

**Method Summary****Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES****Scope and Range**

This method is applicable for the analysis of routine metals in sandy soils, clay and loam by mixed acid digest and analysis by *iCap 6500 Duo* ICP-OES. Additionally Sludge samples can be analysed unaccredited.

Element	Calibration Range mg/kg	Reporting Limit mg/Kg	Accreditation status
Al	0 - 25000	11	None
As	0 - 500	0.6	MCerts
B	0 - 500	0.7	UKAS
Ba	0 - 500	0.6	UKAS
Be	0 - 500	0.01	MCerts
Bi	0 - 500	1.0	None
Cd	0 - 500	0.02	MCerts
Co	0 - 500	0.1	MCerts
Cr	0 - 500	0.9	MCerts
Cu	0 - 500	1.4	MCerts
Fe	0 - 25000	2	UKAS
Hg	0 - 500	0.14	MCerts
Li	0 - 500	1.0	None
Mn	0 - 500	0.13	MCerts
Mo	0 - 500	0.1	UKAS
Ni	0 - 500	0.2	MCerts
P	0 - 500	1	None
Pb	0 - 500	0.7	MCerts
Sb	0 - 500	0.6	UKAS
Se	0 - 500	1	UKAS
Sn	0 - 500	0.24	UKAS
Sr	0 - 500	0.4	UKAS
Te	0 - 500	1.0	None
Ti	0 - 500	0.1	None
Tl	0 - 500	0.7	UKAS
V	0 - 500	0.2	UKAS
Zn	0 - 500	1.9	MCerts



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References

none

Principle

Soil samples submitted to the laboratory are prepared for analysis by drying and crushing. A sub-sample of the soil is taken and dried and crushed in accordance with in-house method PM-024 *Homogenisation and Preparation of Soil Samples*.

Sludge samples submitted to the laboratory are prepared for analysis by drying and crushing. A sub-sample of the sludge is taken and dried and crushed in accordance with in-house method PM207 - *Preparation of Sludge Samples*

A portion of the dried crushed sample is digested in a mixture of nitric acid and hydrochloric acid.

The digest is then sent for analysis by ICP-OES.

The ICP-OES instrument measures the intensity of characteristic emission lines for each element of interest in each sample.

Interferences

Since many spectral lines are close to each other, there is the possibility of overlap occurring. Care must be taken to ensure that selected lines are free from interference, where this it is not possible, some form of correction should be used to prevent erroneous readings.

Since emission spectroscopy responses are linear over a wide concentration range, a simple mathematical calculation known as inter-element correction (IEC) can often be used.