

Trace Analysis Arium[®] Mini Plus

Elements	Detection threshold	Calculated concentration Arium [®] ultrapure water	Unit	Procedure
Aluminium Al	<0.5	3.8	ng/L (ppt)	ICP-SMS
Antimony Sb	<0.005	0.05	ng/L (ppt)	ICP-SMS
Arsenic As	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Barium Ba	<0.02	0.19	ng/L (ppt)	ICP-SMS
Beryllium Be	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Boron B	<2	3.2	ng/L (ppt)	ICP-SMS
Lead Pb	<0.01	0.09	ng/L (ppt)	ICP-SMS
Cadmium Cd	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Calcium Ca	<5	24	ng/L (ppt)	ICP-SMS
Cesium Cs	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Cerium Ce	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Chromium Cr	<0.02	0.08	ng/L (ppt)	ICP-SMS
Cobalt Co	<0.005	0.06	ng/L (ppt)	ICP-SMS
Dysprosium Dy	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Iron Fe	<0.5	0.82	ng/L (ppt)	ICP-SMS
Erbium Er	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Europium Eu	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Gadolinium Gd	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Gallium Ga	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Germanium Ge	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Gold Au	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Hafnium Hf	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Holmium Ho	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Iridium Ir	<0.001	Under detection threshold	ng/L (ppt)	ICP-SMS
Copper Cu	<0.5	0.92	ng/L (ppt)	ICP-SMS
Lanthanum La	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Lithium Li	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Lutetium Lu	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Magnesium Mg	<1	2.8	ng/L (ppt)	ICP-SMS
Manganese Mn	<0.05	0.2	ng/L (ppt)	ICP-SMS
Molybdenum Mo	<0.02	0.06	ng/L (ppt)	ICP-SMS
Neodymium Nd	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS

Execution and Analysis Procedure

The water analysis was executed by ALS Scandinavia AB, an internationally recognized testing laboratory for special analytics, based on the ICP-SMS (HR-ICP-MS) after 50-fold preconcentration by sub-boiling distillation. The trace elements are determined using 18 scans over the mass range, resulting in total measurement time of 300 s. All concentrations are within $\pm 30\%$ of the reported value. This may not apply to Br and I. The tests were performed with an Arium[®] Mini Plus, without final filter, fed with tap water.

Elements	Detection threshold	Calculated concentration Arium® ultrapure water	Unit	Procedure
Nickel Ni	<0.4	1.2	ng/L (ppt)	ICP-SMS
Niobium Nb	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Osmium Os	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Palladium Pd	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Platinum Pt	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Potassium K	<5	17	ng/L (ppt)	ICP-SMS
Praseodymium Pr	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Mercury Hg	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Rhenium Re	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Rhodium Rh	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Rubidium Rb	<0.01	0.04	ng/L (ppt)	ICP-SMS
Ruthenium Ru	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Samarium Sm	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Scandium Sc	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Selenium Se	<0.05	Under detection threshold	ng/L (ppt)	ICP-SMS
Silver Ag	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Sodium Na	<10	24	ng/L (ppt)	ICP-SMS
Strontium Sr	<0.01	0.05	ng/L (ppt)	ICP-SMS
Tantalum Ta	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Tellurium Te	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Terbium Tb	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Thallium Tl	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Thorium Th	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Thulium Tm	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Titanium Ti	<0.1	Under detection threshold	ng/L (ppt)	ICP-SMS
Uranium U	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Vanadium V	<0.01	0.03	ng/L (ppt)	ICP-SMS
Bismuth Bi	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Tungsten W	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Ytterbium Yb	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Yttrium Y	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Zinc Zn	<2	6.1	ng/L (ppt)	ICP-SMS
Tin Sn	<0.02	0.11	ng/L (ppt)	ICP-SMS
Zirconium Zr	<0.005	Under detection threshold	ng/L (ppt)	ICP-SMS
Silicon, Si	<30	33	ng/L (ppt)	ICP-SMS
Bromine, Br	<5	Under detection threshold	ng/L (ppt)	ICP-SMS
Phosphorus, P	<2	10	ng/L (ppt)	ICP-SMS
Iodine, I	<0.2	Under detection threshold	ng/L (ppt)	ICP-SMS
Sulphur, S	<20	83	ng/L (ppt)	ICP-SMS

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