

METHOD STATEMENT



Determinand:

Determination of Bromate

Matrix:

Sample Types: Raw, Potable, Surface and Ground waters.

Principle of Method:

This method uses Dionex ICS3000 and associated accessories.

Detection of Bromate is obtained by applying an acidic solution of potassium iodide containing a catalytic amount of molybdenum (VI) where the bromate reacts with iodide to form tri-iodide ions in a post column reaction (PCR) step. The tri-iodide is then measured by UV detection at 352nm. The amount of tri-iodide is directly proportional to the quantity of bromate in the sample.

Sampling and Sample Preparation:

Samples are normally collected in 250 ml or 300 ml amber glass bottles.

No special preservation is required

If analysis cannot be immediately undertaken, samples should be stored at a temperature of 1 - 5°C until the day of analysis. Samples should be warmed up to room temperature prior to analysis and analysed within 31 days of the sampling date.

Interferences

Any peak that co-elutes at the same time as Bromate.

Performance of Method:

Range of Application:

LOQ - 20 µg/l BrO₃

The analytical ranges may be extended by sample dilution with deionised (Milli-Q) water.

Reporting Limit is 0.26 µg/l BrO₃

Limit of Quantification:

0.2510 µg/l BrO₃

Recoveries of Compounds, Bias and Uncertainty of measurement:

Sample type	Mean sample result (µg/l)	Mean sample spike result (µg/l)	Conc. of spike (µg/l)	Spike recovery (%)	Bias (%)	% uncertainty
Soft- Langsett	0.002	10.129	9.901	102.28	2.28	± 7.13
Medium- Tophill Low	2.488	12.711	9.901	103.25	2.60	± 9.03
Hard- Purton (Bristol)	1.832	11.993	9.901	102.62	2.21	± 7.82
Borehole - Goose House BH2	0.006	10.086	9.901	101.81	1.81	± 7.27
Raw-(Surface) Derwent at Elvington	0.004	9.895	9.901	99.90	-0.10	± 6.14
Bottle water -Strathmore	0.005	10.190	9.901	102.87	2.87	± 8.82
Spiked LOD sample	-	0.470	0.5	93.92	-6.08	± 18.87

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Sample type	Mean sample result (µg/l)	Mean sample spike result (µg/l)	Conc. of spike (µg/l)	Spike recovery (%)	Bias (%)	% uncertainty
4 µg/l Std	-	4.058	4.00	101.45	1.45	± 7.67
16 µg/l Std	-	16.098	16	101.45	0.61	± 4.29

References:

Dionex ICS3000 user's instruction guides

Thermo scientific (Dionex) Technical Note 116 - Determination of Bromate by ISO Method 11206