

• Gases • Sectors of activity •

CERCA LEA produces gases and gaseous mixtures for use as standard gases or tracers in a wide range of activities. The gases are packaged in ampoules, metal bottles (depending on use/activity) and standardized containers (see page 4.3 for gaseous mixtures).

- Analysis
- Industrial applications
- Environmental monitoring
- Nuclear medicine
- Research
- Spectrometry

• Environmental monitoring

Ampoules of standard gases (*Krypton-85*, *Xenon-133*) are used for calibrating gas-flow ionization chambers and Geiger-Müller or proportional counters used in the measurement of radioactive gases.

⁸⁵Kr and ¹³³Xe gases in metal bottles are used for calibrating atmospheric contamination monitors used in environmental monitoring (in industrial chimney stacks, nuclear power plants, etc.).



**Gases are available
in two types of containers:
glass ampoules and metal bottles.**

• Ampoules

Gases packaged in ampoules are characterized in terms of activity concentration (STP conditions, STP volume = 3 cm³) between 4 x 10³ and 4 x 10⁷ Bq.cm⁻³.

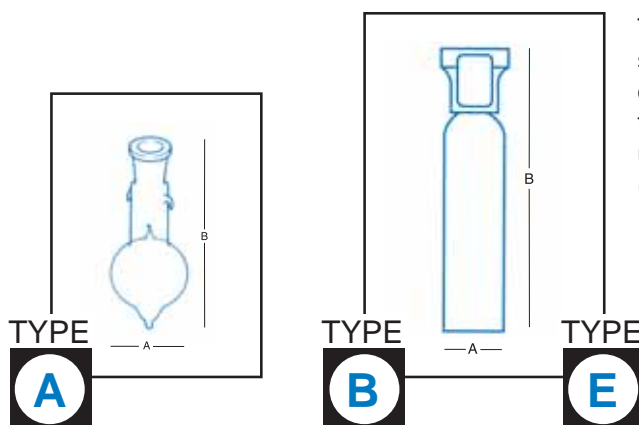
Sealed glass ampoules (type A) have a type 1 standard ground joint (socket). The volume of 30 cm³ is determined to 0.5% uncertainty (k = 2).

• Bottles

Mixtures of a radioactive gas (⁸⁵Kr or ¹³³Xe) with a carrier gas (nitrogen), characterized in terms of activity concentration (200 Bq.cm⁻³ STP) are compressed in an aluminum alloy bottle that complies with French standards.

Krypton-85 and Xenon-133 are supplied in type E bottles. Krypton-85 can also be supplied in type B bottles.

• Gases • Xe¹³³ and Kr⁸⁵ Product codes •



The bottle can be supplied with a pressure-reducer/valve/flowmeter system to deliver a variable gas flow adjustable from 30 to 400 cm³.s⁻¹, with a maximum uncertainty of 5% with respect to flow (see Accessories on opposite page).

	TYPE A	TYPE B*	TYPE E
STP volume (dm ³ = liter)	3 x 10 ⁻³	≈ 700	≈ 500
Ampoule/bottle volume (dm ³ = liter)	30 x 10 ⁻²	≈ 7	≈ 5
A – Diameter (cm)	4	15	14.5
B – Overall height (cm)	12	74.5	60.5
Weight (kg)		10	6
Connection		Male type C	Male type C
Right-hand thread		1.8/4	1.8/4
Diameter (mm)		21.7	21.7

* Type B bottle are supplied by the customer.

• Gases in ampoules and metal bottles ⁸⁵Kr and ¹³³Xe

Radionuclide and half-life	Radiation energy (MeV)		Product code ⁽¹⁾	Activity concentration ^{(*) (2)}		Package Volume ⁽²⁾ dm ³	Type	Maximum uncertainty %
	β max	γ		kBq.cm ⁻³	μCi.cm ⁻³			
⁸⁵ Kr 1,07 x 10 ¹ years	0,173	0,514	KR85EZSA40	8 x 10 ¹	2,2	3 x 10 ⁻³	A	5
	0,687		KR85EZSA60	4 x 10 ⁴	1,1 x 10 ³	3 x 10 ⁻³	A	5
			KR85EZSB20	2 x 10 ⁻¹	5,4 x 10 ⁻³	700	B	5
			KR85EZSE20	2 x 10 ⁻¹	5,4 x 10 ⁻³	500	E	5
¹³³ Xe 5,24 days	0,346	0,081	XE133EZSA60	4 x 10 ⁴	1,1 x 10 ³	3 x 10 ⁻³	A	5
			XE133EZSE20	2 x 10 ⁻¹	5,4 x 10 ⁻³	500	E	5

Legend: Metal bottles

(1) Bottles: concerns only refill gases. For first orders, the user must also supply the type B bottle, or order the type E bottle (ref. 9AC-ETZL) and the pressure-reducer/valve/flowmeter system (ref. 9AC-ETZN)

(2) NTP conditions

(*) Manufacturing tolerance ±30%

• Activity on request

Radionuclide Type of container
KR85EZSA1MBQ
 Type of product Required total activity
 (Gaseous standard)

• Accessories

	Volume (cm ³)	Type	Product
Metal bottle	5 000	E	9ACETZL
Pressure-reducer/valve/flowmeter system			9ACETZN

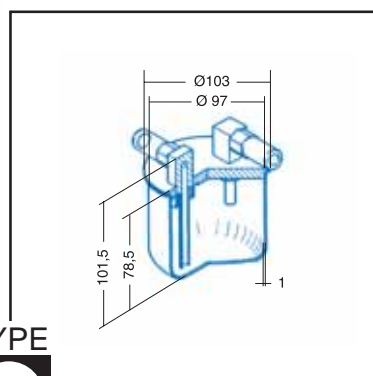
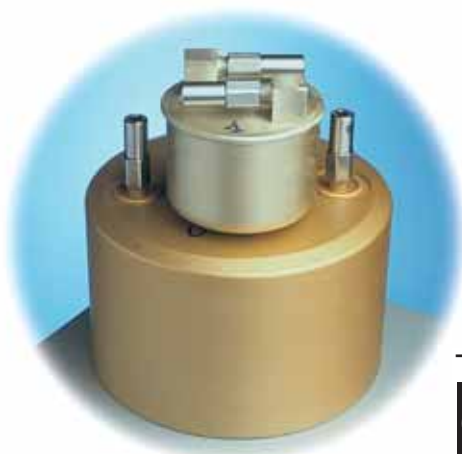
Multigamma ray gaseous standards

Multigamma ray gaseous standards are used for calibrating gamma spectrometers used in monitoring radioactive gaseous releases.

The mixture of Krypton-85, Xenon-127 and Xenon-133 is packaged in type SG500G (500 cm³) and SG3000G (3000 cm³) containers (see diagrams below) at below atmospheric pressure.

Gamma energies rays within 80 - 600 keV.

• Available packaging



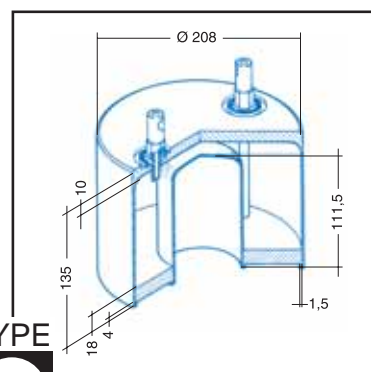
TYPE

C

Container: SG500G (500 cm³)

**Mass per unit area
of container wall: 270 mg.cm⁻²**

Mean mass: approx. 420 g



TYPE

D

Container: SG3000G (3000 cm³)

**Mass per unit area
of container wall: 400 mg.cm⁻²**

Mean mass: approx. 2500 g

Radionuclides	Product code	Activity		Packaging Volume cm ³	Type	Measurement uncertainty %
		kBq	µCi			
Mixture Multigamma (9ML02) ⁸⁵ Kr, ¹²⁷ Xe, ¹³³ Xe	9ML02EZMC67	1 x 10 ⁴	2,7 x 10 ²	500	C	4 to 5
	9ML02EZMD67	1 x 10 ⁴	2,7 x 10 ²	3 000	D	4 to 5

Legend:

Contact CERCA LEA regarding lead times or consult the last page of the catalogue.

• Multigamma mixture containing

	¹³³ Xe	¹²⁷ Xe	⁸⁵ Kr
Metal container SG500G	39 kBq	32 kBq	6,5 MBq
Metal container SG3000G	70 kBq	25 kBq	6 MBq

• Accessories for gases

	Volume (cm ³)	Type	Product code
Metal container SG500G	500	C	9ACETZW
Metal container SG3000G	3000	D	9ACETZX

To order: see Commercial Information on pages I.1 – I.5 of the INFORMATION section