



Method Summary

Dissolved Metals in Saline Matrices by CCT ICP-MS

Scope and Range

This method details the multi-element determination of waters by inductively coupled plasma mass spectroscopy in conjunction with a collision cell (CCT ICP-MS).

This method applies to saline waters, and high total dissolved solids aqueous solutions.

Analyte	Working range (µg/l)	LoD (µg/l)
As	0-250	0.5
Al	0-2500	3.7
B	0-125000	201
Cd	0-250	0.15
Cr	0-250	1.5
Cu	0-2500	1.0
Fe	0-250000	4.0
Pb	0-250	0.2
Hg	0-50	0.15
Mn	0-2500	0.3
Ni	0-250	1.1
Sb	0-2500	1.0
Se	0-250	0.5
V	0-250	4.0
Zn	0-2500	2.1

Principle

Preparation and Extraction

The sample is filtered, and 1 mL is pipetted into a 12ml polypropylene test tube
The sample is then acidified with a high-purity nitric/hydrochloric acid mix.

Analysis

The samples are loaded into an autosampler, and the instrument is set up to run the samples.

The sample in solution passes into the plasma source in a flow of argon. The sample is atomised and ionised in the plasma.

The collision cell removes any polyatomic interferences by a process of kinetic energy discrimination (KED); essentially the polyatomic species are much bigger than individual ions, so are knocked-out by the collision gas and prevented from entering the quadrupole. - The quadrupole then separates out ions by their mass to charge ratio, which is element specific.

The intensity of the signal at each mass is directly proportional to the concentration of the element in question in the solution.