

# Radioactive Isotope Product Information

## Specifications<sup>1</sup>

<b>Radioisotope</b>	Abbreviated radioisotope
<b>Half-life/Daughter</b>	<p>The half-life along with the subsequent decay daughter; more information may be noted for generators. Unless otherwise noted, information was retrieved from the <a href="#">National Nuclear Data Center's (NNDC) Evaluated Nuclear Structure Data File (ENSDF)</a> database in 2019 and will be updated periodically.</p> <p><b>Please refer to the NNDC database for the most up-to-date values.</b></p>
<b>Decay</b>	<p>Decay radiation information, via a link to an NNDC <a href="#">Decay Radiation Search</a> isotope-specific page. Please <a href="#">contact the NIDC</a> with any questions regarding product-specific decay data or calculations.</p>
<b>Chemical Form</b>	<p>The chemical form in which the isotope is provided (e.g. nitrate solid, powder, solution with molarity provided). Abbreviations are as follows:</p> <ul style="list-style-type: none"> <li>▪ N: normal</li> <li>▪ M: molar</li> <li>▪ HCl: hydrochloric acid</li> <li>▪ NaOH: sodium hydroxide</li> <li>▪ HNO<sub>3</sub>: nitric acid</li> <li>▪ H<sub>2</sub>O: water</li> </ul> <p><b>Please note any special requests in the comments section during quote request checkout.</b> Other chemical forms may be possible for certain isotopes.</p>
<b>Available Specific Activity</b>	The activity of the product as a function of mass (i.e. Bq/g and mCi/g). Values noted are for the product provided.
<b>Activity Concentration</b>	The concentration of the product, in activity per volume (i.e. Bq/mL and mCi/mL).
<b>Radionuclidic Purity</b>	<p>The ratio (expressed as a percentage) of the radioactivity of the <b>radionuclide of interest</b> to the <b>total radioactivity of the radioactive preparation</b>.<sup>2,3</sup></p> <p><b>Purities are based on activity unless weight is noted.</b><sup>4</sup></p>
<b>Radioisotopic Purity</b>	<p>The ratio (expressed as a percentage) of the radioactivity of the <b>radionuclide of interest</b> to the <b>total radioactivity of the element of interest</b>. The radioisotopic purity effectively narrows the scope of the radionuclidic purity to only consider the element of interest (e.g. for Ac-225, the <i>radioisotopic</i> purity would consider amounts of Ac-226 and Ac-227 present, but not any radium isotopes). Purities are based on activity unless weight is noted.</p>

<sup>1</sup> Please note that the information provided will vary for each product, e.g. not all isotopes will have radioisotopic purity provided.

<sup>2</sup> Coenen HH, Gee AD, Adam M, Antoni G, Cutler CS, Fujibayashi Y, et al. [Consensus Nomenclature Rules for Radiopharmaceutical Chemistry—Setting the Record Straight](#). Nucl Med Biol 2017;55:v–xi.doi.org/10.1016/j.nucmedbio.2017.09.004.

<sup>3</sup> United States Pharmacopeia, <821> RADIOACTIVITY.

<sup>4</sup> In many cases, one analytical technique is used for analysis; therefore, not all isotopes may be detected if their decay chain does not include an emission for the specific analytical method (e.g. beta emitters may not be detected if gamma spectroscopy is utilized).

<b>Radiochemical Purity</b>	The ratio (expressed as a percentage) of the radioactivity of the <b>radionuclide of interest in the intended chemical form</b> to the <b>total radioactivity of all radioactive ingredients and impurities</b> present in the radiopharmaceutical preparation.
<b>Production Route</b>	The method by which the product is obtained. This will usually be either via reactor or accelerator irradiation, although some products are obtained via the decay of other isotopes or are legacy materials.
<b>Processing</b>	The method(s) via which the product is processed for separation and purification, if applicable.
<b>Primary Container</b>	The interior container in which the product is packaged (e.g. glass vial).
<b>Availability</b>	<p>Production status of isotope, categorized under one of the following:</p> <ul style="list-style-type: none"> <li>▪ <b>Stock:</b> currently available</li> <li>▪ <b>Routinely available:</b> produced according to set schedules or according to current demand/requests</li> <li>▪ <b>Special order:</b> advanced notice is necessary to obtain the product</li> </ul>
<b>Unit of Sale</b>	The unit by which the product is sold. Some products have minimum order requirements or available ranges.
<b>Grade</b>	Further information on the grade of the product (e.g. cGMP).

## Other Information

- Additional relevant information (e.g. generator availability, details on nuclear materials requiring additional documentation)