ISO 4721:2024-12 (E)

Water quality - Strontium 90 - Test method using ICP-MS

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Normative references 1

3 Terms and definitions 2

4 Symbols 2

5 Principle 3

6 Sampling and sample storage 5

7 Chemical reagents and equipment 5
7.1 General 5
7.2 Chemical reagents 5
7.3 Apparatus 6

8 Chemical separation 6

9 Quality control 6
9.1 General 6
9.2 Variables that can influence the measurement 7
9.3 Instrument verification 7
9.4 Method verification 8

10 Expression of results 8
10.1 General 8
10.2 Data analysis 8
10.3 Background 8
10.4 Mass bias evaluation 9
10.5 Use of naturally occurring stable strontium as chemical yield tracer 9
10.5.1 Internal standard 9
10.5.2 Determination of stable strontium concentration 10
10.5.3 Mass bias evaluation 11
10.5.4 Sample mass concentration 11
10.5.5 Limit of detection 11
10.5.6 Limit of quantification 11
10.6 Isotope dilution method using an enriched isotope spike 11
10.6.1 General 11
10.6.2 Isotope spike solution 11
10.6.3 Mass bias evaluation 12
10.6.4 Sample mass concentration 12
10.6.5 Limit of detection 12
10.6.6 Limit of quantification 13
10.7 Conversion of mass concentration to mass activity 13
10.8 Conversion from mass to volume units 13

11 Test report 13

Annex A (informative) **Chemical separation of strontium by crown ether-based extraction chromatographic resin — Sample strontium solution in 4 mol·l^{-1} HNO_3** 15

Annex B (informative) **Chemical separation of strontium by strontium-specific extraction chromatographic resin — Sample strontium solution in 0,01 mol·l^{-1} HNO_3** 17

Annex C (informative) **Chemical separation of strontium for large volume water samples by cation exchange resin and strontium-specific extraction chromatographic resin** 19

Bibliography 21