



Multigamma point standard

These standard sources are characterized in terms of photon flux within 4π sr, expressed in s^{-1} for each specified gamma line. The source activity is also stated as an indicative value.

Precise calibration of gamma spectrometers requires a complete set of standards emitting gamma lines of different energies.

Multigamma ray standards allow a rapid, precise energy and efficiency calibration. They are particularly useful in measuring the response of germanium detectors (type Ge(Li) and Ge-HP) and enabling direct, rapid plotting of efficiency/energy curves of gamma spectrometers without requiring the decay scheme parameters for the radionuclides used.

The active diameter is 3 mm and is sealed between two thin plastic foils before to be mounted in a plastic ring to ensure rigidity and best handling.

The sources are supplied in two configurations (see Point and wide area sources, p. 2.13):

- outside diameter 25 mm (type A),
- outside diameter 38 mm (type E).

• Europium-152

The multigamma ray standard is a europium-152 source in the energy range 100 - 1500 keV, which encompasses the majority of applications.

This radionuclide emits numerous intense gamma lines in the energy range 122 - 1408 keV.

• Barium-133

In addition to europium-152, barium-133 can be used for calibrating instrumentation in the range 30 - 400 keV. The intense X-ray and gamma lines emitted by this radionuclide enable effective measurement of efficiency response at low energies.

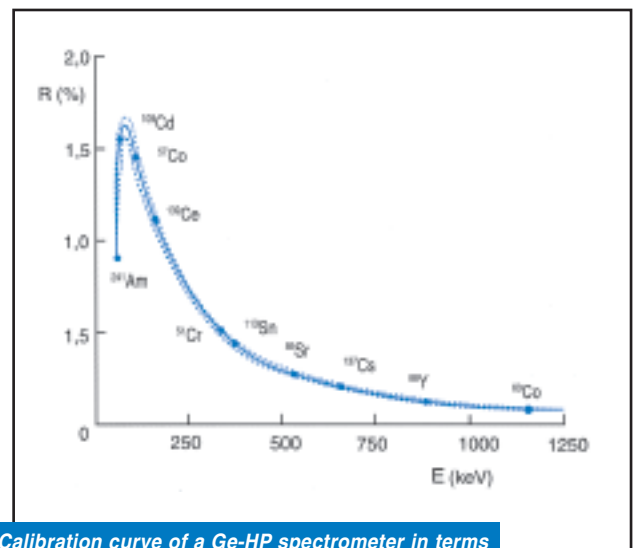
• Mixture of radionuclides

The mixture comprises the following radionuclides:

^{241}Am , ^{109}Cd , ^{57}Co , ^{139}Ce , ^{51}Cr , ^{113}Sn , ^{85}Sr , ^{137}Cs , ^{60}Co , ^{88}Y .

This single standard source covers the range 60 - 1836 keV.

This source has the advantage of providing a simpler spectrum.



Calibration curve of a Ge-HP spectrometer in terms of particle flux obtained using standard sources



Multigamma rays standards

Radionuclide Half-life	Product code	γ flux within 4π sr s^{-1}	Activity		Outside Diameter mm	Type	Measurement uncertainty %
			kBq	μ Ci			
^{133}Ba <i>1,05 x 10¹ years</i>	BA133EGMA10	1,6 x 10 ¹ to 3,6 x 10 ³	4	1,1 x 10 ⁻¹	25	A	2,5 to 4
	BA133EGMA15	1,6 x 10 ² to 3,6 x 10 ⁴	4 x 10 ¹	1,1	25	A	2,5 to 4
	BA133EGMA20	1,6 x 10 ³ to 3,6 x 10 ⁵	4 x 10 ²	1,1 x 10 ¹	25	A	2,5 to 4
	BA133EGME10	1,6 to 10 ¹ to 3,6 x 10 ³	4	1,1 x 10 ⁻¹	38	E	2,5 to 4
	BA133EGME15	1,6 to 10 ² to 3,6 x 10 ⁴	4 x 10 ¹	1,1	38	E	2,5 to 4
	BA133EGME20	1,6 x 10 ³ to 3,6 x 10 ⁵	4 x 10 ²	1,1 x 10 ¹	38	E	2,5 to 4
^{152}Eu <i>1,35 x 10¹ years</i>	EU152EGMA10	1,7 x 10 ¹ to 1,7 x 10 ³	4	1,1 x 10 ⁻¹	25	A	2 to 4
	EU152EGMA15	1,7 x 10 ² to 1,7 x 10 ⁴	4 x 10 ¹	1,1	25	A	2 to 4
	EU152EGMA20	1,7 x 10 ³ to 1,7 x 10 ⁵	4 x 10 ²	1,1 x 10 ¹	25	A	2 to 4
	EU152EGME10	1,7 to 10 ¹ to 1,7 x 10 ³	4	1,1 x 10 ⁻¹	38	E	2 to 4
	EU152EGME15	1,7 to 10 ² to 1,7 x 10 ⁴	4 x 10 ¹	1,1	38	E	2 to 4
	EU152EGME20	1,7 x 10 ³ to 1,7 x 10 ⁵	4 x 10 ²	1,1 x 10 ¹	38	E	2 to 4
MULTIGAMMA MIXTURE							
^{241}Am, ^{109}Cd, ^{57}Co, ^{139}Ce, ^{51}Cr, ^{113}Sn, ^{85}Sr, ^{137}Cs, ^{60}Co, ^{88}Y	9ML01EGMA15⁽¹⁾	3,7 x 10 ¹ to 2,2 x 10 ³	3 x 10 ¹	0,8	25	A	3 to 5
	9ML01EGME15⁽¹⁾	3,7 x 10 ¹ to 2,2 x 10 ³	3 x 10 ¹	0,8	38	E	3 to 5

Legend:

(1) Lead time: see production schedule at the last page of the catalogue