

ISO 21909-1:2015-12 (E)

Passive neutron dosimetry systems - Part 1: Performance and test requirements for personal dosimetry

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms, definitions, and symbols	1
3.1	General terms and definitions	1
3.2	Terms relating to quantities	2
3.3	Terms relating to calibration and evaluation	3
3.4	List of symbols	6
4	General test conditions	8
4.1	Test conditions	8
4.2	Reference radiation	8
4.3	Tests requirements	8
5	Tests and performance requirements	9
6	Test methods	12
7	Performance tests: intrinsic characteristics	12
7.1	General	12
7.2	Irradiations	12
7.3	Qualification for eliminating the use of the full neutron and photon package	17
7.3.1	Aim of the test	17
7.3.2	Method of test	18
7.3.3	Interpretation of results	18
7.4	Performances tests	18
7.4.1	General	18
7.4.2	Coefficient of variation/linearity	18
7.4.3	Energy and angle dependence of the response	19
7.4.4	Specific test for thermal neutrons	20
8	Performance tests: stability in the range of realistic conditions of use of the dosimeters. 21 8.1	
	Fading	21
8.1.1	General	21
8.1.2	Method of test	21
8.1.3	Interpretation of results	22
8.2	Ageing	22
8.2.1	General	22
8.2.2	Method of test	23
8.2.3	Interpretation of results	23
8.3	Effect of storage for unexposed dosimeters	24
8.3.1	General	24
8.3.2	Method of test	24
8.3.3	Interpretation of results	24
8.4	Exposure to radiation other than neutrons	24
8.4.1	General	24

8.4.2	Photon radiation	24
8.4.3	Radon	26
8.5	Stability under various climatic conditions	26
8.5.1	General	26
8.5.2	Effect on the dose response	26
8.5.3	Effect for unexposed dosimeters	27
8.6	Effect of light exposure (insensitivity to light)	28
8.6.1	Effect on the dose response	28
8.6.2	Effect for unexposed dosimeters	28
8.7	Drop test	28
8.7.1	Effect on the dose response	29
8.7.2	Effect for unexposed dosimeters	29
8.8	Distance to the phantom	29
8.8.1	General	29
8.8.2	Method of test	30
8.8.3	Interpretation of results	30
8.9	Sealing	30
9	Identification and accompanying documentation	30
9.1	Individual marking	30
9.2	Collective marking	30
9.3	Accompanying documentation	31
Annex A (normative) Dosimetry for the irradiation of the extremities		32
Annex B (normative) Reference and standard test conditions		33
Annex C (informative) Irradiation conditions		34
Annex D (normative) Conversion tables		35
Annex E (normative) Confidence limits		36
Bibliography		39