

ISO 23655-1:2022-09 (E)

Water quality - Nickel-59 and nickel-63 - Part 1: Test method using liquid scintillation counting

Contents	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 General symbols and nickel-59 and nickel-63 specific symbols	2
5 Principle	4
6 Reagents	4
6.1 Standard solutions	5
6.1.1 Nickel-59 and 63Ni standards	5
6.1.2 Stable nickel standards	5
6.2 Chemical quenching agent	5
6.3 Colour quenching agent	5
6.4 Holdback carrier	5
6.5 Water	5
6.6 Specific reagents for chemical separation	5
7 Equipment	6
7.1 Laboratory equipment for direct evaporation	6
7.2 Liquid scintillation vials	6
7.3 Measurement equipment: Liquid scintillation counter	6
8 Sampling	6
9 Liquid scintillation set up and calibration	7
9.1 Window setting	7
9.2 Background	7
9.3 Calibration	7
10 Procedure	9
10.1 Preliminary	9
10.1.1 Stable nickel content	9
10.1.2 Iron and nickel separation	9
10.2 Liquid scintillation source preparation	9
11 Quality control	10
12 Expression of results	10
12.1 Nickel-59 measurements	10
12.1.1 Nickel recovery	10
12.1.2 Activity calculation	10
12.2 Nickel-63 measurements	11
12.3 Uncertainties and characteristic limits	11
12.3.1 Nickel recovery	11

12.3.2	Nickel-59 measurements	11
12.3.3	Nickel-63 measurements	13
12.4	Limits of the coverage interval	15
12.4.1	Limits of the probabilistically symmetric coverage interval	15
12.4.2	Shortest coverage interval	16
13	Test report	16
Annex A (normative) Isolation and purification of nickel		18
Bibliography		20