

# Y-90 Fact Sheet

## Yttrium-90 Radiochemical Yttrium Chloride Solution

### Yttrium (Y-90) Chloride

Half-Life: 64.1 hours

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Yttrium-90 is a pure beta-emitter with a half-life of 64.1 hours, average energy of 0.935 MeV and maximum of 2.284 MeV. It is produced from the liquid extraction of a strontium-90 generator.

Yttrium-90 is an ideal isotope for radiotherapy. With its high specific activity (no carrier added) and very high chemical purity, yttrium-90 chloride (fission) is suitable for the radiolabelling of radiotherapeutic agents.

### Process Data

#### Nuclear Reaction

Fission  $^{90}\text{Sr}$  (28.74 years, Beta-)  $^{90}\text{Y}$

### Product Specification

#### Chemical Composition

$^{90}\text{Y}$  as  $\text{YCl}_3$  in 0.04 N HCl solution

#### Specific Activity

No carrier added

#### Radionuclidic Purity\*

$^{90}\text{Sr}/^{90}\text{Y} \leq 2.5 \cdot 10^{-6}$

#### Radioactive Concentration\*

Low concentration 100 – 200 mCi/mL

(3.7 – 7.4 GBq/mL)

High concentration  $\geq 500$  mCi/mL

( $\geq 18.5$  GBq/mL)

#### Radiochemical Purity

$\geq 95\%$

#### Chemical Purity\*

$(\text{Zn}+\text{Cd}+\text{Pb}+\text{Cu}+\text{Fe})/^{90}\text{Y} \leq 30 \mu\text{g}/\text{Ci}$

( $\leq 0.81 \mu\text{g}/\text{GBq}$ )

\*Specifications at reference date  
(2 days after manufacturing at 18h00 CET)

### Packaging

- Octovial – plastic outer vial, glass inner V-vial
- Quartz lined glass vial (2 mL and 10 mL)

### Availability

On request

### Product Origin

Fleurus, Belgium

### First Class Delivery Service

MDS Nordion has a world class distribution system that includes a unique, software-based order management system. Carefully managed transportation logistics ensure products reach their destination on time.

## Yttrium-90 Decay Table Half-Life: 64.1 hours

HOURS:	0	1	2	3	4	5	6	7	8	9
0	1.0000	0.9892	0.9786	0.9681	0.9577	0.9474	0.9372	0.9271	0.9171	0.9073
10	0.8975	0.8879	0.8783	0.8689	0.8595	0.8503	0.8411	0.8321	0.8231	0.8143
20	0.8055	0.7969	0.7883	0.7798	0.7714	0.7631	0.7549	0.7468	0.7388	0.7308
30	0.7230	0.7152	0.7075	0.6999	0.6924	0.6849	0.6775	0.6703	0.6630	0.6559
40	0.6489	0.6419	0.6350	0.6281	0.6214	0.6147	0.6081	0.6016	0.5951	0.5887
50	0.5824	0.5761	0.5699	0.5638	0.5577	0.5517	0.5458	0.5399	0.5341	0.5283
60	0.5227	0.5170	0.5115	0.5060	0.5005	0.4952	0.4898	0.4846	0.4794	0.4742
70	0.4691	0.4641	0.4591	0.4541	0.4492	0.4444	0.4396	0.4349	0.4302	0.4256
80	0.4210	0.4165	0.4120	0.4076	0.4032	0.3989	0.3946	0.3903	0.3861	0.3820
90	0.3779	0.3738	0.3698	0.3658	0.3619	0.3580	0.3541	0.3503	0.3466	0.3428
100	0.3391	0.3355	0.3319	0.3283	0.3248	0.3213	0.3178	0.3144	0.3110	0.3077
110	0.3044	0.3011	0.2979	0.2947	0.2915	0.2884	0.2853	0.2822	0.2792	0.2762
120	0.2732	0.2702	0.2673	0.2645	0.2616	0.2588	0.2560	0.2533	0.2505	0.2478
130	0.2452	0.2425	0.2399	0.2374	0.2348	0.2323	0.2298	0.2273	0.2249	0.2224
140	0.2201	0.2177	0.2153	0.2130	0.2107	0.2085	0.2062	0.2040	0.2018	0.1996
150	0.1975	0.1954	0.1933	0.1912	0.1891	0.1871	0.1851	0.1831	0.1811	0.1792
160	0.1773	0.1753	0.1735	0.1716	0.1698	0.1679	0.1661	0.1643	0.1626	0.1608
170	0.1591	0.1574	0.1557	0.1540	0.1524	0.1507	0.1491	0.1475	0.1459	0.1443
180	0.1428	0.1412	0.1397	0.1382	0.1367	0.1353	0.1338	0.1324	0.1309	0.1295
190	0.1281	0.1268	0.1254	0.1241	0.1227	0.1214	0.1201	0.1188	0.1175	0.1163

The half-life values stated are as of time of publication. MDS Nordion values may vary.

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