

A-Z of Stock Radionuclides

Radionuclide	Reference Date (YYYY-MM-DD)	Activity Concentration	Product Mass	Chemistry	Impurities	NPL Product Code
Americium-241	2019-02-01 12:00 UTC	10 Bq/g	10 g nominal	0.5 mol dm ⁻³ nitric acid	None detected	R13-01
	2015-06-01 12:00 UTC	300 Bq/g	10 g nominal		None detected	R13-02
	2018-03-01 12:00 UTC	4 kBq/g	10 g nominal		None detected	R13-03
	2015-06-01 12:00 UTC	100 kBq/g	10 g nominal		None detected	R13-05
Americium-243	2012-07-01 12:00 UTC	1 Bq/g	10 g nominal	1 mol dm ⁻³ nitric acid	²⁴¹ Am < 0.05 %	R18-00
	2012-12-01 12:00 UTC	100 Bq/g	10 g nominal		²⁴¹ Am < 0.05 %	R18-20
Caesium-137	2014-01-01 12:00 UTC	10 Bq/g	10 g nominal	0.1 mol dm ⁻³ nitric acid containing 50 µg g ⁻¹ inactive caesium	None detected	R03-01
	2014-01-01 12:00 UTC	100 Bq/g	10 g nominal		None detected	R03-02
	2019-05-19 12:00 UTC	350 kBq/g	1 g or 3 g nominal	0.1 mol dm ⁻³ hydrochloric acid containing 10 µg g ⁻¹ inactive caesium	None detected	R03-05
Carbon-14	2014-01-01 12:00 UTC	100 Bq/g	10 g nominal	Aqueous sodium carbonate containing 5 mg g ⁻¹ inactive sodium carbonate and 1 mg g ⁻¹ formaldehyde	None detected	R19-02
	2017-06-01 12:00 UTC	2 kBq/g	10 g nominal		None detected	R19-03
Carbon-14 (glucose)	2014-12-01 12:00 UTC	100 Bq/g	10 g nominal	Aqueous D-[1- ¹⁴ C]-glucose also containing 1 mg g ⁻¹ inactive glucose and 1 mg g ⁻¹ formaldehyde	None detected	R43-02
	2014-12-01 12:00 UTC	2 kBq/g	10 g nominal		None detected	R43-03
	2014-12-01 12:00 UTC	100 kBq/g	10 g nominal		None detected	R43-05
Iodine-129	2012-02-22 12:00 UTC	100 Bq/g	10 g nominal	0.001 mol dm ⁻³ sodium hydroxide	None detected	R14-02
	2012-02-22 12:00 UTC	1 kBq/g	10 g nominal		None detected	R14-03
Lead-210	2017-09-01 12:00 UTC	1 Bq/g	10 g nominal	2 mol dm ⁻³ nitric acid containing 50 µg g ⁻¹ inactive lead and 50 µg g ⁻¹ inactive bismuth	None detected	R22-00
	2017-09-01 12:00 UTC	40 Bq/g	5 g nominal		None detected	R22-01
	2014-03-01 12:00 UTC	350 Bq/g	10 g nominal		None detected	R22-02
	2014-03-01 12:00 UTC	37 kBq/g	5 g nominal	1 mol dm ⁻³ nitric acid containing 50 µg g ⁻¹ inactive lead and 50 µg g ⁻¹ inactive bismuth	None detected	R22-03

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Radionuclide	Reference Date (YYYY-MM-DD)	Activity Concentration	Product Mass	Chemistry	Impurities (% of Activity Concentration)	NPL Product Code
Nickel-63	2012-06-01 12:00 UTC	2 kBq/g	10 g nominal	0.1 mol dm ⁻³ hydrochloric acid containing 100 µg g ⁻¹ inactive nickel	None detected	R48-03
Plutonium-236	2018-11-01 12:00 UTC	10 Bq/g	5 g nominal	2 mol dm ⁻³ nitric acid	None detected	R37-01
Plutonium-238	2018-05-01 12:00 UTC	10 Bq/g	10 g nominal	2 mol dm ⁻³ nitric acid	None detected	R45-01
	2018-05-01 12:00 UTC	100 Bq/g	10 g nominal		None detected	R45-02
	2012-10-01 12:00 UTC	1 kBq/g	10 g nominal		None detected	R45-03
Plutonium-239*	2018-10-01 12:00 UTC	50 Bq/g	10 g nominal	2 mol dm ⁻³ nitric acid	²⁴⁰ Pu < 0.5 % ²⁴¹ Pu < 0.2 %	R24-01
	2010-03-15 12:00 UTC	1 kBq/g	10 g nominal		²⁴⁰ Pu < 0.5 % ²⁴¹ Pu < 0.3 %	R24-03
Plutonium-241**	2010-10-01 12:00 UTC	10 Bq/g	10 g nominal	2 mol dm ⁻³ nitric acid	²³⁸ Pu < 0.02 % ²³⁹ Pu < 0.01 % ²⁴⁰ Pu < 0.05 % ²⁴² Pu < 6 × 10 ⁻⁴ % ²⁴⁴ Pu < 3 × 10 ⁻⁹ % ²⁴¹ Am – Decay product	R35-01
	2018-10-01 12:00 UTC	150 Bq/g	10 g nominal		²³⁸ Pu < 0.02 % ²³⁹ Pu < 0.01 % ²⁴⁰ Pu < 0.05 % ²⁴² Pu < 6 × 10 ⁻⁴ % ²⁴⁴ Pu < 3 × 10 ⁻⁹ % ²⁴¹ Am – Decay products	R35-02
	2016-02-01 12:00 UTC	4 kBq/g	5 g nominal		²³⁸ Pu < 0.02 % ²³⁹ Pu < 0.01 % ²⁴⁰ Pu < 0.05 % ²⁴² Pu < 6 × 10 ⁻⁴ % ²⁴⁴ Pu < 3 × 10 ⁻⁹ % ²⁴¹ Am – Decay products	R35-03
Plutonium-242	2016-04-01 12:00 UTC	1 Bq/g	10 g nominal	2 mol dm ⁻³ nitric acid	²⁴¹ Am < 0.3% ²⁴¹ Pu < 5 %	R15-00
	2016-04-01 12:00 UTC	12.5 Bq/g	10 g nominal		²⁴¹ Am < 0.3% ²⁴¹ Pu < 5 %	R15-20
Protactinium-231	2019-04-01 12:00 UTC	100 Bq/g	5 g nominal	7 mol dm ⁻³ hydrochloric acid	None detected	R49-02

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** The plutonium impurities for these batches have a reference date of 2010-03-17 and have not been derived at NPL.

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Radionuclide	Reference Date (YYYY-MM-DD)	Product description	Product Mass	Chemistry	Impurities	NPL Product Code
Radium-226	2014-02-28 12:00 UTC	100 Bq/g	10 g nominal	1 mol dm ⁻³ hydrochloric acid	None detected	R36-02
	2014-02-28 12:00 UTC	2 kBq/g	10 g nominal		None detected	R36-03
	2016-05-10 12:00 UTC	40 kBq/g	5 g nominal		None detected	R36-04
Radium-228	2014-08-01 12:00 UTC	10 Bq/g	5 g nominal	2 mol dm ⁻³ nitric acid	²²⁶ Ra < 0.3 %	R42-01
Strontium-90	2014-02-05 12:00 UTC	100 Bq/g	10 g nominal	1 mol dm ⁻³ nitric acid containing 50 µg g ⁻¹ strontium and 50 µg g ⁻¹ yttrium	None detected	R01-03
	2014-02-05 12:00 UTC	2 kBq/g	10 g nominal		None detected	R01-05
	2014-02-05 12:00 UTC	40 kBq/g	10 g nominal		None detected	R01-04
Technetium-99	2015-03-01 12:00 UTC	100 Bq/g	10 g nominal	0.1 mol dm ⁻³ ammonium hydroxide	None detected	R11-02
	2015-03-01 12:00 UTC	1 kBq/g	10 g nominal		None detected	R11-03
Thorium-229***	2016-10-01 12:00 UTC	1 Bq/g	10 g nominal	2 mol dm ⁻³ nitric acid containing 10 µg g ⁻¹ ammonium cerium nitrate	None detected	R26-00
	2013-08-01 12:00 UTC	10 Bq/g	10 g nominal		None detected	R26-01
	2013-08-01 12:00 UTC	100 Bq/g	10 g nominal		None detected	R26-02
Tritium	2010-01-01 12:00 UTC	10 Bq/g	10 g nominal	Tritiated water	None detected	R30-01
	2010-01-01 12:00 UTC	100 Bq/g	10 g nominal		None detected	R30-02
	2018-06-01 12:00 UTC	5 kBq/g	10 g nominal		None detected	R30-04
Tritium (Glucose)	2019-10-14 12:00 UTC	1 kBq/g	10 g nominal	D-[3- ³ H]-glucose containing 1 mg g ⁻¹ inactive glucose and 1mg g ⁻¹ formaldehyde	None detected	R44-03
natural Uranium*** Uranium-234 Uranium-238 Uranium-235	2016-10-01 12:00 UTC	100 Bq/g ~50 Bq/g ²³⁴ U ~50 Bq/g ²³⁸ U ~2.5 Bq/g ²³⁵ U	10 g nominal	2 mol dm ⁻³ nitric acid	-	R47-02
	2017-06-01 12:00 UTC	200 Bq/g ~100 Bq/g ²³⁴ U ~100 Bq/g ²³⁸ U ~5 Bq/g ²³⁴ U	10 g nominal		-	R47-03

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Radionuclide	Reference Date (YYYY-MM-DD)	Product description	Product Mass	Chemistry	Impurities	NPL Product Code
Uranium-232*	2014-06-01 12:00 UTC	1 Bq/g	10 g nominal	2 mol dm ⁻³ nitric acid	None detected	R20-00
	2016-04-01 12:00 UTC	10 Bq/g	10 g nominal		None detected	R20-15
	2017-11-01 12:00 UTC	100 Bq/g	10 g nominal		None detected	R20-02
	2007-04-15 12:00 UTC	5 kBq/g	5 g nominal		None detected	R20-03
Uranium-233***	2018-07-01 12:00 UTC	1 Bq/g	10 g nominal	2 mol dm ⁻³ nitric acid	²²⁹ Th < 0.3 %	R46-00
	2018-07-01 12:00 UTC	10 Bq/g	10 g nominal		²²⁹ Th < 0.3 %	R46-01
	2014-05-01 12:00 UTC	100 Bq/g	10 g nominal		²²⁹ Th < 0.2 % ²³³ U < 0.4 %	R46-02
	2014-05-01 12:00 UTC	1 kBq/g	10 g nominal		²²⁹ Th < 0.2 % ²³³ U < 0.4 %	R46-03
Uranium-234	2019-06-01 12:00 UTC	10 Bq/g	10 g nominal	2 mol dm ⁻³ nitric acid	U-232 < 1.3 %	R50-01
	2019-06-01 12:00 UTC	100 Bq/g	10 g nominal		U-232 < 1.3 %	R50-02
Uranium-236	2014-01-01 12:00 UTC	10 Bq/g	10 g nominal	2 mol dm ⁻³ nitric acid	²³⁵ U < 0.005 %	R41-01
	2014-01-01 12:00 UTC	100 Bq/g	10 g nominal		²³⁵ U < 0.005 %	R41-02
	2014-01-01 12:00 UTC	900 Bq/g	5 g nominal		²³⁵ U < 0.005 %	R41-03

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Additional Products

Radionuclide	Product description	Chemistry	NPL Product Code
Mixed Radionuclide	10 kBq/g, 1 g nominal	4 mol dm ⁻³ HCl with 10 µg g ⁻¹ of appropriate carrier elements	R08-02
Mixed Radionuclide	10 kBq/g, 10 g nominal		R08-04
Mixed Nuclide Carrier Solution	500 g nominal		R08-Carrier
3M Filter Mixed Radionuclide****	5-10 kBq total activity	n/a	RR20-3MXX
RASA Filter Mixed Radionuclide****	5-10 kBq total activity		RR20-RSXX
CINDERELLA Filter Mixed Radionuclide****	5-10 kBq total activity		RR20-ARXX

****Optional addition of ²¹⁰Pb is available. Please advise when ordering with Customer Services.

For any of these products, please contact customer services at: radioactivity@npl.co.uk

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