B, Colour (Hazen units) and Turbidity (JTU/NTU)

Code	Product	Unit	Price €
NRCSLRS-5	River water - Trace elements	500 mL	223,00

Certified values

Aluminum (Al) ..... 49.5 ± 5.0 µg/kg
Arsenic (As) ..... 0.413 ± 0.039 µg/kg
Barium (Ba) ..... 14.0 ± 0.5 µg/kg
Cadmium (Cd) ..... 0.0060 ± 0.0014 µg/kg
Chromium (Cr) ..... 0.208 ± 0.023 µg/kg
Copper (Cu) ..... 17.4 ± 1.3 µg/kg
Iron (Fe) ..... 91.2 ± 5.8 µg/kg
Lead (Pb) ..... 0.081 ± 0.006 µg/kg
Manganese (Mn) ..... 4.33 ± 0.18 µg/kg
Nickel (Ni) ..... 0.476 ± 0.064 µg/kg
Strontium (Sr) ..... 53.6 ± 1.3 µg/kg
Vanadium (V) ..... 0.317 ± 0.033 µg/kg
Zinc (Zn) ..... 0.845 ± 0.095 µg/kg
Calcium (Ca) ..... 10.5 ± 0.4 µg/g
Magnesium (Mg) ..... 2.54 ± 0.16 µg/g
Potassium (K) ..... 0.839 ± 0.036 µg/g
Sodium (Na) ..... 5.38 ± 0.10 µg/g

Indicative values for Sb, Be, Co, Mg, U

The density of SLRS-5 is 1.0007 g/mL.

NIST-2709A	San Joaquin soil - Trace and constituent elements (baseline)	50 g	790,00

Certified values

Aluminum ..... 7.37 ± 0.16 %
Antimony ..... 1.55 ± 0.06 mg/kg
Calcium ..... 1.91 ± 0.09 %
Barium ..... 979 ± 28 mg/kg
Cadmium ..... 0.371 ± 0.002
Chromium ..... 130 ± 9 mg/kg
Cobalt ..... 12.8 ± 0.2 mg/kg
Iron ..... 3.36 ± 0.07 %
Lead ..... 17.3 ± 0.1 mg/kg
Magnesium ..... 1.46 ± 0.02 %
Manganese ..... 529 ± 18 mg/kg
Phosphorus . 0.0688 ± 0.0013 %
Potassium ..... 2.11 ± 0.06 %
Silicon ..... 30.3 ± 0.4 %
Sodium ..... 1.22 ± 0.03 %
Strontium ..... 239 ± 6 mg/kg
Titanium ..... 0.336 ± 0.007 %
Vanadium ..... 110 ± 11 mg/kg
Zirconium ..... 195 ± 46 mg/kg

NIST-2710A	Montana I soil - Trace and constitutent elements (highly elevated)	50 g	790,00

Certified values

Aluminum ..... 5.95 ± 0.05 %
Antimony ..... 52.5 ± 1.6 mg/kg
Arsenic ..... 0.154 ± 0.010 %
Barium ..... 792 ± 36 mg/kg
Calcium ..... 0.964 ± 0.045 %
Cadmium ..... 12.3 ± 0.3 mg/kg
Cobalt ..... 5.99 ± 0.14 mg/kg
Copper ..... 0.342 ± 0.005 %
Iron ..... 4.32 ± 0.08 %
Lanthanum ..... 30.6 ± 1.2 mg/kg
Lead ..... 0.552 ± 0.003 %
Magnesium ..... 0.734 ± 0.038 %
Manganese ..... 0.214 ± 0.006 %
Mercury ..... 9.88 ± 0.21 mg/kg
Phosphorus ..... 0.105 ± 0.004 %
Potassium ..... 2.17 ± 0.13 %
Silicon ..... 31.1 ± 0.4 %
Sodium ..... 0.894 ± 0.019 %
Strontium ..... 255 ± 7 mg/kg
Titanium ..... 0.311 ± 0.007 %
Uranium ..... 9.11 ± 0.30 mg/kg
Zinc ..... 0.418 ± 0.015 %

NIST-2701	Contaminated soil - Hexavalent chromium (high level)	75 g	803,00

Certified values

Hexavalent Cr ..... 551.2 mg/kg ± 34.5 mg/kg
Total Cr ..... 4.26 % ± 0.12 %
Fe ..... 23.73 % ± 0.19 %
Mn ..... 0.2137 % ± 0.0014 %

Indicative values for selected elements.

Code	Product	Unit	Price €
NIST-1649B	Urban dust - Organic contaminants	2.5 g	724,00

This Standard Reference Material® (SRM®) is an atmospheric particulate material collected in an urban area and is intended for use in evaluating analytical methods for the determination of selected polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCB) congeners, and chlorinated pesticides in atmospheric particulate material and similar matrices. Reference values are also provided for nitro-substituted polycyclic aromatic hydrocarbons (nitro-PAHs), decabromodiphenyl ether, toxaphene congeners, and polychlorinated dibenzo-p-dioxin and dibenzofuran congeners. Information concentration values are provided for selected hydrocarbons, hopanes, steranes, ketones, and particle-size characteristics. All of the constituents for which certified, reference, and information values are provided in NIST-1649B are naturally present in the particulate material.

Certified concentrations for selected PAHs

	Mass fraction (mg/kg)
Phenanthrene	3.941 ± 0.047
4H-Cyclopenta[def]phenanthrene	0.252 ± 0.018
Fluoranthene	6.14 ± 0.12
Pyrene	4.784 ± 0.029
Benzo[ghi]fluoranthene	0.885 ± 0.015
Benzo[c]phenanthrene	0.449 ± 0.014
Benz[a]anthracene	2.092 ± 0.048
Chrysene	3.008 ± 0.044
Triphenylene	1.244 ± 0.052
Benzo[b]fluoranthene	5.99 ± 0.20
Benzo[j]fluoranthene	1.731 ± 0.083
Benzo[k]fluoranthene	1.748 ± 0.083
Benzo[e]pyrene	2.970 ± 0.043
Benzo[a]pyrene	2.47 ± 0.17
Perylene	0.606 ± 0.013
Benzo[ghi]perylene	3.937 ± 0.052
Indeno[1,2,3-cd]pyrene	2.96 ± 0.17
Anthanthrene	0.509 ± 0.014
Dibenz[a,c]anthracene	0.212 ± 0.017
Dibenz[a,h]anthracene	0.290 ± 0.004
Picene	0.390 ± 0.028
Dibenzo[b,k]fluoranthene	0.655 ± 0.035
Dibenzo[a,e]pyrene	0.538 ± 0.024

Certified concentrations for selected PCB congeners

		Mass fraction (µg/kg)
PCB 49	2,2'4,5'-Tetrachlorobiphenyl	8.92 ± 1.0
PCB 52	2,2',5,5'-Tetrachlorobiphenyl	23.7 ± 3.6
PCB 101	2,2',4,5,5'-Pentachlorobiphenyl	55.1 ± 5.1
PCB 105	2,3,3',4,4'-Pentachlorobiphenyl	9.7 ± 1.0
PCB 110	2,3,3',4',6-Pentachlorobiphenyl	32.9 ± 3.0
PCB 149	2,2',3,4',5',6-Hexachlorobiphenyl	77.5 ± 2.1
PCB 151	2,2',3,5,5',6-Hexachlorobiphenyl	32.6 ± 2.1
PCB 153	2,2',4,4',5,5'-Hexachlorobiphenyl	74.8 ± 1.0
PCB 163	2,3,3',4'5,6-Hexachlorobiphenyl	21.69 ± 0.33
PCB 183	2,2',3,4,4',5',6-Heptachlorobiphenyl	16.80 ± 0.85
PCB 187	2,2',3,4',5,5',6-Heptachlorobiphenyl	38.5 ± 2.9
PCB 194	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	27.8 ± 1.6
PCB 206	2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	16.6 ± 1.2

Certified concentrations for selected chlorinated pesticides

Chlorinated pesticides	Mass fraction in µg/kg
trans-Chlordane (γ-Chlordane)	50.7 ± 5.1
trans-Nonachlor	33.0 ± 3.5
4,4'-DDE	49.5 ± 1.3
4,4'-DDD	36.8 ± 1.9

Reference values for PAHs, nitro-substituted PAHs, PCBs, pesticides incl. toxaphene, decabromodiphenyl ether, dibenzo-p-dioxin and dibenzofuran congeners.

RTC-PB-3000	Soil - Lead	50 g	182,00

RTC-Pb-3000 was certified using methods USEPA SW846, 3rd edition, 3050 (hot block), 3051 (microwave), 6010 (ICP-EOS), 6020 (ICP-MS) and 7000 (AES) series.

Certified value

Lead, Pb..... 2710 mg/kg

Code	Product	Unit	Price €
RTC-CRM059-050	Soil (Loamy clay) - Metals	50 g	182,00

Certified values

Antimony, Sb	86.0 mg/kg
Arsenic, As	153 mg/kg
Barium, Ba	138 mg/kg
Beryllium, Be	39.1 mg/kg
Boron, B	155 mg/kg
Cadmium, Cd	65.0 mg/kg
Calcium, Ca	11700 mg/kg
Chromium, Cr (total)	136 mg/kg
Cobalt, Co	44.3 mg/kg
Copper, Cu	99.4 mg/kg
Iron, Fe	21100 mg/kg
Lead, Pb	107 mg/kg
Magnesium, Mg	1580 mg/kg
Manganese, Mn	220 mg/kg
Mercury, Hg	9.72 mg/kg
Molybdenum, Mo	9.30 mg/kg
Nickel, Ni	75.5 mg/kg
Potassium, K	3720 mg/kg
Selenium, Se	106 mg/kg
Silver, Ag	98.5 mg/kg
Sodium, Na	5710 mg/kg
Strontium, Sr	43.8 mg/kg
Thallium, Tl	81.1 mg/kg
Tin, Sn	81.9 mg/kg
Titanium, Ti	14.3 mg/kg
Vanadium, V	95.1 mg/kg
Zinc, Zn	428 mg/kg
pH	6.83
Aluminum, Al	7790 mg/kg
Silicon, Si	508 mg/kg

RTC-CRM2003-050	Taiwan clay - Trace metals	50 g	189,00

The certified values were determined by using USEPA SW846 Method 7060A for Arsenic, by using USEPA SW846 Method 7471B for Mercury, and by using Aqua Regia Method for Cadmium, Chromium, Copper, Lead, Nickel, and Zinc.

Certified values

Arsenic, As	20.7 mg/kg
Cadmium, Cd	1.66 mg/kg
Chromium, Cr (total)	86.8 mg/kg
Cobalt, Co	13.5 mg/kg
Copper, Cu	126 mg/kg
Lead, Pb	44.1 mg/kg
Manganese, Mn	292 mg/kg
Mercury, Hg	0.865 mg/kg
Nickel, Ni	206 mg/kg
Zinc, Zn	342 mg/kg

RTC-PB-2000	Clay loam - Lead	50 g	168,00

RTC-Pb-2000 was certified using methods USEPA SW846, 3rd edition, 3050 (hot block), 3051 (microwave), 6010 (ICP-EOS), 6020 (ICP-MS) and 7000 (AES) series.

Certified value

Lead, Pb	2000 mg/kg

RTC-CRM2004-050	Taiwan clay - Trace metals	50 g	189,00

The certified values were determined by using USEPA SW846 Method 7060A for Arsenic, by using USEPA SW846 Method 7471B for Mercury, and by using Aqua Regia Method for Cadmium, Chromium, Copper, Lead, Nickel, and Zinc.

Certified values

Arsenic, As	7.81 mg/kg
Cadmium, Cd	7.89 mg/kg
Chromium, Cr (total)	47.1 mg/kg
Cobalt, Co	8.22 mg/kg
Copper, Cu	65.1 mg/kg
Lead, Pb	44.9 mg/kg
Manganese, Mn	118 mg/kg
Mercury, Hg	0.140 mg/kg
Nickel, Ni	38.5 mg/kg
Zinc, Zn	118 mg/kg

RTC-CRM361-100	Sea sediment - Total petroleum hydrocarbons (TPH)	100 g	175,00

Certified value

TPH (Diesel range organics)	694.99 mg/kg

Environmental reference materials

Code	Product	Unit	Price €
RTC-CRM372-100	Sandy soil - Total petroleum hydrocarbons (TPH) Certified values >C10 to C12 Aliphatics ..... 201.00 mg/kg >C12 to C16 Aliphatics ..... 1060.00 mg/kg >C16 to C21 Aliphatics ..... 789.00 mg/kg >C21 to C35 Aliphatics ..... 1740.00 mg/kg Total Petroleum Hydrocarbon ..... 4660.00 mg/kg C10 to C28, TPH ..... 2900.00 mg/kg C28 to C40, TPH ..... 2180.00 mg/kg Indicative values for >C12 to C16 Aromatics, >C16 to C21 Aromatics and >C21 to C35 Aromatics	100 g	175,00
RTC-CRM305-030	Silt loam - BETX The sample was certified by USEPA SW846, 3rd edition Method 5030A and 8020A or 8240B and is suitable for use by these and other similar methods. Certified values Benzene ..... 57.5 mg/kg Ethylbenzene ..... 3.49 mg/kg Methyl tert-butyl ether (MTBE) ..... 31.6 mg/kg Toluene ..... 15.5 mg/kg m+p-Xylene ..... 42.7 mg/kg o-Xylene ..... 23.2 mg/kg Xylene, total ..... 66.7 mg/kg Gasoline range organics (C6-C12) ..... 235 mg/kg	30 g	140,00
RTC-CRM513-030	Soil - BTEX/GRO The sample was certified by USEPA Method 8015B, and is suitable for use by this and other similar methods.	30 g	154,00
RTC-CRM501-030	Soil (Loamy clay) - BTEX/GRO The sample was certified by USEPA Method 8015B, and is suitable for use by this and other similar methods. Certified values Benzene ..... 10.5 mg/kg Ethylbenzene ..... 9.63 mg/kg Toluene ..... 42.6 mg/kg m+p-Xylene ..... 34.2 mg/kg o-Xylene ..... 12.6 mg/kg Xylene, total ..... 46.3 mg/kg Gasoline range organics (C6-C12) ..... 480 mg/kg	30 g	154,00
RTC-CRM502-030	Soil (clay) - BTEX/GRO The sample was certified by USEPA Method 8015B, and is suitable for use by this and other similar methods. Certified values Benzene ..... 57.5 mg/kg Ethylbenzene ..... 3.49 mg/kg Methyl tert-butyl ether (MTBE) ..... 31.6 mg/kg Toluene ..... 15.5 mg/kg m+p-Xylene ..... 42.7 mg/kg o-Xylene ..... 23.2 mg/kg Xylene, total ..... 66.7 mg/kg Gasoline range organics (C6-C12) ..... 235 mg/kg	30 g	154,00

Code	Product	Unit	Price €
RTC-CRM629-030	Soil (Sandy loam) - Volatile organic analytes (low level) The sample was certified by USEPA SW846, 3rd edition Method 8260B using the low soil concentration procedure and is suitable for use by this and other similar methods. Certified values Benzene....160 µg/kg Bromobenzene ....177 µg/kg Bromodichloromethane....95.2 µg/kg Bromoform....61.8 µg/kg 2-Butanone (Methyl ethyl ketone, MEK) ....200 µg/kg Carbon tetrachloride ....92.6 µg/kg Chlorobenzene....134 µg/kg Chloroform....141 µg/kg Dibromochloromethane ....67.1 µg/kg 1,2-Dibromoethane (EDB) ....78.6 µg/kg 1,2-Dichlorobenzene....273 µg/kg 1,3-Dichlorobenzene....152 µg/kg 1,4-Dichlorobenzene....101 µg/kg 1,2-Dichloroethane ....86.1 µg/kg 1,1-Dichloroethylene....223 µg/kg 1,2-Dichloropropane ....129 µg/kg Ethylbenzene ....152 µg/kg 2-Hexanone ....108 µg/kg Methylene chloride (Dichloromethane) ....1180 µg/kg 4-Methyl-2-pentanone (MIBK)....166 µg/kg Methyl tert-butyl ether (MTBE)....181 µg/kg Styrene....101 µg/kg 1,1,2,2-Tetrachloroethane ....130 µg/kg Toluene....134 µg/kg 1,2,4-Trichlorobenzene....50.5 µg/kg 1,1,2-Trichloroethane....177 µg/kg 1,2,3-Trichloropropane ....181 µg/kg 1,2,4-Trimethylbenzene ....341 µg/kg 1,3,5-Trimethylbenzene ....227 µg/kg m+p-Xylene....127 µg/kg o-Xylene....156 µg/kg Xylene, total ....299 ug/kg	30 g	140,00
RTC-CRM138-010	Soil (Silt loam) - Nitroaromatics and nitrosamines Certified values Nitrobenzene.... 7.06 mg/Kg 2,4-Dinitrotoluene (2,4-DNT) ....5.22 mg/kg 2,6-Dinitrotoluene (2,6-DNT) ....6.78 mg/kg 2-Nitrotoluene ....6.85 mg/kg 3-Nitrotoluene ....6.09 mg/kg 4-Nitrotoluene ....7.89 mg/kg	100 g	189,00
RTC-CRM927-050	Soil (Clay loam) - PCBs The certified value was determined by USEPA SW846 (3rd edition) Methods 8081A and 8082. The sample is suitable for use by these and other similar methods. Certified value Aroclor 1242 ..... 7.03 mg/kg	50 g	175,00
RTC-CRM961-050	Clay soil - PCBs Certified values PCBs, total.... 3,100 ± 516 µg/kg 2,4,4'-Trichlorobiphenyl (PCB 28).... 135 ± 19.8 µg/kg 2,2',5,5'-Tetrachlorobiphenyl (PCB 52).... 85.9 ± 18.2 µg/kg 3,3',4,4'-Tetrachlorobiphenyl (PCB 77).... 223 ± 31.5 µg/kg 3,4,4',5-Tetrachlorobiphenyl (PCB 81).... 205 ± 35.8 µg/kg 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101).... 106 ± 11.0 µg/kg 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105).... 147 ± 18.5 µg/kg 2,3',4,4',5-Pentachlorobiphenyl (PCB 118).... 173 ± 19.9 µg/kg 2,3',4,4',5'-Pentachlorobiphenyl (PCB 123).... 170 ± 24.0 µg/kg 2,3,4,4',5-Pentachlorobiphenyl (PCB 114).... 183 ± 28.9 µg/kg 3,3',4,4',5-Pentachlorobiphenyl (PCB 126).... 213 ± 26.6 µg/kg 2,2',3,4,4',5'-Hexachlorobiphenyl (PCB 138).... 130 ± 22.8 µg/kg 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153).... 137 ± 18.5 µg/kg 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167).... 236 ± 43.7 µg/kg 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169).... 124 ± 15.5 µg/kg 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180).... 116 ± 11.6 µg/kg 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189).... 247 ± 60.2 µg/kg PCB (156)+(157).... 370 ± 4.59 µg/kg	50 g	231,00

Environmental reference materials

Code	Product	Unit	Price €
RTC-CRM962-050	Loamy sand - PCBs Certified values 2,4,4'-Trichlorobiphenyl (PCB 28) ... 180 ± 53.6 µg/kg 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) ... 179 ± 40.7 µg/kg 3,3',4,4'-Tetrachlorobiphenyl (PCB 77) ... 221 ± 32.1 µg/kg 3,4,4',5-Tetrachlorobiphenyl (PCB 81) ... 165 ± 2.73 µg/kg 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) ... 119 ± 39.5 µg/kg 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105) ... 108 ± 19.62 µg/kg 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) ... 154 ± 11.82 µg/kg 2,3',4,4',5'-Pentachlorobiphenyl (PCB 123) ... 187 ± 28.0 µg/kg 2,3,4,4',5-Pentachlorobiphenyl (PCB 114) ... 128 ± 3.69 µg/kg 3,3',4,4',5-Pentachlorobiphenyl (PCB 126) ... 124 ± 23.3 µg/kg 2,2',3,4,4',5'-Hexachlorobiphenyl (PCB 138) ... 265 ± 84.9 µg/kg 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) ... 204 ± 74.9 µg/kg 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157) ... 241 ± 101 µg/kg 2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156) ... 211 ± 60.3 µg/kg 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167) ... 225 ± 35.0 µg/kg 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169) ... 178 ± 32.9 µg/kg 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) ... 287 ± 66.5 µg/kg 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189) ... 204 ± 35.7 µg/kg PCB (156)+(157) ... 450 ± 29.7 µg/kg	50 g	231,00
RTC-CRM963-050	Silty loam - PCBs Certified values 2,4,4'-Trichlorobiphenyl (PCB 28) ... 86.3 ± 33.6 µg/kg 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) ... 41.2 ± 2.09 µg/kg 2,2',4,5,5'-Pentachlorobiphenyl (PCB 101) ... 77.5 ± 3.28 µg/kg 2,3',4,4',5-Pentachlorobiphenyl (PCB 118) ... 80.1 ± 5.01 µg/kg 2,2',3,4,4',5'-Hexachlorobiphenyl (PCB 138) ... 50.3 ± 7.04 µg/kg 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153) ... 55.5 ± 20.0 µg/kg 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180) ... 89.2 ± 9.14 µg/kg	50 g	231,00
RTC-CRM853-050	Soil (Clay) - Toxaphenes Certified value Toxaphene ... 306 µg/kg	50 g	189,00
RTC-CRM852-050	Sediment - Chlordane Certified value Chlordane (total) ... 235 ug/kg	50 g	166,00
RTC-CRM851-050	Soil (Silty loam) - Organophosphorous pesticides Certified values Azinphos-methyl (Guthion) ... 1.76 mg/kg Chlorfenvinphos ... 1.76 mg/kg Diazinon ... 0.217 mg/kg Malathion ... 4.14 mg/kg Parathion, methyl ... 5.80 mg/kg Parathion, ethyl ... 3.23 mg/kg Ronnel ... 2.14 mg/kg Tetrachlorvinphos ... 0.673 mg/kg Disulfoton ... 5.18 mg/kg	50 g	189,00

Food reference materials

Code	Product	Unit	Price €
ERM-BE376	Compound feedingstuff - Aflatoxins ERM-BE376 is a compound feeding stuff mixed from contaminated copra, wheat, barley, soya, maize and a mineral / vitamin premix. Certified values Aflatoxin B1..... 12.9 ±1.8 µg/kg Aflatoxin G1.....5.2 ± 0.8 µg/kg Aflatoxin B2.... 0.68 ± 0.10 µg/kg	2 x 75 g	160,00
NIST-3280	Multivitamin/Multielement tablets A unit of NIST-3280 consists of five bottles, each containing 30 tablets. Each tablet weighs approximately 1.5 g. Certified Concentration Values for Vitamins and Carotenoids Folic acid..... 394 ± 22 µg/g Biotin..... 23.4 ± 3.2 µg/g Ergocalciferol..... 9.13 ± 0.71 µg/g Phylloquinone ..... 22.8 ± 2.2 µg/g Trans-β-carotene ..... 420 ± 100 µg/g Total β-carotene..... 514 ± 87 µg/g α-Tocopherol..... 21.4 ± 3.5 mg/g Ascorbic acid ..... 42.2 ± 3.7 mg/g Thiamine hydrochloride ..... 1.06 ± 0.12 mg/g Riboflavin..... 1.32 ± 0.17 mg/g Niacinamide..... 14.10 ± 0.23 mg/g Pantothenic acid ..... 7.30 ± 0.96 mg/g Pyridoxine hydrochloride..... 1.81 ± 0.17 mg/g Certified Concentration Values for Selected Elements Certified Concentration Values for Selected Elements B ..... 0.141 ± 0.007 mg/g Mg .....67.8 ± 4.0 mg/g Ca ..... 110.7 ± 5.3 mg/g Mn .....1.44 ± 0.11 mg/g Cl ..... 53.0 ± 2.3 mg/g Mo .....0.0707 ± 0.0045 mg/g Cr ..... 0.0937 ± 0.0027 mg/g P .....75.7 ± 3.2 mg/g Cu ..... 1.40 ± 0.17 mg/g K.....53.1 ± 7.0 mg/g I..... 0.1327 ± 0.0066 mg/g Zn .....10.15 ± 0.81 mg/g Fe..... 12.35 ± 0.91 mg/g Indicative values for elements, vitamins and carotenoids	150 tablets	774,00
NIST-3274	Botanical oils - Omega-3 and omega-6 fatty acids This Standard Reference Material® (SRM®) is intended primarily for use in validating analytical methods for the determination of fatty acids in botanical oils and similar matrices. This SRM can also be used for quality assurance when assigning values to in-house control materials. A unit of SRM 3274 consists of a total of four ampoules, one each of four seed oils (3274-1 Borage [Borago officinalis], 3274-2 Evening Primrose [Oenothera biennis], 3274-3 Flax [Linium usitatissimum], and 3274-4 Perilla [Perilla frutescens]). Each ampoule contains approximately 1.2 mL of oil under argon. Please contact your local LGC Standards office for further information.	4 x 1.2 mL	423,00
ERM-AC405C-1	Ethanol/water - 15% Ethanol Certified value Alcoholic strenght (at 20°C).....14.99 % ABV Density (in air)..... 977.94 kg/m^3 ABV:Alcohol by Volume	50 mL	91,00
ERM-AC405C	Ethanol/water - 15% Ethanol Certified value Ethanol..... 15 mL/100 mL at 20°C	5 x 50 mL	413,00

Cyanobacterial toxins

MCRR-P1ML	[D-Asp3,(E)-Dhb7]-Microcystin RR from Planktothrix sp. 10 µg/mL in Methanol	1 mL	172,00
MCNOD-1ML	Nodularin 10 µg/mL in Methanol	1 mL	194,00

Shellfish toxins

	New lots are available from the following paralytic shellfish toxins (PSP)		
NRCCRM-GTX14C	Gonyautoxins-1 and -4 solution Each ampoule contains approximately 0.5 mL of solution with 60.4 ± 3.1 µmoles/L (at 20°C) of GTX1 and 19.7 ± 1.6 µmoles/L (at 20°C) of GTX4 in filtered and aqueous 0.003 M hydrochloric acid plus 0.01 M acetic acid.	0.5 mL	194,00
NRCCRM-GTX23C	Gonyautoxins-2 and -3 solution Each ampoule contains approximately 0.5 mL of solution with 114.2 ± 5.7 µmoles/L (at 20°C) of GTX2 and 43.4 ± 2.2 µmoles/L (at 20°C) of GTX3 in filtered and aqueous 0.003 M hydrochloric acid plus 0.01 M acetic acid.	0.5 mL	194,00

Code	Product	Unit	Price €
NRCCRM-NEO-C	Neosaxitoxin solution Each ampoule contains approximately 0.5 mL of solution with 65.6 ± 3.4 µmoles/L (at 20°C) of neosaxitoxin in filtered and aqueous 0.003 M hydrochloric acid.	0.5 mL	194,00

Certified materials for microbiological properties

Code	Product	Unit	Price €
BCR-506	Enterococcus faecium (WR63) in milk powder BCR-506 consists of 0.26 g milk powder (with a tolerance interval of ± 5 % m/m), artificially contaminated with Enterococcus faecium (WR63), contained in a gelatin capsule. The entire capsule should be reconstituted according to the instruction for use.	10 caps.	120,00

Colony forming particles of Enterococcus faecium (WR63) according to the procedure	Number of colony forming particles (cfp) Certified value [cfp/capsule]	Uncertainty interval [cfp/capsule]
ISO 7899/2, 1984 KFA	76	71 - 81
ISO 7899/2, 1984 m-EA	72	63 - 82
ISO 6222, 1988 YA	109	102 - 117

Dry ice shipment required

Code	Product	Unit	Price €
BCR-507R	Salmonella typhimurium in milk powder BCR-507R consists of 0.29 g artificially contaminated spray dried milk contained in a blue/white gelatine capsule. The strain used for the contamination is Salmonella typhimurium.	10 caps.	120,00

Colony forming particles of Salmonella typhimurium according to the procedure	Number of colony forming particles (cfp) Certified value [cfp/capsule]	Uncertainty interval [cfp/capsule]
Enumeration procedure	5.0	4.5 - 5.4

Fraction of negative capsules of Salmonella typhimurium according to the procedure	Fraction of negative capsules Certified value [%]	Uncertainty interval [%]
Enumeration procedure	1.1	0 - 2.1
Presence/absence procedure	1.6	0 - 2.8

Dry ice shipment required

Code	Product	Unit	Price €
BCR-527	Enterobacter cloacae (WR3) in milk powder BCR-527 consists of 0.308 g milk powder, artificially contaminated with Enterobacter cloacae (WR3), contained in a gelatine capsule.	10 caps.	100,00

Colony forming particles of Enterobacter cloacae (WR3) according to the procedure	Number of colony forming particles (cfp) Certified value [cfp/capsule]	Uncertainty interval [cfp/capsule]
ISO 9308-1, 1990 LSA	34	29 - 40

Dry ice shipment required

Code	Product	Unit	Price €
BCR-528	Bacillus cereus in milk powder BCR-528 consists of 0.317 g artificially contaminated with spray dried milk contained in an ochre/white gelatine capsule. The strain used for the contamination is Bacillus cereus (ATCC 9139).	10 caps.	100,00

Colony forming particles of Bacillus cereus according to the procedure	Number of colony forming particles (cfp) Certified value [cfp/capsule]	Uncertainty interval [cfp/capsule]
MEYP (ISO 7932) after 24 h incubation	53.4	51.7 – 55.2
MEYP (ISO 7932) after 48 h incubation	53.7	52.1 – 55.4
PEMBA (L 00.00 - 25) after 24 h incubation	55.0	52.8 – 57.4
PEMBA (L 00.00 - 25) after 48 h incubation	55.8	53.6 – 58.0

Indicative value for colony forming particles of Bacillus cereus according to the procedure SBA (Analysis no 67) after 24 h incubation

Dry ice shipment required

Code	Product	Unit	Price €
BCR-594	Escherichia coli in milk powder BCR-594 consists of 0.28 g milk powder (with a mass tolerance of ± 5 %), artificially contaminated with Escherichia coli (WR1), contained in a gelatine capsule.	10 caps.	120,00

Number of colony forming particles (z) of Escherichia coli (WR1) in 1 mL of suspension of reconstituted artificially contaminated milk powder.

Colony forming particles of Bacillus cereus according to the procedure	Certified value	Uncertainty Relevant below the certified value	Uncertainty Relevant above the certified value
ISO 9308-1, 1990 T7A 30/37	56	8	10
ISO 9308-1, 1990 T7A 30/44	49	8	10
ISO 9380-1, 1990 LSA 30/37	40	7	8
ISO 9308-1, 1990 LSA 30/44	36	7	8

Dry ice shipment required

Code	Product	Unit	Price €
BCR-595	Listeria monocytogenes in milk powder	10 caps.	120,00

BCR-595 consists of 0.34 g artificially contaminated spray dried milk contained in an orange/white gelatine capsule. The strain used for the contamination is Listeria monocytogenes (Scott A strain).

Colony forming particles of Listeria monocytogenes according to the procedure	Number of colony forming particles (cfp) Certified value [cfp/capsule]	Uncertainty interval [cfp/capsule]
Enumeration procedure	7.2	6.8 – 7.6

Fraction of negative capsules of Listeria monocytogenes according to the procedure	Fraction of negative capsules Certified value [%]	Uncertainty interval [%]
Enumeration procedure	0.075	0.05 – 0.112
Presence/absence procedure according to IDF standard 143	1.2	0 - 2.3

Dry ice shipment required

Code	Product	Unit	Price €
IRMM-311	Genomic DNA of Bacillus licheniformis DSM 5749 in agarose inserts for Pulsed Field Gel Electrophoresis (PFGE)	vial	80,00

The intended use of this material is the taxonomic identification of the authorised probiotic feed additive Bacillus licheniformis DSM 5749 by pulsed field gel electrophoresis (PFGE). The material is supplied in a vial containing one agarose insert of undigested genomic DNA of Bacillus licheniformis DSM 5749. Certified values and uncertainties are provided for SfiI digested DNA fragments in the size interval 50 kb - 90 kb and requires the use of a specified analytical procedure.

SfiI digested DNA fragments in the size interval 50 kb – 90 kb	Band no	Fragment length Certified value [kb]	Uncertainty [kb]
	1	89.6	4.7
	2	80.9	2.5
	3	75.3	2.7
	4	72.2	3.5
	5	66.9	1.9
	6	64.6	2.9
	7	60.3	1.3
	8	56.5	1.3
	9	53.9	1.3
	10	50.6	1.3

Code	Product	Unit	Price €
IRMM-312	Genomic DNA of Bacillus subtilis DSM 5750 in agarose inserts for Pulsed Field Gel Electrophoresis (PFGE)	vial	80,00

The intended use of this material is the taxonomic identification of the authorised probiotic feed additive Bacillus subtilis DSM 5750 by pulsed field gel electrophoresis (PFGE). The material is supplied in a vial containing one agarose insert of undigested genomic DNA of Bacillus subtilis DSM 5750. Certified values and uncertainties are provided for SfiI digested DNA fragments in the size interval 15 kb - 97 kb and requires the use of a specified analytical procedure.

SfiI digested DNA fragments in the size interval 15 kb – 97 kb	Band no	Fragment length Certified value [kb]	Uncertainty [kb]
	1	89.2	0.9
	2	81.4	0.8
	3	77.7	0.6
	4	62.5	1.8
	5	59.5	2.1
	6	44.0	2.4
	7	29.2	2.0
	8	23.6	1.3
	9	18.6	1.3

Code	Product	Unit	Price €
IRMM-351	Escherichia coli 0157 in material spheres (BioBall® format)	vial	40,00

Each vial contains one material sphere of Escherichia coli O157 (NCTC 12900).

Certified values

cfu per material sphere on nutrient agar	4 ± 2 cfu
cfu per material sphere on enterohemolysin agar	5 ± 2 cfu

Recommendation: For application in presence/absence tests, analyse at least two vials of the CRM.

Dry ice shipment required

BioBall® - Trademark of BIOMERIEUX INDUSTRY

Code	Product	Unit	Price €
IRMM-352	Salmonella enteritidis in material spheres (BioBall® format)	vial	40,00

Each vial contains one material sphere of Salmonella enteritidis (NCTC 12694).

Certified values

cfu per material sphere on nutrient agar	5 ± 2 cfu
cfu per material sphere on xylose lysine deoxycholate agar	5 ± 2 cfu

Recommendation: For application in presence/absence tests, analyse at least two vials of the CRM.

Dry ice shipment required

BioBall® - Trademark of BIOMERIEUX INDUSTRY

Code	Product	Unit	Price €
IRMM-447	Genomic DNA of Listeria Monocytogenes Freeze dried genomic DNA Certified identity: genomic DNA Listeria monocytogenes (strain 4B, NCTC 11994) Indicative value for the mass of genomic DNA per vial Dry ice shipment required	vial	20,00
IRMM-448	Genomic DNA Campylobacter jejuni (NCTC 11351) Indicative value Mass of genomic DNA per vial .....71 ng Dry ice shipment required	vial	20,00
IRMM-449	Genomic DNA of Escherichia coli Freeze dried genomic DNA Certified identity: genomic DNA Escherichia coli O157, strain EDL 933 Indicative value for the mass of genomic DNA per vial Dry ice shipment required	vial	20,00

Industry reference materials

Code	Product	Unit	Price €
NIST-1880B	Portland cement - Constituents Certified values SiO_2.....20.42 ± 0.36 % Al_2O_3 .....5.183 ± 0.073 % Fe_2O_3 .....3.681 ± 0.023 % CaO.....64.16 ± 0.40 % MgO .....1.176 ± 0.020 % SO3.....2.710 ± 0.099 % Na_2O .....0.0914 ± 0.0052 % K_2O ..... 0.646 ± 0.014 % TiO_2 ..... 0.236 ± 0.012 % P_2O_5..... 0.2443 ± 0.0027 % Mn_2O_3 ..... 0.1981 ± 0.0020 % Cl ..... 0.01830 ± 0.00057 % Cr_2O_3 ..... 0.01927 ± 0.00042 % Indicative values for LOI*, ZnO, sulfide sulfur, insoluble residue, CaO (free), SrO, and fluoride * Loss on Ignition	4 x 5 g	363,00
NIST-1995	Standard sapphire single crystal wafer for crystalline orientation This Standard Reference Material® (SRM®) is intended for use in the calibration of instruments (X-ray diffractometers) used to measure the crystal orientation of wafers relative to the crystal surface. NIST-1995 consists of a 50 mm diameter sapphire wafer. Certified values for crystal orientation. Please ask for details.	50-mm wafer	3754,00
NCS RC76001	Polypropylene - Pb, Hg, Cr, Cd (for X-ray Fluorescence (XRF) analysis) Each set include one blank and two different content level. The minimum package is 30 grams. Certified values Low level Lead, Pb..... 98 ± 6 mg/kg Mercury, Hg..... 91 ± 8 mg/kg Chromium, Cr.....98 ± 4 mg/kg Cadmium, Cd ...9.3 ± 0.7 mg/kg High level Lead, Pb..... 985 ± 35 mg/kg Mercury, Hg..... 918 ± 70 mg/kg Chromium, Cr...978 ± 24 mg/kg Cadmium, Cd .....94 ± 4 mg/kg	set	860,00
NCS RS76001	Polypropylene - Pb, Hg, Cr, Cd (for X-ray Fluorescence (XRF) analysis) Set of 4 slices with size 40 mm x 4 mm each (Low level, medium level, high level, blank) Certified values Low level Lead, Pb..... 98 ± 3 mg/kg Mercury, Hg..... 93 ± 2 mg/kg Chromium, Cr.....98 ± 3 mg/kg Cadmium, Cd ...9.3 ± 0.2 mg/kg Medium level Lead, Pb..... 453 ± 13 mg/kg Mercury, Hg..... 388 ± 9 mg/kg Chromium, Cr.....251 ± 6 mg/kg Cadmium, Cd .....37 ± 1 mg/kg High level Lead, Pb..... 981 ± 17 mg/kg Mercury, Hg..... 922 ± 24 mg/kg Chromium, Cr...983 ± 24 mg/kg Cadmium, Cd .....92 ± 2 mg/kg	set	1620,00
NCS FC28008E	Coal - Elements and properties Coal type: Bitumite Certified values C ..... 66.32 % H ..... 4.46 % N ..... 1.23 % Total S..... 2.79 % Ash..... 15.64 % Volatile matter..... 35.10 % Relative density (20°C) ..... 1.45 Calorific value .....28.21 MJ/kg	50 g	115,00

Code	Product	Unit	Price €
NCS FC28010E	Coal (bitumite) - Elements and properties Coal type: Bitumite Certified values C ..... 67.06 % H ..... 4.09 % N ..... 1.19 % S ..... 1.37 % Ash..... 15.11 % Volatile matter..... 33.32 % Relative density (20°C)..... 1.49 Gross calorific value .....26.94 MJ/kg	50 g	109,00
RTC-CRM925-010	Transformer oil - PCBs Oil taken from an electrical transformer. The sample was certified by USEPA SW846, 3rd edition Method 3540A/8081 and is suitable for use by these and other similar methods. Certified value Aroclor 1254 ..... 24.48 mg/kg	10 g	91,00

Sulfur in residual oil

CON-150-420-100	Sulfur in residual oil, 2500 µg/g	50 mL	112,00
CON-150-420-005	Sulfur in residual oil, 2500 µg/g	100 mL	133,00
CON-150-420-105	Sulfur in residual oil, 3500 µg/g	50 mL	112,00
CON-150-420-010	Sulfur in residual oil, 3500 µg/g	100 mL	133,00
CON-150-420-110	Sulfur in residual oil, 5000 µg/g	50 mL	112,00
CON-150-420-015	Sulfur in residual oil, 5000 µg/g	100 mL	133,00
CON-150-420-120	Sulfur in residual oil, 7500 µg/g	50 mL	112,00
CON-150-420-020	Sulfur in residual oil, 7500 µg/g	100 mL	133,00
CON-150-420-125	Sulfur in residual oil, 10000 µg/g	50 mL	112,00
CON-150-420-025	Sulfur in residual oil, 10000 µg/g	100 mL	133,00
CON-150-420-130	Sulfur in residual oil, 15000 µg/g	50 mL	112,00
CON-150-420-030	Sulfur in residual oil, 15000 µg/g	100 mL	133,00
CON-150-420-135	Sulfur in residual oil, 20000 µg/g	50 mL	112,00
CON-150-420-035	Sulfur in residual oil, 20000 µg/g	100 mL	133,00
CON-150-420-140	Sulfur in residual oil, 25000 µg/g	50 mL	112,00
CON-150-420-040	Sulfur in residual oil, 25000 µg/g	100 mL	133,00
CON-150-420-145	Sulfur in residual oil, 30000 µg/g	50 mL	112,00
CON-150-420-045	Sulfur in residual oil, 30000 µg/g	100 mL	133,00
CON-150-420-150	Sulfur in residual oil, 35000 µg/g	50 mL	112,00
CON-150-420-050	Sulfur in residual oil, 35000 µg/g	100 mL	133,00
CON-150-420-155	Sulfur in residual oil, 40000 µg/g	50 mL	112,00
CON-150-420-055	Sulfur in residual oil, 40000 µg/g	100 mL	133,00
CON-150-420-160	Sulfur in residual oil, 50000 µg/g	50 mL	112,00
CON-150-420-060	Sulfur in residual oil, 50000 µg/g	100 mL	133,00

Standards from Ultra Scientific

TOC System Suitability Kits

Total Organic Carbon (TOC) detection is an important measurement because of the effects it may have on the environment, human health, and manufacturing processes. TOC detection is a highly sensitive, non-specific measurement of all organics present in a sample. Low TOC can confirm the absence of potentially harmful organic chemicals in water used to manufacture pharmaceutical products or to regulate the organic chemical discharge to the environment in a manufacturing plant.

System compatibility (Hydrochloric acid preserved):

Analytik Jena
Sievers
Shimadzu
Skalar

Code	Product	Unit	Price €
U-IQCK-601-40	TOC Pharmaceutical System Suitability Kit (Hydrochloric acid preserved) Preserved in hydrochloric acid 1 x 40 mL vial of each individual standard in Low TOC Water Low TOC Water ..... < 50 ppb USP Sucrose ..... 0.500 ppm USP Benzoquinone..... 0.500 ppm	40 mL Kit	128,00
U-IQCK-601-125	TOC Pharmaceutical System Suitability Kit (Hydrochloric acid preserved) Preserved in hydrochlorid acid 1 x 125 mL vial of each individual standard in Low TOC Water Low TOC Water ..... < 50 ppb USP Sucrose ..... 0.500 ppm USP Benzoquinone..... 0.500 ppm	125 mL Kit	297,00

System compatibility (Phosphoric acid preserved):

OI Analytical
Tekmar-Teledyne

Code	Product	Unit	Price €
U-IQCK-602-40	TOC Pharmaceutical System Suitability Kit (Phosphoric acid preserved) Preserved in phosphoric acid 1 x 40 mL vial of each individual standard in Low TOC Water Low TOC Water ..... < 50 ppb USP Sucrose ..... 0.500 ppm USP Benzoquinone..... 0.500 ppm	40 mL Kit	128,00
U-IQCK-602-125	TOC Pharmaceutical System Suitability Kit (Phosphoric acid preserved) Preserved in phosphoric acid 1 x 125 mL vial of each individual standard in Low TOC Water Low TOC Water ..... < 50 ppb USP Sucrose ..... 0.500 ppm USP Benzoquinone..... 0.500 ppm	125 mL Kit	297,00

Test mixtures used in Pharmacopeia Method 467

U-USPM-467J-1	USP 467 Class 1 Residual Solvents Mixture - July 2008 Revision Solvent: Dimethyl sulfoxide (DMSO) Benzene ..... 10 mg/mL Carbon tetrachloride ..... 20 mg/mL 1,2-Dichloroethane..... 25 mg/mL 1,1-Dichloroethene..... 40 mg/mL 1,1,1-Trichloroethane..... 50 mg/mL	1 mL	43,00
U-USPM-467J	USP 467 Class 1 Residual Solvents Mixture - July 2008 Revision	4 x 1 mL	139,00
U-USPM-467K-1	USP 467 Class 2 Residual Solvents Mixture A - July 2008 Revision Sovent: Dimethyl sulfoxide (DMSO) Acetonitrile ..... 2.05 mg/mL Chlorobenzene..... 1.8 mg/mL Cyclohexane ..... 19.4 mg/mL cis-1,2-Dichloroethene ..... 4.7 mg/mL trans-1,2-Dichloroethene ..... 4.7 mg/mL 1,4-Dioxane..... 1.9 mg/mL Ethylbenzene ..... 1.84 mg/mL Methanol ..... 15 mg/mL Methylcyclohexane..... 5.9 mg/mL Methylene chloride (Dichloromethane) ..... 3 mg/mL Tetrahydrofuran (THF) ..... 3.6 mg/mL Toluene ..... 4.45 mg/mL o-Xylene ..... 0.98 mg/mL m-Xylene ..... 6.51 mg/mL p-Xylene ..... 1.52 mg/mL	1 mL	38,00

Code	Product	Unit	Price €
U-USPM-467K	USP 467 Class 2 Residual Solvents Mixture A - July 2008 Revision	4 x 1 mL	121,00
U-USPM-467M-1	USP 467 Class 2 Residual Solvents Mixture C - July 2008 Revision Solvent: Dimethyl sulfoxide (DMSO) N,N-Dimethylacetamide ... 5450 µg/mL N,N-Dimethylformamide ... 4400 µg/mL 2-Ethoxyethanol ... 800 µg/mL Ethylene glycol ... 3100 µg/mL Formamide ... 1100 µg/mL 2-Methoxyethanol (methyl cellosolve) ... 250 µg/mL N-Methylpyrrolidone (1-Methyl-2-pyrrolidinone) ... 2650 µg/mL Sulfolane (tetramethylene sulfone) ... 800 µg/mL	1 mL	35,00
U-USPM-467M	USP 467 Class 2 Residual Solvents Mixture C - July 2008 Revision	4 x 1 mL	112,00
U-USPM-467N-1	USP 467 Class 2 Residual Solvents Mixture B (low) - July 2008 Revision Solvent: Dimethyl sulfoxide (DMSO) Chloroform ... 60 µg/mL 1,2-Dimethoxyethane (DME) ... 100 µg/mL n-Hexane ... 290 µg/mL 2-Hexanone ... 50 µg/mL Nitromethane ... 50 µg/mL Pyridine ... 200 µg/mL 1,2,3,4-Tetrahydronaphthalene ... 100 µg/mL Trichloroethene ... 80 µg/mL	1 mL	34,00
U-USPM-467N	USP 467 Class 2 Residual Solvents Mixture B (low) - July 2008 Revision	4 x 1 mL	110,00

ULTRAgrade® ICP/ICP-MS Multi-Element Standards

- ✓ 99.999% Pure starting materials, wherever possible
- ✓ Traceable to NIST SRMs
- ✓ ASTM Type 1, 18 Megohm ultra low TOC (<50 ppb) Water
- ✓ REACH compliant labeling and SDS
- ✓ ISO 9001:2000 Registered quality system
- ✓ ISO 17025:2005 Accredited laboratory

Competitive pricing

Larger standard size

ICP Standards

Code	Product	Unit	Price €
U-ICM-106	ICP Calibration Standard Surface Water (X) 23 Analytes in 5% HNO_3 with trace HF As (Arsenic) ... 50 ng/mL Ba (Barium) ... 50 ng/mL Be (Beryllium) ... 20 ng/mL Bi (Bismuth) ... 10 ng/mL B (Boron) ... 100 ng/mL Cd (Cadmium) ... 20 ng/mL Ca (Calcium) ... 35000 ng/mL Cr (Chromium) ... 20 ng/mL Co (Cobalt) ... 25 ng/mL Cu (Copper) ... 20 ng/mL Fe (Iron) ... 100 ng/mL Pb (Lead) ... 25 ng/mL Mg (Magnesium) ... 15000 ng/mL Mn (Manganese) ... 30 ng/mL Mo (Molybdenum) ... 100 ng/mL Ni (Nickel) ... 50 ng/mL K (Potassium) ... 3000 ng/mL Se (Selenium) ... 10 ng/mL Na (Sodium) ... 8000 ng/mL Sr (Strontium) ... 100 ng/mL Tl (Thallium) ... 10 ng/mL V (Vanadium) ... 50 ng/mL Zn (Zinc) ... 50 ng/mL	125 mL	111,00
U-ICM-103	ICP Calibration Standard (IV) 23 Analytes in 5% HNO_3 Ag (Silver) ... 1000 µg/mL Al (Aluminum) ... 1000 µg/mL B (Boron) ... 1000 µg/mL Ba (Barium) ... 1000 µg/mL Bi (Bismuth) ... 1000 µg/mL Ca (Calcium) ... 1000 µg/mL Cd (Cadmium) ... 1000 µg/mL Co (Cobalt) ... 1000 µg/mL Cr (Chromium) ... 1000 µg/mL Cu (Copper) ... 1000 µg/mL Fe (Iron) ... 1000 µg/mL Ga (Gallium) ... 1000 µg/mL In (Indium) ... 1000 µg/mL K (Potassium) ... 1000 µg/mL Li (Lithium) ... 1000 µg/mL Mg (Magnesium) ... 1000 µg/mL Mn (Manganese) ... 1000 µg/mL Na (Sodium) ... 1000 µg/mL Ni (Nickel) ... 1000 µg/mL Pb (Lead) ... 1000 µg/mL Sr (Strontium) ... 1000 µg/mL Tl (Thallium) ... 1000 µg/mL Zn (Zinc) ... 1000 µg/mL	125 mL	105,00

ULTRAgrade® ICP/ICP-MS Multi-Element Standards

Code	Product	Unit	Price €
U-ICM-102	ICP Calibration Standard (I) 19 Analytes in 5% HNO_3	125 mL	106,00

Ag (Silver)	50 µg/mL	Fe (Iron)	15 µg/mL
Al (Aluminum)	100 µg/mL	Ga (Gallium)	150 µg/mL
B (Boron)	15 µg/mL	In (Indium)	200 µg/mL
Ba (Barium)	5 µg/mL	Mn (Manganese)	5 µg/mL
Be (Beryllium)	1 µg/mL	Ni (Nickel)	50 µg/mL
Bi (Bismuth)	200 µg/mL	Pb (Lead)	200 µg/mL
Cd (Cadmium)	20 µg/mL	Sr (Strontium)	1 µg/mL
Co (Cobalt)	20 µg/mL	Tl (Thallium)	400 µg/mL
Cr (Chromium)	25 µg/mL	Zn (Zinc)	20 µg/mL
Cu (Copper)	20 µg/mL		

U-ICM-108	ICP Calibration Standard - Quality Control (XVI) 21 Analytes in 5% HNO_3 with HF, tartaric acid	125 mL	155,00

As (Arsenic)	100 µg/mL	Mo (Molybdenum)	100 µg/mL
Be (Beryllium)	100 µg/mL	Ni (Nickel)	100 µg/mL
Ca (Calcium)	100 µg/mL	Pb (Lead)	100 µg/mL
Cd (Cadmium)	100 µg/mL	Sb (Antimony)	100 µg/mL
Co (Cobalt)	100 µg/mL	Se (Selenium)	100 µg/mL
Cr (Chromium)	100 µg/mL	Sr (Strontium)	100 µg/mL
Cu (Copper)	100 µg/mL	Ti (Titanium)	100 µg/mL
Fe (Iron)	100 µg/mL	Tl (Thallium)	100 µg/mL
Li (Lithium)	100 µg/mL	V (Vanadium)	100 µg/mL
Mg (Magnesium)	100 µg/mL	Zn (Zinc)	100 µg/mL
Mn (Manganese)	100 µg/mL		

U-ICM-101	ICP Calibration Standard (VIII) 24 Analytes in 5% HNO_3 with trace HCl	125 mL	120,00

Al (Aluminum)	100 µg/mL	K (Potassium)	100 µg/mL
B (Boron)	100 µg/mL	Li (Lithium)	100 µg/mL
Ba (Barium)	100 µg/mL	Mg (Magnesium)	100 µg/mL
Be (Beryllium)	100 µg/mL	Mn (Manganese)	100 µg/mL
Bi (Bismuth)	100 µg/mL	Na (Sodium)	100 µg/mL
Ca (Calcium)	100 µg/mL	Ni (Nickel)	100 µg/mL
Cd (Cadmium)	100 µg/mL	Pb (Lead)	100 µg/mL
Co (Cobalt)	100 µg/mL	Se (Selenium)	100 µg/mL
Cr (Chromium)	100 µg/mL	Sr (Strontium)	100 µg/mL
Cu (Copper)	100 µg/mL	Te (Tellurium)	100 µg/mL
Fe (Iron)	100 µg/mL	Tl (Thallium)	100 µg/mL
Ga (Gallium)	100 µg/mL	Zn (Zinc)	100 µg/mL

U-ICM-104	ICP Calibration Standard Trace Metals (XIII) 15 Analytes in 5% HNO_3 with trace HF	125 mL	175,00

Al (Aluminum)	500 µg/mL	Hg (Mercury)	5 µg/mL
As (Arsenic)	100 µg/mL	Mn (Manganese)	100 µg/mL
Be (Beryllium)	100 µg/mL	Ni (Nickel)	100 µg/mL
Cd (Cadmium)	25 µg/mL	Pb (Lead)	100 µg/mL
Co (Cobalt)	100 µg/mL	Se (Selenium)	25 µg/mL
Cr (Chromium)	100 µg/mL	V (Vanadium)	250 µg/mL
Cu (Copper)	100 µg/mL	Zn (Zinc)	100 µg/mL
Fe (Iron)	100 µg/mL		

U-ICM-100	ICP Calibration Standard Earth Alkali Elements (III) 4 Analytes in 5% HNO_3	125 mL	70,00

Ba (Barium)	1000 µg/mL	Mg (Magnesium)	1000 µg/mL
Ca (Calcium)	1000 µg/mL	Sr (Strontium)	1000 µg/mL

U-ICM-105	ICP Calibration Standard Toxic Elements (IX) 5 Analytes in 5% HNO_3	125 mL	89,00

As (Arsenic)	100 µg/mL
Be (Beryllium)	100 µg/mL
Cd (Cadmium)	100 µg/mL
Cr+6 (Chromium (VI)	100 µg/mL
Hg (Mercury)	100 µg/mL
Ni (Nickel)	100 µg/mL
Pb (Lead)	100 µg/mL
Se (Selenium)	100 µg/mL
Tl (Thallium)	100 µg/mL

U-ICM-109	ICP Calibration Standard Sewage Sludge (XI) 7 Analytes in 5% HNO_3	125 mL	91,00

Cd (Cadmium)	10 µg/mL	Ni (Nickel)	200 µg/mL
Cr (Chromium)	900 µg/mL	Pb (Lead)	900 µg/mL
Cu (Copper)	800 µg/mL	Zn (Zinc)	2500 µg/mL
Hg (Mercury)	8 µg/mL		

U-ICM-107	ICP Calibration Standard HCl Soluble Elements (XVII) 7 Analytes in 15% HCl with trace HNO_3, HF, tartaric	125 mL	78,00

Hf (Hafnium)	100 µg/mL	Ta (Tantalum)	100 µg/mL
Ir (Iridium)	100 µg/mL	Ti (Titanium)	100 µg/mL
Sb (Antimony)	100 µg/mL	Zr (Zirconium)	100 µg/mL
Sn (Tin)	100 µg/mL		

Code	Product	Unit	Price €

ICP, Graphite Furnace AA & Ion Chromatography Standards

U-ICM-110-5 — ICP Wavelength Calibration Standard (V) — 500 mL — 340,00

26 Analytes in 5% HNO_3 with trace HF

Al (Aluminum)	20 µg/mL	Mg (Magnesium)	1 µg/mL
As (Arsenic)	20 µg/mL	Mn (Manganese)	1 µg/mL
B (Boron)	2 µg/mL	Na (Sodium)	20 µg/mL
Ba (Barium)	2 µg/mL	Ni (Nickel)	5 µg/mL
Be (Beryllium)	1 µg/mL	P (Phosphorus)	10 µg/mL
Ca (Calcium)	10 µg/mL	Pb (Lead)	20 µg/mL
Cd (Cadmium)	2 µg/mL	Sc (Scandium)	1 µg/mL
Cr (Chromium)	2 µg/mL	Se (Selenium)	20 µg/mL
Cu (Copper)	2 µg/mL	Sr (Strontium)	1 µg/mL
Fe (Iron)	2 µg/mL	Te (Tellurium)	20 µg/mL
Hg (Mercury)	5 µg/mL	Ti (Titanium)	2 µg/mL
K (Potassium)	100 µg/mL	Y (Yttrium)	1 µg/mL
Li (Lithium)	2 µg/mL	Zn (Zinc)	2 µg/mL

U-ICM-120-5 — ICP Tuning Standard (XXIV) — 500 mL — 319,00

15 Analytes in 1% HNO_3

Al (Aluminum)	50 µg/mL	Mn (Manganese)	50 µg/mL
As (Arsenic)	50 µg/mL	Mo (Molybdenum)	50 µg/mL
Ba (Barium)	50 µg/mL	Ni (Nickel)	50 µg/mL
Cd (Cadmium)	50 µg/mL	Pb (Lead)	50 µg/mL
Co (Cobalt)	50 µg/mL	Se (Selenium)	50 µg/mL
Cr (Chromium)	50 µg/mL	Sr (Strontium)	50 µg/mL
Cu (Copper)	50 µg/mL	Zn (Zinc)	50 µg/mL
K (Potassium)	500 µg/mL		

U-ICM-111-5 — ICP Wavelength Calibration Standard (XIV) — 500 mL — 154,00

11 Analytes in 2% HCl with trace HNO_3

As (Arsenic)	20 µg/mL	Na (Sodium)	20 µg/mL
K (Potassium)	100 µg/mL	Ni (Nickel)	20 µg/mL
La (Lanthanum)	20 µg/mL	P (Phosphorus)	100 µg/mL
Li (Lithium)	20 µg/mL	S (Sulfur)	100 µg/mL
Mn (Manganese)	20 µg/mL	Sc (Scandium)	20 µg/mL
Mo (Molybdenum)	20 µg/mL		

U-ICC-330 — IC Cations Mixture (VII) — 125 mL — 91,00

9 Analytes in 0.2% HNO_3

$NH4^+$ (Ammonium)	100 µg/mL	Mg^{+2} (Magnesium)	100 µg/mL
Ba^{+2} (Barium)	100 µg/mL	Mn (Manganese)	100 µg/mL
Ca^{+2} (Calcium)	100 µg/mL	Na^+ (Sodium)	100 µg/mL
K^+ (Potassium)	100 µg/mL	Sr^{+2} (Strontium)	100 µg/mL
Li^+ (Lithium)	100 µg/mL		

U-ICM-150 — Graphite Furnace AA Calibration Standard (XVIII) — 125 mL — 168,00

16 Analytes in 5% HNO3 with trace tartaric

Ag (Silver)	10 µg/mL	Cu (Copper)	50 µg/mL
Al (Aluminum)	100 µg/mL	Fe (Iron)	20 µg/mL
As (Arsenic)	100 µg/mL	Mn (Manganese)	20 µg/mL
Ba (Barium)	50 µg/mL	Ni (Nickel)	50 µg/mL
Be (Beryllium)	5 µg/mL	Pb (Lead)	100 µg/mL
Cd (Cadmium)	5 µg/mL	Sb (Antimony)	100 µg/mL
Co (Cobalt)	50 µg/mL	Se (Selenium)	100 µg/mL
Cr (Chromium)	20 µg/mL	Tl (Thallium)	100 µg/mL

ICP-MS Standards

U-IMS-102 — ICP-MS Calibration Standard (XXI) — 125 mL — 308,00

29 Analytes in 5% HNO_3

Ag (Silver)	10 µg/mL	K (Potassium)	10 µg/mL
Al (Aluminum)	10 µg/mL	Li (Lithium)	10 µg/mL
As (Arsenic)	10 µg/mL	Mg (Magnesium)	10 µg/mL
Ba (Barium)	10 µg/mL	Mn (Manganese)	10 µg/mL
Be (Beryllium)	10 µg/mL	Na (Sodium)	10 µg/mL
Bi (Bismuth)	10 µg/mL	Ni (Nickel)	10 µg/mL
Ca (Calcium)	10 µg/mL	Pb (Lead)	10 µg/mL
Cd (Cadmium)	10 µg/mL	Rb (Rubidium)	10 µg/mL
Co (Cobalt)	10 µg/mL	Se (Selenium)	10 µg/mL
Cr (Chromium)	10 µg/mL	Sr (Strontium)	10 µg/mL
Cs (Cesium)	10 µg/mL	Tl (Thallium)	10 µg/mL
Cu (Copper)	10 µg/mL	U (Uranium)	10 µg/mL
Fe (Iron)	10 µg/mL	V (Vanadium)	10 µg/mL
Ga (Gallium)	10 µg/mL	Zn (Zinc)	10 µg/mL
In (Indium)	10 µg/mL		

U-IMS-121 — Mercury ICP-MS Standard (XXI) — 125 mL — 83,00

in 5% HNO_3

Hg (Mercury) 10 µg/mL

ULTRAgrade® ICP/ICP-MS Multi-Element Standards

Code	Product	Unit	Price €
U-IMS-120	ICP-MS Calibration Standard (VI) 30 Analytes in 5% HNO_3 with trace HF Ag (Silver) ..... 10 µg/mL Al (Aluminum) ..... 10 µg/mL As (Arsenic) ..... 100 µg/mL B (Boron)..... 100 µg/mL Ba (Barium)..... 10 µg/mL Be (Beryllium) ..... 100 µg/mL Bi (Bismuth) ..... 10 µg/mL Ca (Calcium)..... 1000 µg/mL Cd (Cadmium) ..... 10 µg/mL Co (Cobalt)..... 10 µg/mL Cr (Chromium) ..... 10 µg/mL Cu (Copper) ..... 10 µg/mL Fe (Iron) ..... 100 µg/mL Ga (Gallium)..... 10 µg/mL K (Potassium) ..... 10 µg/mL Li (Lithium)..... 10 µg/mL Mg (Magnesium)..... 10 µg/mL Mn (Manganese) ..... 10 µg/mL Mo (Molybdenum)..... 10 µg/mL Na (Sodium) ..... 10 µg/mL Ni (Nickel)..... 10 µg/mL Pb (Lead)..... 10 µg/mL Rb (Rubidium) ..... 10 µg/mL Se (Selenium)..... 100 µg/mL Sr (Strontium)..... 10 µg/mL Te (Tellurium)..... 10 µg/mL Tl (Thallium) ..... 10 µg/mL U (Uranium)..... 10 µg/mL V (Vanadium) ..... 10 µg/mL Zn (Zinc) ..... 100 µg/mL	125 mL	319,00
U-IMS-130-5	ICP-MS Mass Calibration Standard (XXIII) 15 Analytes in 5% HNO_3 with trace HCl B (Boron)..... 1 ng/mL Ba (Barium)..... 1 ng/mL Co (Cobalt)..... 1 ng/mL Fe (Iron) ..... 1 ng/mL Ga (Gallium)..... 1 ng/mL In (Indium)..... 1 ng/mL K (Potassium) ..... 1 ng/mL Li (Lithium) ..... 1 ng/mL Lu (Lutetium) ..... 1 ng/mL Na (Sodium) ..... 1 ng/mL Rh (Rhodium) ..... 1 ng/mL Sc (Scandium)..... 1 ng/mL Tl (Thallium) ..... 1 ng/mL U (Uranium)..... 1 ng/mL Y (Yttrium) ..... 1 ng/mL	500 mL	216,00
U-IMS-133-L	ICP-MS Plasma Setup Solution (XX) 11 Analytes in in 1% HNO_3 with trace HF Ba (Barium)..... 10 ng/mL Cd (Cadmium) ..... 10 ng/mL Ce (Cerium) ..... 10 ng/mL Cu (Copper) ..... 10 ng/mL Ge (Germanium)..... 10 ng/mL Mg (Magnesium)..... 10 ng/mL Pb (Lead)..... 10 ng/mL Rh (Rhodium) ..... 10 ng/mL Sc (Scandium)..... 10 ng/mL Tb (Terbium)..... 10 ng/mL Tl (Thallium) ..... 10 ng/mL	1 L	119,00
U-IMS-131	ICP-MS Optimization Standard (XXII) 5 Analytes in 2% HNO_3 with trace HCl Cd (Cadmium) ..... 200 ng/mL Cu (Copper) ..... 200 ng/mL Mg (Magnesium)..... 200 ng/mL Pb (Lead)..... 200 ng/mL Rh (Rhodium) ..... 200 ng/mL	125 mL	59,00
U-IMS-132	ICP-MS Detection Limit Standard (XIX) 5 Analytes in 1%HNO_3 Be (Beryllium) ..... 10 ng/mL Co (Cobalt)..... 10 ng/mL In (Indium)..... 10 ng/mL Tl (Thallium) ..... 10 ng/mL U (Uranium)..... 10 ng/mL	125 mL	71,00