

Joint Research Centre

Certified reference materials for water testing



Trace elements in estuarine and coastal water

Code	Certified values		
BCR-505 Estuarine water (1 L)	Cd	0.80 ± 0.04	nmol/kg
	Co	(0.99 ± 0.26)	nmol/kg
	Cu	29.4 ± 1.5	nmol/kg
	Fe	(19 ± 4)	nmol/kg
	Ni	24.1 ± 2.0	nmol/kg
	Pb	(0.24 ± 0.14)	nmol/kg
	Zn	172 ± 11	nmol/kg
BCR-579 Coastal seawater (1 L)	Hg	1.9 ± 0.5	ng/kg

Major ions in ground- and freshwater

	ERM-CA616 Groundwater (high carbonate content) (95 mL) [mg/L]	BCR-617 Groundwater (low carbonate content) (75 mL) [mg/kg]	BCR-611 Groundwater (4 x 25 mL) [mg/kg]	BCR-612 Groundwater (4 x 25 mL) [mg/kg]	BCR-479 Freshwater (100 mL) [mg/kg]	BCR-480 Freshwater (100 mL) [mg/kg]
Ca	42.6 ± 1.4	14.6 ± 0.4				
K	5.79 ± 0.15	9.93 ± 0.26				
Mg	10.1 ± 0.3	7.32 ± 0.15				
Mn		0.050 ± 0.002				
Na	27.9 ± 0.8	14.6 ± 0.3				
Cl	44.6 ± 0.9	26.4 ± 0.4				
Br			0.093 ± 0.004	0.252 ± 0.010		
NO ₃		25.8 ± 0.5			13.3 ± 0.3	54.9 ± 0.8
PO ₄	2.24 ± 0.10					
SO ₄		26.3 ± 0.5				

Confidence in measurements

All certificates and detailed production information can be found at <https://crm.irmm.jrc.ec.europa.eu>



European
Commission

Ions in simulated rainwater

Code	Certified values		
ERM-CA408 Simulated rainwater (95 mL)	Ammonium	0.910 ± 0.028	mg/L
	Cl	1.96 ± 0.07	mg/L
	F	0.194 ± 0.008	mg/L
	Mg	0.145 ± 0.022	mg/L
	NO ₃	2.01 ± 0.09	mg/L
	<i>Ortho</i> -phosphate SO ₄	1.00 ± 0.05 1.46 ± 0.04	mg/L mg/L

Trace elements in waste water

	ERM-CA713 Wastewater (100 mL)			
As	108	±	0.3	µg/L
Cd	5.09	±	0.20	µg/L
Cr	209	±	1.3	µg/L
Cu	101	±	7	µg/L
Fe	445	±	27	µg/L
Hg	1.84	±	0.11	µg/L
Mn	95	±	4	µg/L
Ni	50.3	±	1.4	µg/L
Pb	49.7	±	1.7	µg/L
Se	4.9	±	1.1	µg/L

Trace elements in groundwater

Code	Certified values			
BCR-609 Groundwater (500 mL)	Al	47.7	± 1.6	mg/kg
	As	1.20	± 0.12	mg/kg
	Cd	0.164	± 0.012	mg/kg
	Cu	2.48	± 0.09	mg/kg
	Pb	1.63	± 0.04	mg/kg
BCR-610 Groundwater (500 mL)	Al	159	± 4	mg/kg
	As	10.8	± 0.4	mg/kg
	Cd	2.94	± 0.08	mg/kg
	Cu	45.7	± 1.5	mg/kg
	Pb	7.78	± 0.13	mg/kg
ERM-CA615 Groundwater (100 mL)	As	9.6	± 0.7	mg/L
	Cd	0.106	± 0.011	mg/L
	Fe	5.11	± 0.26	mg/L
	Hg	0.037	± 0.004	mg/L
	Mn	107	± 5	mg/L
	Ni	25.3	± 1.1	mg/L
	Pb	7.1	± 0.6	mg/L

How to order reference materials

From JRC in Geel

Tel: +32 14 571 705 • Fax: +32 14 590 406
<https://ec.europa.eu/jrc/en/reference-materials>
 E-mail: jrc-irmm-rm-distribution@ec.europa.eu

From authorised distributors

LGC Standards GmbH (DE)
<http://www.lgcstandards.com/>
 E-mail: de@lgcstandards.com

Sigma-Aldrich Chemie GmbH (CH)
<http://www.sigmaaldrich.com/irmm>
 E-mail: flukatec@sial.com

Sigma-Aldrich RTC Inc. (USA)
<http://www.RT-Corp.com>
 E-mail: RTCSalesgroup@sial.com

ARMI (USA)
<http://www.armi.com>
 E-mail: Info@ARMI.com

Industrial Analytical (RSA)
<http://www.industrialanalytical.co.za>
 E-mail: info@industrialanalytical.co.za



Accredited CRM Producer: the JRC-IRMM is accredited to ISO Guide 34:2009 for the production of reference materials under the code BELAC 268-RM