bv CYCLOTRON VU
radiopharmaceuticals and radionuclides

Fact Sheet: Zirconium-89

Zirconium-89
-Half-Life: 78.4 hours

Zirconium-89 is employed in specialized diagnostic applications using positron emission tomography imaging, for example, with zirconium-89 labeled antibodies (immuno-PET).

About BV Cyclotron VU

BV Cyclotron VU is a leading provider of PET-radiopharmaceuticals and radionuclides for the nuclear medicine community. Our expert team ensures reliable supply of our products and the highest possible product quality. Total annual output is about 35,000 patient doses.

Process Data

Nuclear reaction
proton irradiation of natural yttrium-89

Assay
Gamma-ray spectrometry: the most prominent gamma photon has an energy of 909 keV

Product Specification

Definition
Zirconium-89 in 1 mol/L oxalic acid

Specific activity
No carrier added

Activity concentration*
Between 740 – 1850 MBq/mL (20 – 50 mCi/mL)

Radionuclidic purity*
^{89}Zr ≥ 99.9%
Others ≤ 0.1%

Tests
pH: lower than 4

Endotoxin content
< 17.5 EU/mL

Packaging

2.0 mL V-bottom screw top glass vials

Availability

Dispensed every week

Delivery Service

Cyclotron counts on its cooperation partner PerkinElmer for the distribution of the diagnostic radionuclide zirconium-89.

*At at reference time

Please note that the zirconium-89 is not tested for sterility. Verification of its suitability for use in humans is the sole responsibility of the purchaser.

Physical Data

Rad. Type	Energy (keV)	Radiation Intensity (%)
B+	395.5	22.74
E-AU-L	1.91	79
E-AU-K	12.7	19.47
G-AN	511	45.48
G	909.15	99.04
G	1620.8	0.073
G	1657.3	0.106
G	1713	0.745
G	1744.5	0.123

Decay Table

Physical half-life: 78.41 hours

Hours	0	1	2	3	4	5	6	7	8	9
0	1.000	0.991	0.982	0.974	0.965	0.957	0.948	0.940	0.932	0.924
10	0.915	0.907	0.899	0.891	0.884	0.876	0.868	0.860	0.853	0.845
20	0.838	0.831	0.823	0.816	0.809	0.802	0.795	0.788	0.781	0.774
30	0.767	0.760	0.754	0.747	0.740	0.734	0.727	0.721	0.715	0.708
40	0.702	0.696	0.690	0.684	0.678	0.672	0.666	0.660	0.654	0.648
50	0.643	0.637	0.631	0.626	0.620	0.615	0.610	0.604	0.599	0.594
60	0.588	0.583	0.578	0.573	0.568	0.563	0.558	0.553	0.548	0.543
70	0.539	0.534	0.529	0.524	0.520	0.515	0.511	0.506	0.502	0.497
80	0.493	0.489	0.484	0.480	0.476	0.472	0.468	0.463	0.459	0.455
90	0.451	0.447	0.443	0.439	0.436	0.432	0.428	0.424	0.420	0.417
100	0.413	0.409	0.406	0.402	0.399	0.395	0.392	0.388	0.385	0.382
110	0.378	0.375	0.372	0.368	0.365	0.362	0.359	0.355	0.352	0.349
120	0.346	0.343	0.340	0.337	0.334	0.331	0.328	0.325	0.323	0.320
130	0.317	0.314	0.311	0.309	0.306	0.303	0.301	0.298	0.295	0.293
140	0.290	0.288	0.285	0.282	0.280	0.278	0.275	0.273	0.270	0.268
150	0.266	0.263	0.261	0.259	0.256	0.254	0.252	0.250	0.247	0.245
160	0.243	0.241	0.239	0.237	0.235	0.233	0.231	0.228	0.226	0.224
170	0.223	0.221	0.219	0.217	0.215	0.213	0.211	0.209	0.207	0.205
180	0.204	0.202	0.200	0.198	0.197	0.195	0.193	0.191	0.190	0.188
190	0.186	0.185	0.183	0.182	0.180	0.178	0.177	0.175	0.174	0.172

To obtain a precalibration number, divide by the decay factor.
For a postcalibration number, multiply by the decay factor.
(See also: http://2cyc.eu/d)

More Information

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More Information

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For more information, download our free White Papers:

- The Future of Immuno-PET
- ^{89}Zr-PET Applications
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