

**Method Number: TM 224**

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**Method Summary****Determination of Alkali Metals by ICP-OES****Scope and Range**

This method details the analysis of soil samples, digested by mixed acid, for alkali metals (specifically Ca, K, Mg, and Na) by inductively coupled optical emission spectroscopy (ICP-OES).

Analyte	Working range (mg/Kg)	LoD (mg/Kg)
Ca	0-20,000	21
K	0-20,000	16
Mg	0-20,000	8
Na	0-20,000	7

**References**

none

**Principle****Preparation and Extraction**

1g of dried and crushed sample is weighed into a digestion tube.

This is then digested with 10mL of aquaregia (3:1 HCl/HNO<sub>3</sub>) at 1100C for 90 minutes before being made to volume.

The solution is then centrifuged, and the supernatant is decanted into a vial for analysis.

**Analysis**

The samples are loaded into an autosampler, and as each sample passes into the plasma it is atomised, ionised, and excited.

The excited atoms emit photons at characteristic wavelengths; these wavelengths are used to identify each element, and the intensity of the emission is used to measure the concentration.

**Interferences**

This method is not prone to matrix effects, but may suffer from spectral overlap (where two or more elements have emission lines close together). Every effort is made to select lines that exhibit no overlap, but where this is unavoidable inter-element corrections (IECs) may be used.