

DIN EN ISO 10704:2020-12 (E)

Water quality - Gross alpha and gross beta activity - Test method using thin source deposit (ISO 10704 :2019)

Contents		Page
European foreword		4
Foreword		5
Introduction		6
1 Scope		8
2 Normative references		8
3 Terms, definitions and symbols		9
4 Principle		10
5 Chemical reagents and equipment		10
5.1 Reagents		10
5.1.1 General		10
5.1.2 Standard solutions		10
5.1.3 Wetting or surfactant agents		11
5.1.4 Volatile organic solvents		11
5.1.5 Water		11
5.1.6 Specific reagents for alpha-emitting radionuclides co-precipitation		11
5.2 Equipment		11
5.2.1 Laboratory equipment for direct evaporation		11
5.2.2 General equipment		11
5.2.3 Special equipment for alpha-emitting radionuclide co-precipitation		12
5.2.4 Measurement equipment		12
6 Sampling		12
7 Procedure		12
7.1 Preliminary		12
7.2 Source preparation		12
7.2.1 Preparation of planchet		12
7.2.2 Evaporation		13
7.2.3 Co-precipitation		13
7.3 Counting stage		14
7.4 Background and blank determination		14
7.5 Preparation of counting standard for calibration		14
7.6 Preparation of calibration source for self-absorption determination		15
7.6.1 General		15
7.6.2 Spiking one of two test portions		15
7.6.3 Self-absorption curve		15
8 Expression of results		16
8.1 General		16
8.2 Alpha activity concentration		16
8.3 Beta activity concentration		16
8.4 Standard uncertainty of the alpha activity concentration		17
8.5 Standard uncertainty of the beta activity concentration		17
8.6 Decision threshold		19
8.6.1 Decision threshold of the alpha activity concentration		19
8.6.2 Decision threshold of the beta activity concentration		19

8.7	Detection limit.....	19
8.7.1	Detection limit of the alpha activity concentration	19
8.7.2	Detection limit of the beta activity concentration	20
8.8	Confidence limits.....	20
9	Control of interferences.....	20
9.1	General.....	20
9.2	Relative humidity.....	21
9.3	Geometry of the deposit.....	21
9.4	Crosstalk.....	21
9.5	Gamma emitters.....	22
9.6	Low beta energy.....	22
9.7	Chlorides	22
9.8	Organic matter	22
9.9	Contamination.....	22
9.10	Losses of activity	22
9.11	Contribution of the natural radionuclides	22
9.12	Losses of activity	23
10	Test report.....	23
	Annex A (informative) Numerical applications.....	25
	Bibliography	26