



## **Method Summary**

### **Determination of Anions in Waters and Leachates using Ion Chromatography**

#### **Scope**

This method is suitable for the determination of anions in waters and leachates (mg/l). The limits of detection are as set out in Table 1. These are based on validation data for waters. Limits for leachates will differ depending on the extraction ratio. The calibrated range for all the anions is between the LOD and 200mg/l.

**Table 1 - Limits of Detection**

<b><u>Anion</u></b>	<b><u>Limit of Detection (mg/l)</u></b>
Fluoride	0.03
Chloride	0.08
Nitrite	0.03
Bromide	0.02
Nitrate	0.04
Phosphate	0.14
Sulphate	0.10

#### **Principle**

An aliquot of the sample is injected onto a liquid chromatography column, where the different anions are separated by ion chromatography and subsequently pass a conductivity detector. The conductivity reading is plotted against time to give a chromatogram for each sample. The peaks on the calibration standards chromatograms are assigned to each of the anions in the order in Table 1. The peaks on the samples are then automatically assigned to each of the anions that are present in the sample, based on the time previously recorded for the standards. All of the sample peaks are then checked for correct integration by the analyst. The integrated area under each sample peak is compared to values from the calibration standards to give a result for each peak identified.

#### **Interferences**

Very large concentrations of one peak near another peak may mask that peak in the chromatogram and prevent it from being detected. In this case, gradual dilutions are carried out to reduce the size of the interfering peak and still detect an analysable amount of the peak of interest.

#### **Sampling and Sample Preparation**

Samples to be analysed for anions by IC should be taken using an un-preserved bottle. All samples should be stored refrigerated until ready for analysis.

1-1.5ml of each sample is filtered through 0.45µm filters into a vial. Vials are then capped and racked up until they are transferred to the instrument autosampler.