

Eckert & Ziegler offers over 80 radionuclides in liquid form as shown on the reverse page. Our radionuclide solutions are available as either Standard Solutions or Nominal Solutions.

- **Standard Solutions (7000 and 8000 Series)** are certified for contained activity. Standard Solutions are provided with a Certificate of Calibration that provides traceability to NIST, PTB, NPL or other National Metrology Institutes (NMIs) and expanded uncertainties. Typical expanded uncertainties are $\pm 3\text{-}5\%$. In most cases, an ISO 17025 accredited Certificate of Calibration can also be provided for Standard Solutions if requested.
- **Nominal Solutions (6000 Series)** are not certified. Nominal Solutions are not traceable to national standard and are not offered with an activity uncertainty value.

All radionuclide solutions are prepared by gravimetric aliquot from known activity batches on a per order basis and are available as follows:

Available Activity of Isotrak Solutions vary based on nuclide and chemical form. Solutions are typically made with a contained activity value that is $\pm 15\%$ of the requested activity value. Tighter activity tolerances can be achieved if requested.

Chemical Forms for normally available batches are listed on the next page. Custom chemical forms are available upon request.

Radionuclide Impurities are specified on the Certificate of Calibration or Nominal Data Sheet if we can measure them or if they are known from our supplier and if they exceed 0.1% of the activity of the primary nuclide. Decay products are not considered impurities and are usually not listed. For applications that require specific radionuclide purity requirements, please inquire with your Isotrak sales representative.

Non-radioactive Impurities are not determined and are not reported.

Non-radioactive elemental carriers are added to many solutions to ensure long term stability. Solutions can be prepared without the additional carriers however this does not guarantee a carrier free solution. We will not guarantee the stability of the activity when carrier is not added.

Packaging of solutions is offered in the various vials, ampoules and bottles listed below. There may be an extra charge for some options.

Container	Material	Size	Fill Volume
V-vial	Glass	0.3 mL	0.15 mL – 0.3 mL
V-vial	Glass	1 mL	0.5 mL – 1.0 mL
V-vial	Glass	2 mL	1.0 mL – 2.0 mL
V-vial	Glass	5 mL	2.5 mL – 5.0 mL
V-vial	Glass	10 mL	5.0 mL – 10.0 mL
V-vial	Polypropylene	0.5 mL	0.25 mL – 0.5 mL
V-vial	Polypropylene	2 mL	1.0 mL – 2.0 mL
V-vial	Polypropylene	5 mL	2.5 mL – 5.0 mL
Flame Sealed	Glass	1 mL	0.5 mL – 1.0 mL
Flame Sealed	Glass	2 mL	1.0 mL – 2.0 mL
Flame Sealed	Glass	5 mL	2.5 mL – 5.0 mL
Flame Sealed	Glass	10 mL	5.0 mL – 10.0 mL
Flame Sealed	Glass	20 mL	10 mL – 20 mL
Flame Sealed	Glass	50 mL	25 mL – 50 mL
Flame Sealed	Polyethylene	5 mL	2.5 mL – 5.0 mL

Container	Material	Size	Fill Volume
Serum Vial	Glass	5 mL	2.5 mL – 5.0 mL
Serum Vial	Glass	10 mL	5.0 mL – 10.0 mL
Serum Vial	Glass	20 mL	10 mL – 20 mL
Serum Vial	Glass	50 mL	25 mL – 50 mL
Narrow Mouth Bottle	Polypropylene / PPCO	30 mL	15 mL – 30 mL
Narrow Mouth Bottle	Polypropylene / PPCO	60 mL	30 mL - 60 mL
Narrow Mouth Bottle	Polypropylene / PPCO	125 mL	62.5 mL - 125 mL
Narrow Mouth Bottle	Polypropylene / PPCO	250 mL	125 mL - 250 mL
Narrow Mouth Bottle	Polypropylene / PPCO	500 mL	250 mL - 500 mL
Narrow Mouth Bottle	Polypropylene / PPCO	1 L	500 mL - 1000 mL
Flame Sealed Bottle	Glass	100 mL	50 mL - 100 mL
Flame Sealed Bottle	Glass	250 mL	125 mL - 250 mL
Flame Sealed Bottle	Glass	500 mL	250 mL - 500 mL
Flame Sealed Bottle	Glass	1 L	500 mL - 1000 mL



Inquiries and Quotations

For inquiries or quotation requests, please provide the following information:
Standard or Nominal, Activity, Chemical Form, Container Type and Volume, Fill Volume,
Special Requirements.

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Actinium-227
Actinium nitrate in 1 M HNO₃

Americium-241
Americium chloride in 1 M HCl
Americium nitrate in 1 M HNO₃

Americium-243
Americium chloride in 1 M HCl
Americium nitrate in 1 M HNO₃

Antimony-124
Antimony chloride in 6 M HCl

Antimony-125
Antimony chloride in 6 M HCl

Barium-133
Barium chloride in 0.1 M HCl

Bismuth-207
Bismuth chloride in 1 M HCl
Bismuth nitrate in 1 M HNO₃

Cadmium-109
Cadmium chloride in 0.1 M HCl

Calcium-45
Calcium chloride in H₂O

Californium-252
Californium nitrate in 0.1 M HNO₃

Carbon-14
Benzoic Acid-Carboxyl-C-14 in 0.1 M NaOH
Carbon-14 labeled Glucose
Sodium carbonate in 0.1 M NaOH
Carbon-14 labeled toluene

Cerium-139
Cerium chloride in 0.5 M HCl
Cerium chloride in 0.1 M HCl

Cerium-141
Cerium chloride in 0.5 M HCl
Cerium chloride in 0.1 M HCl

Cesium-134
Cesium chloride in 0.1 M HCl

Cesium-137
Cesium chloride in 0.1 M HCl
Cesium nitrate in 0.1 M HNO₃

Chlorine-36
Sodium chloride in H₂O
Sodium chloride in 0.0005 M NaOH
Potassium chloride in H₂O

Chromium-51
Chromium chloride in 0.5 M HCl

Cobalt-56
Cobalt chloride in 0.1 M HCl

Cobalt-57
Cobalt chloride in 0.1 M HCl

Cobalt-58
Cobalt chloride in 0.1 M HCl

Cobalt-60
Cobalt chloride in 0.1 M HCl

Curium-244
Curium chloride in 1 M HCl
Curium nitrate in 1 M HNO₃

Europium-152
Europium chloride in 0.5 M HCl
Europium nitrate in 0.5 M HNO₃

Europium-154
Europium chloride in 0.5 M HCl

Europium-155
Europium chloride in 0.5 M HCl

Gadolinium-148
Gadolinium chloride in 0.1 M HCl

Gadolinium-153
Gadolinium chloride in 1 M HCl

Germanium-68
Germanium chloride in 0.5 M HCl

Holmium-166m
Holmium chloride in 0.1 M HCl

Hydrogen-3
Hydrogen-3 as H₂O
H-3 labeled toluene
H-3 labeled glucose

Iodine-125
Sodium iodide in 0.1 M NaOH

Iodine-129
Sodium iodide in 0.1 M NaOH

Iodine-131
Sodium iodide in 0.1 M NaOH

Iridium-192
Iridium chloride in 0.1 M HCl
Hexachloroiridate in H₂O

Iron-55
Ferric chloride in 0.1 M HCl

Iron-59
Ferric chloride in 0.1 M HCl

Lead-210
Lead nitrate in 1 M HNO₃

Manganese-54
Manganese chloride in 0.1 M HCl

Mercury-203
Mercury chloride in 1 M HCl

Neptunium-237
Neptunium nitrate in 4 M HNO₃
Neptunium chloride in 2 M HCl + 50 µg/g (COOH)₂

Nickel-59
Nickel chloride in 0.1 M HCl

Nickel-63
Nickel chloride in 0.1 M HCl

Niobium-93m
Niobium nitrate in 1 M HNO₃ + 0.3 M HF

Phosphorus-32
Phosphoric acid in 0.02 M HCl

Plutonium-236
Plutonium nitrate in 3 M HNO₃

Plutonium-238
Plutonium nitrate in 4 M HNO₃

Plutonium-239
Plutonium nitrate in 4 M HNO₃

Plutonium-240
Plutonium nitrate in 4 M HNO₃

Plutonium-241
Plutonium nitrate in 4 M HNO₃

Plutonium-242
Plutonium nitrate in 4 M HNO₃

Polonium-209
Polonium nitrate in 1M HNO₃

Polonium-210
Polonium chloride in 2 M HCl

Promethium-147
Promethium chloride in 0.5 M HCl

Protactinium-231
Protactinium chloride in 10 M HCl
Protactinium nitrate in 8 M HNO₃ + 0.5 M HF

Radium-226
Radium chloride in 0.1 M HCl
Radium nitrate in 1 M HNO₃

Radium-228
Radium chloride in 0.1 M HCl
Radium nitrate in 1 M HNO₃

Ruthenium-106
Ruthenium chloride in 6 M HCl

Samarium-151
Samarium chloride in 1 M HCl

Scandium-46
Scandium chloride in 0.5M HCl

Selenium-75
Selenious acid in 0.1 M HCl

Silicon-32
Sodium silicate in 0.1 M NaOH

Silver-108m
Silver chloride in 1 M NH₄OH

Silver-110m
Silver nitrate in 0.1 M HNO₃

Sodium-22
Sodium chloride in H₂O
Sodium chloride in 0.1 M HCl

Strontium-85
Strontium chloride in 0.5 M HCl

Strontium-89
Strontium chloride in 0.1 M HCl

Strontium-90
Strontium chloride in 0.1 M HCl

Sulfur-35
Sodium Sulfate in H₂O

Technetium-99
Ammonium pertechnetate in H₂O
Ammonium pertechnetate in 0.001 M NaOH

Tellurium-123m
Tellurous acid in 4 M HCl

Thallium-204
Thallium chloride in 1 M HCl

Thorium-228
Thorium chloride in 1M HCl

Thorium-229
Thorium nitrate in 0.1 M HNO₃

Thorium-230
Thorium nitrate in 0.1 M HNO₃

Thorium-232
Thorium nitrate in H₂O

Tin-113
Stannic chloride in 6 M HCl

Uranium-232
Uranyl chloride in 1 M HCl

Uranium-233
Uranyl nitrate in 0.1 M HNO₃

Uranium-234
Uranyl nitrate in 0.1 M HNO₃

Uranium-235 (Enriched Uranium)
Uranyl nitrate in 0.1 M HNO₃

Uranium-236
Uranyl nitrate in 0.1 M HNO₃

Uranium-238 (Depleted Uranium)
Uranyl nitrate in H₂O

Uranium-238 (Natural Uranium)
Uranyl nitrate in H₂O

Yttrium-88
Yttrium chloride in 0.1 M HCl

Zinc-65
Zinc chloride in 0.1 M HCl

Zirconium-95
Zirconium oxalate in 0.5 M (COOH)₂
Zirconium nitrate in 1 M HNO₃ + 0.3 M HF