

## Water-Soluble Calcium

### 1. Scope:

This procedure is to be used for the analysis of water-soluble calcium in fertilizers.

### 2. Principle:

Samples are prepared as described in RA-SP-SMPL-PREP. Water-soluble calcium is determined by boiling sample in water, filtering, and analyzing by ICP-OES (see RA-SP-MINERALS-AG).

### 3. Safety:

All laboratory safety rules for sample preparation and analysis shall be followed. Gloves, eye protection, and a lab coat shall be worn when handling hazardous materials.

### 4. Equipment and Supplies:

- 4.1 Analytical balance capable of measuring to 0.0001g
- 4.2 Volumetric flask, 250mL
- 4.3 FilterMate 6.0 $\mu$ m filter (Environmental Express SC0401 or equivalent)

### 5. Sample Analysis:

- 5.1 Weigh 1g of sample in a 250mL volumetric flask.
- 5.2 Add 200mL water and boil 30 minutes.
- 5.3 Cool and dilute to 250mL with water.
- 5.4 Filter using a FilterMate filter.
- 5.5 Analyze for calcium by ICP-OES.

### 6. QA/QC:

- 6.1 A method blank consisting of 1g of 10mohm water that is subjected to the same analysis as the sample(s) shall be included with each set.

- 6.2 A QC sample shall be analyzed with each set and if possible, should be a similar matrix to the samples. An acceptable QC sample is a Magruder test sample with a known mean and standard deviation. If a Magruder sample is not available, CaCl<sub>2</sub> may be used. Results shall be within 2 standard deviations of the assigned value.
- 6.3 The reporting limit is 25ppm (0.0025%).

## 7. References:

- 7.1 AOAC Official Methods of Analysis of AOAC, 19<sup>th</sup> ed., Method 937.02, Chapter 2.6.21, *Magnesium (Water-Soluble) in Fertilizers*

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