

ISO 4037-4:2019 (E)

Radiological protection — X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy — Part 4: Calibration of area and personal dosemeters in low energy X reference radiation fields

Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	Symbols (and abbreviated terms)
5	General procedures for calibrating and determining response
6	Characterisation and production of low energy X-ray reference radiations
6.1	General
6.2	Tube potential
6.3	Spectral fluence and conversion coefficients
7	Dosimetry of low energy reference radiations
7.1	General
7.2	Stability check facility
8	Calibration and determination of the response as a function of photon energy and angle of radiation incidence
8.1	General
8.2	Selection of calibration method
8.3	Calibration by using reference instruments for K_a
8.3.1	General
8.3.2	Conventional quantity value of the air kerma
8.3.3	Conventional quantity value of the dose equivalent quantities $H_p(0,07)$ and $H'(0,07)$
8.3.4	Conventional quantity value of the dose equivalent quantities $H_p(10)$ or $H^*(10)$ and $H_p(3)$ or $H'(3)$
8.3.4.1	Corrections of $h_pK(10, \alpha)$ or $h^*K(10)$ and $h_pK(3, \alpha)$ or $h'K(3, \alpha)$ for air density
8.3.4.2	Evaluation of the effect of angle of radiation incidence α for $H_p(10)$, $H_p(3)$ and $H'(3)$
8.3.4.3	Determination of the conventional quantity value of $H_p(10)$ or $H^*(10)$ and $H_p(3)$ or $H'(3)$
8.3.5	Performing the calibration
8.4	Calibration by using reference instruments which measure the ICRU dose equivalent quantities
8.4.1	General
8.4.2	Conventional quantity value of the dose equivalent quantities $H_p(10)$ or $H^*(10)$ and $H_p(3)$ or $H'(3)$
8.4.2.1	Correction of $H_p(10)$ or $H^*(10)$ and $H_p(3)$ or $H'(3)$ for air density
8.4.2.2	Adjustment of angle of radiation incidence α for $H_p(10)$ and $H_p(3)$ or $H'(3)$
8.4.2.3	Determination of the conventional quantity value of $H_p(10)$ or $H^*(10)$ and $H_p(3)$ or $H'(3)$
8.4.3	Performing the calibration
8.5	Statement of uncertainty
Annex A	(normative) Correction for air density
A.1	General

- A.2** Method for air density correction
- A.3** Air density correction parameters for K_a , $hpK(10, \alpha)$ and $h^*K(10)$
- A.4** Air density correction parameters for $Hp(10)$ and $H^*(10)$
- A.5** Air density correction parameters for $hpK(3, \alpha)$ and $h'K(3, \alpha)$

Page count: 18