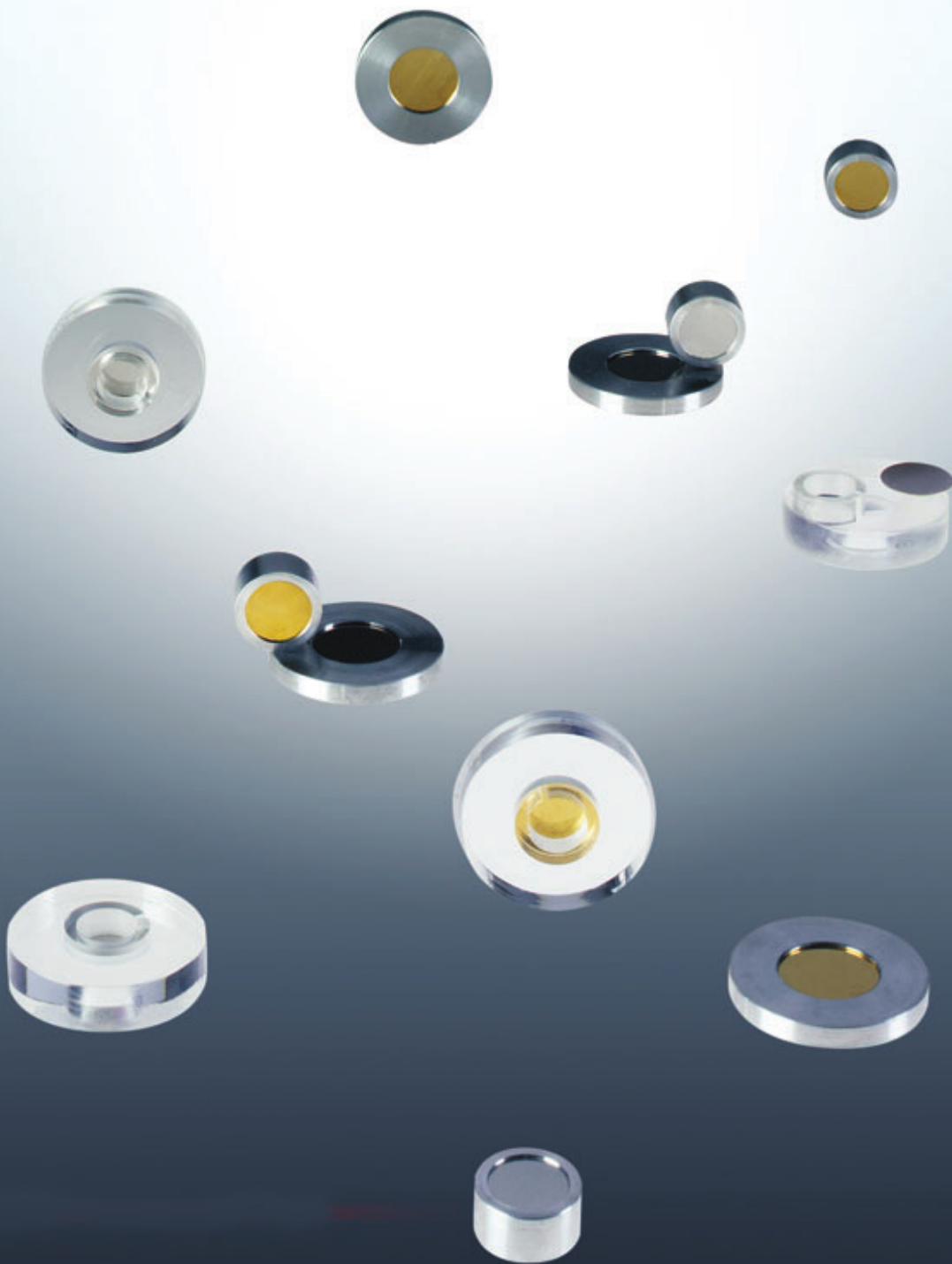


Alpha Particle Standards



The majority of alpha standards listed on pages 36–39 are spectroscopy grade and are suitable for the most exacting research requirements as well as for routine counting room applications. Standards that emit radon gas, most notably Th-228 and Ra-226, should not be used in gross alpha applications. Most sources are prepared by electrodeposition of the desired nuclide on a mirror finish platinum surface foil and are fixed to the surface by diffusion-bonding. These sources exhibit narrow line widths, generally less than 20 keV FWHM for high specific activity nuclides such as Po-210 and Am-241. Calibration methods are described on page 5.

Even the lowest intensity uncovered alpha source may deteriorate with time, showing signs of removable activity as well as decreased spectral resolution. This is caused by the migration of the active material into the substrate and by the accumulation of dust and grime.

For these reasons the source should be stored in a closed container when not in use. The inside of the container should be checked periodically for free activity. EZIP considers the useful life of alpha sources with long half-lives to be two years. We recommend a program of scheduled replacement for these sources.

Cf-252 sources are all supplied with a 100 µg/cm² gold cover. Please note that the gold will not prevent the loss of fission fragments and EZIP suggests the following procedures be followed when handling any Cf-252 source:

- The container should be opened and handled in a hood, glove box, or other well-ventilated enclosure and only by qualified personnel.
- If possible, when not in use, the source should be stored under vacuum or in inert atmosphere to prevent corrosion. These sources are not warranted as suitable for any specific application nor is EZIP liable for any damage or contamination to facilities or equipment resulting from their use.

All activities of Ra-226 and Th-228 standards are supplied with a 100 µg/cm² gold cover which is sufficient to prevent loss of radioactive recoil daughter products.

The general warranty does not apply to any open source of Cf-252, Th-228, or Ra-226. Additional gold covering up to 200 µg/cm² is available upon request.

All electroplated sources are prepared +/- 30% of nominal activity.

Activities for U-235, U-238 and Th-232

Capsule Type	Active Diameter	U-235 dpm	U-235 nCi	U-238 (Natural) dpm	U-238 (Natural) nCi	U-238 (Depleted) dpm	U-238 (Depleted) nCi	Th-232 dpm	Th-232 nCi
A-1	5 mm	1000	0.45	140	0.063	70	0.032	15	0.007
A-2	5 mm	1000	0.45	140	0.063	70	0.032	15	0.007
PM	5 mm	1000	0.45	140	0.063	70	0.032	15	0.007

- 1) Activities are for total alpha activity.
- 2) Individual uranium isotopes specified on Technical Data Sheets supplied with source certificates.
- 3) Due to low specific activity of these isotopes, these AF sources are not spectral grade sources.
- 4) Multiply nCi*37 to convert to Bq.

Weight% vs. Activity% for Uranium Nuclides

	Weight %				Activity %			
	U-234	U-235	U-236	U-238	U-234	U-235	U-236	U-238
Natural Uranium (0.72%)	0.0055	0.720	—	99.274	49.501	2.250	—	48.249
Depleted Uranium (0.017%)	0.0002	0.0173	0.0000	99.982	2.875	0.108	0.0019	97.015
Enriched Uranium (97.66%)	1.658	97.663	0.1497	0.5296	97.904	2.003	0.0918	0.00169