

ISO 22908:2020-01 (E)

Water quality - Radium 226 and Radium 228 - Test method using liquid scintillation counting

Contents	Page
Foreword.....	iv
Introduction.....	v
1 Scope	1
2 Normative references	1
3 Terms, definitions, symbols and units	1
3.1 Terms and definitions.....	1
3.2 Symbols, definitions and units.....	2
4 Principle	3
5 Reagents and equipment	3
5.1 Reagents.....	3
5.2 Equipment.....	4
6 Sampling	5
7 Instrument set-up and calibration	5
7.1 Optimization of counting conditions.....	5
7.1.1 Preparation of sources.....	5
7.1.2 Optimization process.....	6
7.2 Counting efficiencies of ²²⁶ Ra and ²²⁸ Ra.....	6
7.2.1 Preparation of ²²⁶ Ra and ²²⁸ Ra standard sources.....	6
7.2.2 Determination of counting efficiencies.....	6
7.3 Blank sample measurement.....	7
8 Procedure	7
8.1 General.....	7
8.2 Separation of radium by precipitation.....	7
8.3 Purification of radium.....	8
8.4 Test sample preparation.....	8
8.5 Measurement.....	9
8.6 Chemical recovery.....	9
8.6.1 General.....	9
8.6.2 Preparation of a QC sample with known ²²⁶ Ra and ²²⁸ Ra activities.....	9
8.6.3 Determination of overall counting efficiencies.....	9
8.6.4 Determination of chemical recovery.....	9
9 Quality control	10
10 Expression of results	10
10.1 Calculation of massic activities of ²²⁶ Ra and ²²⁸ Ra at the sampling date.....	10
10.2 Standard uncertainty.....	10
10.3 Decision threshold.....	12
10.4 Detection limit.....	12
10.5 Confidence limits.....	12
11 Interference control	12
12 Test report	13
Annex A (informative) Flow chart of the procedure	14
Annex B (informative) Decay series relevant to radium isotopes	15
Annex C (informative) Set-up parameters and procedure	16
Annex D (informative) Validation data	22
Bibliography	28