

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