



Water

The ALS range of methods suitable for all types of water.

Geochemistry





Waters to Brines

ALS offers a range of methods suitable for all types of water, from the cleanest groundwaters to the saltiest brines. The choice of analytical method is dependent on the elements of interest plus the total dissolved solids (TDS) in the water.

Multi-element package selection

The super trace method ME-MS14L™ provides a suite of 53 elements and is suitable for most naturally occurring ground and surface waters with low TDS. Samples are not diluted before analysis to produce the lowest detection limits possible. For this reason, only samples with TDS lower than approximately 2% can be introduced to the ICP-MS. For higher TDS samples that are not brines, methods ME-MS14a and b provide a comprehensive element suite. The ME-MS14a and b methods are also analyzed directly on the ICP-MS but have higher detection limits and are therefore not as sensitive to the higher TDS content of waters. The ME-MS14 a and b methods are not suitable for high metal content samples or those for environmental monitoring. For brines the ME-ICP15 method is applicable as samples are diluted before analysis as a necessary step to reduce interferences and damage to the ICP-AES instruments.

For other solutions which do not fall into the previously mentioned groups, please contact ALS for alternatives.

Fresh Water (low TDS)

ME-MS14L™

Sample preparation

Sample preparation requirements will depend on the information that you want to obtain from the analyses. For concentrations of elements that are present in solution, samples should be filtered at the time of collection. If you are unable to field-filter your samples, please notify us at the time of submission and filtration can be performed at ALS prior to analysis. Samples filtered in the field should also be acidified with ultra-pure nitric acid to maintain elements in solution before analysis.

Alternatively, to determine the concentration of elements in solution plus those in fine suspended particles in the solution, samples should be left unfiltered. Coarser particles will settle out of solution before analysis therefore if you need to determine the coarser particles composition, a solid filter by-product sample may be needed.

If anions and alkalinity of the water need to be determined a second sample needs to be collected without the addition of acid.

Field readings

Ideally water sampling should include physical parameter measurements made at the time of collection as these parameters will be useful for interpretation of results and identification of aquifers. Laboratory physical parameter readings can be taken on samples (see method list) but many of the parameters (temperature, pH, Eh) change during storage and transport, no matter how short the hold time.

Brine

ME-ICP15



ME-MS14a, ME-MS14b or request
ME-MS14PKG to include both.



Transporting samples to ALS

Samples can be delivered to any ALS laboratory location and the samples will be dispatched to the relevant location for analyses. All water samples should be submitted in securely sealed bottles (extra tape around lid if necessary) and enclosed in individual bags to prevent leakage and contamination if spillage does occur. Samples are best shipped in cooler boxes which are sturdy and allow samples to be kept cool and out of direct light during transport. Cooler boxes, cold blocks and sample bottles can be obtained from ALS prior to sampling.

If brines are being used for Li exploration and resource estimation, please note this on the submittal form so that Li specific reference materials are used.

For more details on the collection of hydrogeochemical samples please see the ALS technical note: Hydrogeochemistry for Exploration.

ALS Method Code	Description
ME-MS14L™	Super-trace level analyses of low TDS water for 53 elements by a combination of ICP-MS and ICP-AES.
ME-MS14b	Trace level analyses of brine samples. 36 elements are reported from 50mL solutions analyzed by ICP-MS. Overlimit samples are analyzed by ME-ICP14 on the ICP-AES.
ME-MS14a	Trace level analyses of brine samples. 9 elements reported by direct ICP-MS analyses. Overlimit samples are analysed by ME-ICP14 on the ICP-AES.
ME-MS14PKG	This package combines both ME-MS14a and ME-MS14b.
ME-ICP15	Intermediate to high level analyses of 26 elements in brine samples by ICP-AES. Brine samples can be submitted either filtered or raw.
Li-BrPKG	Physical parameters (pH, conductivity, total dissolved solids) and alkalinity on brine samples.
MS14L-ANPH™	Physical parameters (pH, conductivity, total dissolved solids), alkalinity and anions (Br, Cl, F, NO ₃ , SO ₄) on water. Only available as an add on to the ME-MS14L™ method.
MS14L-REE™	Rare Earth Element analyses on surface and ground water. Only available as an add on to the ME-MS14L™ water method.
MS14L-PbIS™	Pb isotopic analyses on water. Only available as an add on to the ME-MS14L™ water method.

DETECTION LIMITS

ANALYTE	ME-MS14L™ µg/L	ME-MS14a µg/L	ME-S14b µg/L	ME-ICP15 mg/L
Au	0.002			
Ag	0.005		0.05	1
Al	3		50	100
As	0.05	10		10
B	3		10	5
Ba	0.05	0.01		10
Be	0.005		0.3	0.1
Bi	0.01		0.1	
Ca	0.02mg/L		200	50
Cd	0.005	0.1		0.5
Ce	0.005		0.02	
Co	0.005		0.1	2
Cr	0.5	1		2
Cs	0.005		0.01	
Cu	0.1	0.3		1
Fe	0.003mg/L		20	100
Ga	0.05		0.05	
Hf	0.005		0.05	
Hg	0.05	0.2		
In	0.01		0.04	
K	0.01mg/L		60	500
La	0.005		0.02	
Li	0.1		10	10
Mg	0.005mg/L		4	5
Mn	0.05		0.1	1
Mo	0.05		1	1
Na	0.01mg/L		300	100
Nb	0.005		0.02	
Ni	0.2		0.5	2
P	0.005mg/L		100	100
Pb	0.05	0.2		5
Pt	0.005			
Pd	0.005			
Rb	0.01		0.1	
S	0.2mg/L			500*
Sb	0.01		0.1	5
Sc	0.01			
Se	0.05	10		
Si	0.03mg/L			
Sn	0.05		0.3	
Sr	0.05		0.1	2
Ta	0.01		0.01	
Te	0.01		10	
Th	0.005		0.01	
Ti	0.2			100
Tl	0.002		0.04	
U	0.002		0.01	
V	0.05		1	1
W	0.01		0.2	
Y	0.005		0.03	
Zn	0.5	2		1
Zr	0.02		0.05	

*on request

ALS provides a wide range of specialised testing services covering all stages of your project's life cycle.

Please visit alsglobal.com for more information on our services and specialities.



Right Solutions · Right Partner

alsglobal.com

GEOCHEMISTRY CLIENT SERVICES

Australia/Asia — Brisbane

T +61 7 3243 7222

E CSGGBR@alsglobal.com

Australia/Asia — Perth

T +61 8 9347 3222

E CSGPH@alsglobal.com

Africa — Johannesburg

T +27 11 608 0555

E ClientServicesAfrica@alsglobal.com

Brazil — Belo Horizonte

T +55 31 3045 8400

E ALSBH.ClientServMin@alsglobal.com

Canada — Vancouver

T +1 604 984 0221

E ClientServicesWCAN@alsglobal.com

Chile — Santiago

T +56 2 2654 6100

E Santiago.MineralServices@alsglobal.com

Europe — Loughrea

T +353 91 841 741

E ALSM.Loughrea@alsglobal.com

Europe — Seville

T +349 55 981 491

E alssv@alsglobal.com

Mexico — Hermosillo

T +52 662 260 7586

E ClientServicesMEX@alsglobal.com

Peru — Lima

T +51 1 574 57 00

E ServicioAlClientePeru@ALSGlobal.com

Ecuador-Quito

T: +593 2 513 0891

E: ALSEcuadorMin@ALSGlobal.com

USA — Reno

T +1 775 356 5395

E ClientServicesUSA@alsglobal.com