

STANDARD OPERATING PROCEDURE

SAMPLE REQUIREMENTS FOR ANION AND CATION ANALYSIS AND QUANTIFICATION ON AN ION CHROMATOGRAPHY (IC) INSTRUMENT

Introduction

The Ion Chromatography instrument can be used for the quantification of anions (F, Cl, NO₂, Br, NO₃, SO₄, PO₄) and cations (Li, Na, K, NH₄, Mg, Ca) in aqueous samples using conductivity and/or UV detection.

Scope

This Standard Operating Procedure (SOP) describes the sample requirements and preparation for ion analysis and quantification.

Type of samples that can be submitted.

- Ions can be quantified in aqueous samples including ground water (borehole), surface water (dams, rivers, streams), municipal water, effluent and seawater.
- When requesting analysis, please indicate the sample matrix and any treatments conducted or chemicals that were added during preparation of the sample.
- Please indicate the presence of any toxic substances to ensure safe working conditions and appropriate disposal of samples.
- The unit reserves the right not to analyse samples containing hazardous chemicals or may return this to the customer for disposal.

Sampling information

- A minimum of 100 ml sample is required for analysis of anions and cations.
- Samples should be filtered using a 0.45 µm Nylon syringe filter to remove particles. Please do not use filter paper as this can introduce contaminants such as calcium or nitrate.
- Following collection and during transport keep samples in a cooler box on ice in the dark to minimize the growth and activity of micro-organisms in the sample.

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- Select the correct clean container for sample storage/collection/preparation: Polypropylene and low density polyethylene (LDPE) is the most suitable.
- Containers should be filled to the brim leaving no headspace prior to capping and sealing.
- Label samples with a permanent marker indicating sample identity or number and the date.
- Please record the conductivity (EC) of the sample and indicate this on the sample list template provided.
- Complete all information on the sample template and email this prior to sample submission.

Guidelines for the analysis of specific ions

- Analysis and quantification of NO_2 , NO_3 and PO_4 should be conducted within 48-hours following sampling.
- Samples used for analysis and quantification of NH_4 can be preserved by adding 100 μl 1M (IC grade) Nitric acid (HNO_3) for every 10 ml sample immediately after collection or as soon as possible. Acidifying the sample stabilizes the ions in solution.
- If anion quantification will also be required, please collect a separate (non-acidified) sample and indicate which sample is acidified.
- Br, Cl, F and SO_4 can be analysed within 28 days after sampling.