



# 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	$0.80 \pm 0.04$	nmol/kg
	Co	$(0.99 \pm 0.26)$	nmol/kg
	Cu	$29.4 \pm 1.5$	nmol/kg
	Fe	$(19 \pm 4)$	nmol/kg
	Ni	$24.1 \pm 2.0$	nmol/kg
	Pb	$(0.24 \pm 0.14)$	nmol/kg
BCR-579 Coastal seawater (1 L)	Zn	$172 \pm 11$	nmol/kg
	Hg	$1.9 \pm 0.5$	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	$42.6 \pm 1.4$	$14.6 \pm 0.4$				
K	$5.79 \pm 0.15$	$9.93 \pm 0.26$				
Mg	$10.1 \pm 0.3$	$7.32 \pm 0.15$				
Mn		$0.050 \pm 0.002$				
Na	$27.9 \pm 0.8$	$14.6 \pm 0.3$				
Cl	$44.6 \pm 0.9$	$26.4 \pm 0.4$				
Br			$0.093 \pm 0.004$	$0.252 \pm 0.010$		
NO <sub>3</sub>		$25.8 \pm 0.5$			$13.3 \pm 0.3$	$54.9 \pm 0.8$
PO <sub>4</sub>	$2.24 \pm 0.10$					
SO <sub>4</sub>		$26.3 \pm 0.5$				

### Confidence in measurements

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



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Commission

### Ions in simulated rainwater

Code	Certified values		
<b>ERM-CA408</b> 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 <sub>3</sub>	2.01 ± 0.09	mg/L
	<i>Ortho</i> -phosphate SO <sub>4</sub>	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			
<b>BCR-609</b> 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
<b>BCR-610</b> 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
<b>ERM-CA615</b> 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](mailto:jrc-irmm-rm-distribution@ec.europa.eu)

#### From authorised distributors

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

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

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

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

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