

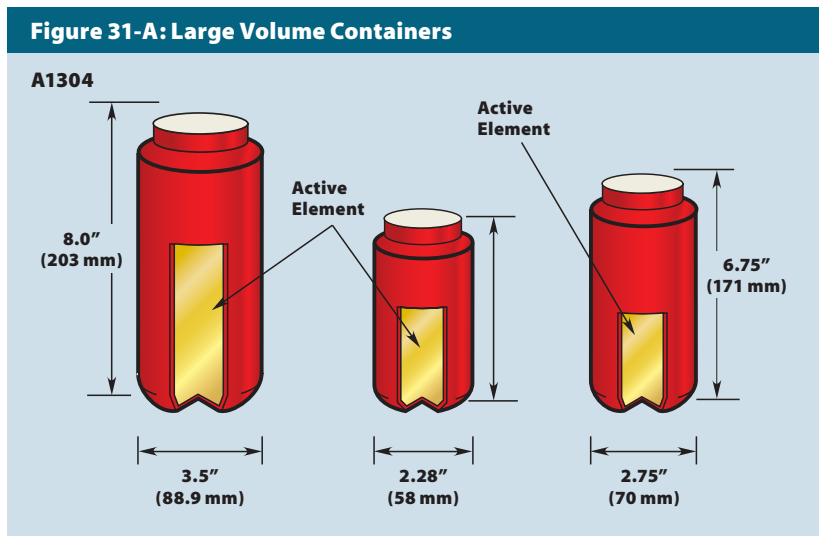
Large Volume Calibration Standards



The model EG Series standards offer a convenient method to calibrate HPGe and NaI(Tl) detectors for the analysis of soil and water samples, reactor coolants, air samples, and other environmental materials. Standard activity is 0.1 μCi (3.7 kBq) – 5 μCi (185 kBq). Customer supplied containers will be filled upon request.

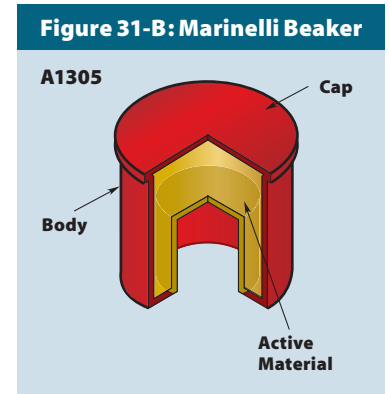
Large Volume Bottle Gamma Standards—EG-LVB

Series LVB wide mouth polyethylene sample bottles are available in 250 mL, 500 mL, and 1000 mL. Additional sizes are available upon request.



Marinelli Gamma Standards—EG-LVM

Series LVM Marinelli beakers, for both HPGe and NaI(Tl) detectors, are available in 500 mL, 1000 mL, 2000 mL and 4000 mL sizes. This configuration is useful where maximum efficiency is needed such as environmental samples. See table on page 32 for complete details on beakers.



See table on page 32 for model numbers and dimensions.

Standard Matrices for Large Volume Bottle Containers and Marinelli Beakers				
Matrix	Density	Materials	Density Tolerance ⁽¹⁾	Details
Epoxy	1.0 g/cc	Standard EZIP Epoxy Mixture	+/- 10%	Customer supplied materials may be used upon request. In both series the radioactivity is uniformly dispersed in the matrix. Specify the series, matrix and container type and size. For the Marinelli beakers, specify the model number as listed on page 32.
Sand	1.7 g/cc	50-70 Mesh Sand		
Epoxy	1.1 to 2.0 g/cc	Standard EZIP Proprietary Filler	+/- 10%	
Epoxy	2.1 to 3.5 g/cc	Upon Request	+/- 10%	
Epoxy	0.4 to 0.9 g/cc	Standard Epoxy Using Proprietary LD Filler	+/- 10%	
Foam	0.04 to 0.4g/cc ⁽²⁾	Low Density Styrofoam	0.04 - 0.4 g/cc	

1) Epoxy matrices will cure over time. Shrinkage may occur and cause density to increase slightly. There may also be separation of epoxy away from the wall of its container which will not affect the function of the source.

2) Volumes of 100 mL and above only. Below 100 mL density can not be guaranteed.

Large Volume Calibration Standards

GA-MA Catalog Numbers for Marinelli Beakers

Catalog Number	Detector Types	Detector "Endcap" Diameter Inches	Diameter cm
200 ml Models			
443016	Germanium or Ge-Li	3.00	7.6
463316	Germanium, 3 x 3 NaI	3.25	8.3
500 ml Models			
523N-E	2 x 2 NaI	2.25	5.7
527G-E	Germanium	2.75	7.0
530G-E	Germanium or Ge-Li	3.00	7.6
533N	Germanium, 3 x 3 NaI	3.25	8.3
538G	Germanium	3.75	9.5
541G	Germanium	4.00	10.2
580G	Germanium	3.15	8.0
590G	Germanium	3.54	9.0
1 Liter Models			
125G	Germanium, 2 x 2 NaI	2.50	6.4
127G	Germanium	2.75	7.0
130G	Germanium or Ge-Li	3.00	7.6
LA130G	Germanium or Ge-Li	3.00	7.6
132G	Germanium	3.25	8.3
133N	3 x 3 NaI	3.25	8.3
138G	Germanium	3.75	9.5
141G	Germanium	4.00	10.2
190G	Germanium	3.54	9.0

GA-MA Catalog Numbers for Marinelli Beakers

Catalog Number	Detector Types	Detector "Endcap" Diameter Inches	Diameter cm
2 Liter Models			
227G	Germanium	2.75	7.0
230G	Germanium or Ge-Li	3.00	7.6
233N	3 x 3 NaI	3.25	8.3
4 Liter Models			
430G	Germanium or Ge-Li	3.00	7.6
433N	3 x 3 NaI	3.25	8.3
438G	Germanium	3.75	9.5
441G	Germanium	4.00	10.2
445N	Germanium, 4 x 4 NaI	4.25	10.8
448G	Germanium	4.75	12.1

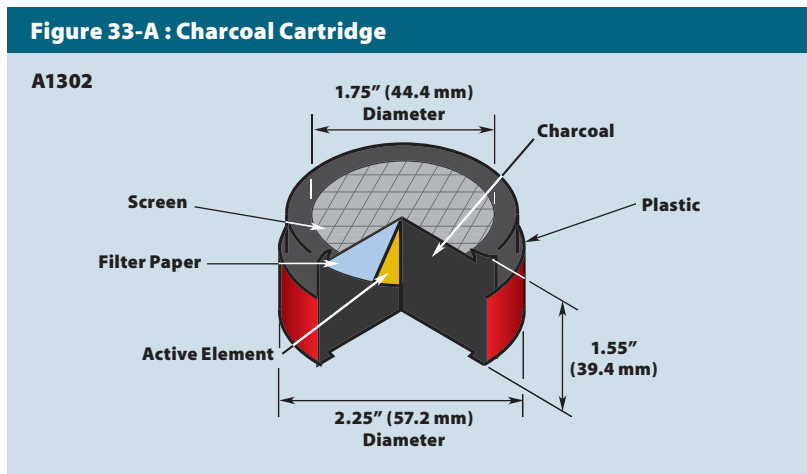


Simulated Charcoal or Zeolite Gamma Cartridge Standards—EG-CH

Face Loaded: The activity is uniformly distributed between two polyimide films and placed under the screen of a 1" x 2.25" (25.4 mm x 57.2 mm) plastic charcoal cartridge (surface loaded).

Uniform Distribution: The activity is uniformly distributed within the charcoal or zeolite filling of the cartridge.

An aluminum metal cartridge is also available upon request. The standard activity for all configurations is 0.1 μCi (3.7 kBq). Sources are NIST traceable for contained activity.



NOTE: I-125 and I-129 are available as surface loaded sources only. See "Simulated I-125" standards on page 45.

Radon-226 Canister Standard—EG-226C

These standards are used to calibrate radioassay systems for measuring nanocurie levels of environmental radon in standard EPA charcoal canisters. The gamma spectrum above the Ra-226 gamma at 186 keV (4%) is identical with that of Rn-222 and its daughters.

The standard is prepared by uniform dispersion of a calibrated Ra-226 solution into the charcoal fill of a standard 1.25" x 4" (31.8 mm x 102 mm) canister, which is then sealed over the charcoal to define the charcoal volume and to prevent the escape of Rn-222 and its daughter products.

The EG-226C is supplied with 20 nCi (740 Bq) Ra-226 and is NIST traceable. Calibration accuracy is within $\pm 5\%$ of the stated value at the 99% confidence level. Other activities and canister sizes are available on request.

