

Finite-Range Droplet Model

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
¹⁶ O	-4.840	²⁵ Na	-8.970	⁴⁶ Al	76.240	⁵⁷ P	118.580	⁶⁰ Cl	85.750	⁵⁷ K	14.110
¹⁷ O	-0.170	²⁶ Na	-5.890	⁴⁷ Al	84.700			⁶¹ Cl	92.410	⁵⁸ K	21.930
¹⁸ O	-2.620	²⁷ Na	-5.180	⁴⁸ Al	95.830	²⁴ S	55.740	⁶² Cl	102.600	⁵⁹ K	27.010
¹⁹ O	2.560	²⁸ Na	-0.730	⁴⁹ Al	105.020	²⁵ S	43.400	⁶³ Cl	111.670	⁶⁰ K	34.920
²⁰ O	2.570	²⁹ Na	2.480	⁵⁰ Al	115.130	²⁶ S	27.740			⁶¹ K	40.780
²¹ O	8.200	³⁰ Na	8.210	⁵¹ Al	123.860	²⁷ S	17.220	²⁷ Ar	64.710	⁶² K	48.960
²² O	10.410	³¹ Na	12.250			²⁸ S	3.880	²⁸ Ar	45.810	⁶³ K	55.590
²³ O	17.720	³² Na	18.440	²² Si	33.170	²⁹ S	-2.700	²⁹ Ar	35.410	⁶⁴ K	66.210
²⁴ O	22.140	³³ Na	23.140	²³ Si	23.600	³⁰ S	-12.300	³⁰ Ar	19.950	⁶⁵ K	72.980
²⁵ O	30.930	³⁴ Na	30.000	²⁴ Si	9.820	³¹ S	-16.590	³¹ Ar	10.790	⁶⁶ K	82.440
²⁶ O	36.750	³⁵ Na	36.190	²⁵ Si	3.200	³² S	-23.750	³² Ar	-2.120	⁶⁷ K	89.860
²⁷ O	46.580	³⁶ Na	45.380	²⁶ Si	-8.350	³³ S	-24.370	³³ Ar	-7.760	⁶⁸ K	99.390
²⁸ O	53.730	³⁷ Na	52.410	²⁷ Si	-12.730	³⁴ S	-28.320	³⁴ Ar	-17.030	⁶⁹ K	107.000
²⁹ O	65.030	³⁸ Na	61.440	²⁸ Si	-21.100	³⁵ S	-27.570	³⁵ Ar	-22.480	⁷⁰ K	117.430
³⁰ O	72.830	³⁹ Na	68.780	²⁹ Si	-20.380	³⁶ S	-29.950	³⁶ Ar	-29.560		
³¹ O	82.300	⁴⁰ Na	80.140	³⁰ Si	-22.480	³⁷ S	-27.260	³⁷ Ar	-30.960	³⁰ Ca	72.940
³² O	91.320	⁴¹ Na	88.510	³¹ Si	-20.510	³⁸ S	-27.780	³⁸ Ar	-35.380	³¹ Ca	58.760
³³ O	104.630	⁴² Na	99.150	³² Si	-22.300	³⁹ S	-24.300	³⁹ Ar	-34.770	³² Ca	40.830
³⁴ O	113.700	⁴³ Na	107.710	³³ Si	-19.290	⁴⁰ S	-23.880	⁴⁰ Ar	-36.530	³³ Ca	28.780
		⁴⁴ Na	118.770	³⁴ Si	-19.510	⁴¹ S	-19.200	⁴¹ Ar	-34.390	³⁴ Ca	13.660
¹⁷ F	1.900			³⁵ Si	-14.760	⁴² S	-17.790	⁴² Ar	-35.620	³⁵ Ca	4.900
¹⁸ F	1.210	²⁰ Mg	16.070	³⁶ Si	-13.370	⁴³ S	-12.150	⁴³ Ar	-32.880	³⁶ Ca	-6.510
¹⁹ F	-3.080	²¹ Mg	9.860	³⁷ Si	-7.950	⁴⁴ S	-9.380	⁴⁴ Ar	-33.300	³⁷ Ca	-13.130
²⁰ F	0.100	²² Mg	-1.500	³⁸ Si	-5.730	⁴⁵ S	-2.640	⁴⁵ Ar	-30.030	³⁸ Ca	-22.880
²¹ F	-0.680	²³ Mg	-5.840	³⁹ Si	0.880	⁴⁶ S	1.720	⁴⁶ Ar	-28.990	³⁹ Ca	-27.990
²² F	3.080	²⁴ Mg	-14.080	⁴⁰ Si	4.820	⁴⁷ S	9.220	⁴⁷ Ar	-24.030	⁴⁰ Ca	-35.440
²³ F	4.240	²⁵ Mg	-12.520	⁴¹ Si	9.780	⁴⁸ S	14.050	⁴⁸ Ar	-21.240	⁴¹ Ca	-36.650
²⁴ F	9.320	²⁶ Mg	-16.390	⁴² Si	12.870	⁴⁹ S	22.250	⁴⁹ Ar	-14.880	⁴² Ca	-40.860
²⁵ F	12.810	²⁷ Mg	-12.540	⁴³ Si	22.620	⁵⁰ S	27.650	⁵⁰ Ar	-11.470	⁴³ Ca	-40.400
²⁶ F	19.940	²⁸ Mg	-14.500	⁴⁴ Si	29.170	⁵¹ S	37.670	⁵¹ Ar	-4.480	⁴⁴ Ca	-43.480
²⁷ F	24.990	²⁹ Mg	-9.340	⁴⁵ Si	38.440	⁵² S	44.480	⁵² Ar	-0.290	⁴⁵ Ca	-42.470
²⁸ F	33.220	³⁰ Mg	-9.140	⁴⁶ Si	42.280	⁵³ S	53.870	⁵³ Ar	7.560	⁴⁶ Ca	-44.700
²⁹ F	39.880	³¹ Mg	-3.550	⁴⁷ Si	55.210	⁵⁴ S	60.740	⁵⁴ Ar	12.860	⁴⁷ Ca	-43.060
³⁰ F	49.320	³² Mg	-1.420	⁴⁸ Si	62.620	⁵⁵ S	70.610	⁵⁵ Ar	20.220	⁴⁸ Ca	-43.790
³¹ F	53.550	³³ Mg	5.360	⁴⁹ Si	73.260	⁵⁶ S	77.620	⁵⁶ Ar	24.980	⁴⁹ Ca	-40.300
³² F	63.380	³⁴ Mg	7.890	⁵⁰ Si	81.030	⁵⁷ S	87.570	⁵⁷ Ar	34.130	⁵⁰ Ca	-38.650
³³ F	72.020	³⁵ Mg	14.920	⁵¹ Si	92.000	⁵⁸ S	95.550	⁵⁸ Ar	40.490	⁵¹ Ca	-33.550
³⁴ F	83.790	³⁶ Mg	19.160	⁵² Si	99.170	⁵⁹ S	108.220	⁵⁹ Ar	49.310	⁵² Ca	-31.070
³⁵ F	93.120	³⁷ Mg	27.560	⁵³ Si	109.510	⁶⁰ S	117.200	⁶⁰ Ar	55.560	⁵³ Ca	-25.390
³⁶ F	104.000	³⁸ Mg	32.740	⁵⁴ Si	117.750			⁶¹ Ar	64.380	⁵⁴ Ca	-22.460
³⁷ F	110.240	³⁹ Mg	41.120			²⁵ Cl	70.020	⁶² Ar	70.320	⁵⁵ Ca	-16.250
³⁸ F	124.510	⁴⁰ Mg	45.420	²³ P	45.660	²⁶ Cl	54.310	⁶³ Ar	80.570	⁵⁶ Ca	-12.820
		⁴¹ Mg	58.180	²⁴ P	33.780	²⁷ Cl	39.290	⁶⁴ Ar	88.390	⁵⁷ Ca	-5.290
¹⁸ Ne	3.210	⁴² Mg	65.520	²⁵ P	20.520	²⁸ Cl	28.260	⁶⁵ Ar	99.440	⁵⁸ Ca	-1.990
¹⁹ Ne	0.470	⁴³ Mg	76.280	²⁶ P	11.390	²⁹ Cl	14.830	⁶⁶ Ar	108.940	⁵⁹ Ca	5.590
²⁰ Ne	-7.720	⁴⁴ Mg	78.060	²⁷ P	1.050	³⁰ Cl	4.910	⁶⁷ Ar	119.560	⁶⁰ Ca	10.470
²¹ Ne	-5.870	⁴⁵ Mg	95.370	²⁸ P	-6.500	³¹ Cl	-5.380			⁶¹ Ca	17.780
²² Ne	-8.690	⁴⁶ Mg	101.100	²⁹ P	-15.890	³² Cl	-11.470	²⁹ K	61.630	⁶² Ca	23.100
²³ Ne	-5.010	⁴⁷ Mg	115.530	³⁰ P	-17.430	³³ Cl	-19.010	³⁰ K	48.080	⁶³ Ca	31.940
²⁴ Ne	-5.980			³¹ P	-21.940	³⁴ Cl	-23.120	³¹ K	32.160	⁶⁴ Ca	37.530
²⁵ Ne	-0.980	²¹ Al	26.480	³² P	-21.750	³⁵ Cl	-28.110	³² K	20.620	⁶⁵ Ca	46.380
²⁶ Ne	1.020	²² Al	18.040	³³ P	-24.000	³⁶ Cl	-28.400	³³ K	7.400	⁶⁶ Ca	52.430
²⁷ Ne	7.250	²³ Al	6.450	³⁴ P	-22.780	³⁷ Cl	-31.190	³⁴ K	-0.990	⁶⁷ Ca	61.470
²⁸ Ne	10.020	²⁴ Al	0.400	³⁵ P	-23.460	³⁸ Cl	-30.270	³⁵ K	-10.680	⁶⁸ Ca	67.900
²⁹ Ne	17.830	²⁵ Al	-8.450	³⁶ P	-20.420	³⁹ Cl	-31.120	³⁶ K	-16.910	⁶⁹ Ca	77.270
³⁰ Ne	22.440	²⁶ Al	-10.770	³⁷ P	-19.440	⁴⁰ Cl	-28.680	³⁷ K	-24.930	⁷⁰ Ca	83.650
³¹ Ne	29.130	²⁷ Al	-16.900	³⁸ P	-15.190	⁴¹ Cl	-28.570	³⁸ K	-28.870	⁷¹ Ca	94.580
³² Ne	33.320	²⁸ Al	-15.480	³⁹ P	-13.410	⁴² Cl	-25.270	³⁹ K	-34.390	⁷² Ca	102.730
³³ Ne	42.960	²⁹ Al	-16.440	⁴⁰ P	-8.350	⁴³ Cl	-24.050	⁴⁰ K	-35.360	⁷³ Ca	113.660
³⁴ Ne	49.560	³⁰ Al	-14.480	⁴¹ P	-5.480	⁴⁴ Cl	-19.910	⁴¹ K	-37.780		
³⁵ Ne	60.850	³¹ Al	-14.400	⁴² P	0.620	⁴⁵ Cl	-18.310	⁴² K	-36.970	³² Sc	70.750
³⁶ Ne	68.780	³² Al	-10.760	⁴³ P	3.190	⁴⁶ Cl	-12.630	⁴³ K	-38.550	³³ Sc	54.230
³⁷ Ne	79.590	³³ Al	-9.070	⁴⁴ P	11.640	⁴⁷ Cl	-8.640	⁴⁴ K	-37.320	³⁴ Sc	40.370
³⁸ Ne	84.850	³⁴ Al	-4.210	⁴⁵ P	17.180	⁴⁸ Cl	-2.060	⁴⁵ K	-38.060	³⁵ Sc	25.050
³⁹ Ne	98.860	³⁵ Al	-1.540	⁴⁶ P	24.860	⁴⁹ Cl	2.620	⁴⁶ K	-35.710	³⁶ Sc	14.670
⁴⁰ Ne	107.820	³⁶ Al	4.390	⁴⁷ P	29.180	⁵⁰ Cl	9.890	⁴⁷ K	-35.440	³⁷ Sc	2.910
⁴¹ Ne	118.930	³⁷ Al	8.290	⁴⁸ P	39.810	⁵¹ Cl	15.290	⁴⁸ K	-31.610	³⁸ Sc	-5.460
		³⁸ Al	15.180	⁴⁹ P	46.600	⁵² Cl	23.560	⁴⁹ K	-28.860	³⁹ Sc	-15.450
¹⁹ Na	11.470	³⁹ Al	20.060	⁵⁰ P	56.550	⁵³ Cl	30.240	⁵⁰ K	-23.510	⁴⁰ Sc	-22.210
²⁰ Na	6.160	⁴⁰ Al	28.150	⁵¹ P	64.340	⁵⁴ Cl	38.730	⁵¹ K	-19.780	⁴¹ Sc	-29.890
²¹ Na	-2.820	⁴¹ Al	30.430	⁵² P	73.740	⁵⁵ Cl	45.900	⁵² K	-13.770	⁴² Sc	-33.580
²² Na	-4.930	⁴² Al	41.110	⁵³ P	81.710	⁵⁶ Cl	54.660	⁵³ K	-9.530	⁴³ Sc	-38.700
²³ Na	-9.820	⁴³ Al	49.470	⁵⁴ P	91.060	⁵⁷ Cl	61.710	⁵⁴ K	-2.680	⁴⁴ Sc	-39.830
²⁴ Na	-7.430	⁴⁴ Al	58.380	⁵⁵ P	98.860	⁵⁸ Cl	69.420	⁵⁵ K	2.520	⁴⁵ Sc	-43.290
		⁴⁵ Al	61.220	⁵⁶ P	109.640	⁵⁹ Cl	76.330	⁵⁶ K	8.920	⁴⁶ Sc	-43.770

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
⁴⁷ Sc	-46.430	⁷⁹ Ti	111.730	⁶² Cr	-41.180	⁴² Fe	49.400	⁶⁸ Co	-52.580	⁹² Ni	63.580		
⁴⁸ Sc	-45.660	⁸⁰ Ti	120.750	⁶³ Cr	-36.030	⁴³ Fe	37.990	⁶⁹ Co	-51.440	⁹³ Ni	73.090		
⁴⁹ Sc	-46.890			⁶⁴ Cr	-34.950	⁴⁴ Fe	23.620	⁷⁰ Co	-47.380	⁹⁴ Ni	80.570		
⁵⁰ Sc	-44.530	³⁶ V	62.540	⁶⁵ Cr	-28.740	⁴⁵ Fe	12.910	⁷¹ Co	-45.500	⁹⁵ Ni	90.140		
⁵¹ Sc	-43.400	³⁷ V	45.710	⁶⁶ Cr	-26.330	⁴⁶ Fe	-0.020	⁷² Co	-41.220	⁹⁶ Ni	97.410		
⁵² Sc	-39.360	³⁸ V	33.840	⁶⁷ Cr	-20.500	⁴⁷ Fe	-8.120	⁷³ Co	-38.830	⁹⁷ Ni	107.100		
⁵³ Sc	-36.840	³⁹ V	19.860	⁶⁸ Cr	-17.340	⁴⁸ Fe	-18.930	⁷⁴ Co	-34.020	⁹⁸ Ni	114.880		
⁵⁴ Sc	-32.030	⁴⁰ V	10.220	⁶⁹ Cr	-11.090	⁴⁹ Fe	-25.080	⁷⁵ Co	-31.170	⁹⁹ Ni	124.740		
⁵⁵ Sc	-29.170	⁴¹ V	-0.890	⁷⁰ Cr	-7.360	⁵⁰ Fe	-34.600	⁷⁶ Co	-26.070				
⁵⁶ Sc	-23.840	⁴² V	-9.430	⁷¹ Cr	-0.330	⁵¹ Fe	-40.820	⁷⁷ Co	-22.480	⁴⁸ Cu	44.970		
⁵⁷ Sc	-20.440	⁴³ V	-19.200	⁷² Cr	4.130	⁵² Fe	-48.350	⁷⁸ Co	-15.360	⁴⁹ Cu	29.680		
⁵⁸ Sc	-14.590	⁴⁴ V	-25.270	⁷³ Cr	11.230	⁵³ Fe	-51.930	⁷⁹ Co	-9.680	⁵⁰ Cu	19.130		
⁵⁹ Sc	-10.990	⁴⁵ V	-32.960	⁷⁴ Cr	16.020	⁵⁴ Fe	-57.080	⁸⁰ Co	-2.050	⁵¹ Cu	5.940		
⁶⁰ Sc	-4.830	⁴⁶ V	-36.430	⁷⁵ Cr	24.730	⁵⁵ Fe	-58.120	⁸¹ Co	4.180	⁵² Cu	-2.780		
⁶¹ Sc	-1.020	⁴⁷ V	-42.360	⁷⁶ Cr	31.210	⁵⁶ Fe	-60.720	⁸² Co	12.340	⁵³ Cu	-14.280		
⁶² Sc	6.670	⁴⁸ V	-45.590	⁷⁷ Cr	40.440	⁵⁷ Fe	-60.010	⁸³ Co	18.720	⁵⁴ Cu	-21.970		
⁶³ Sc	11.680	⁴⁹ V	-48.850	⁷⁸ Cr	47.290	⁵⁸ Fe	-61.980	⁸⁴ Co	27.490	⁵⁵ Cu	-32.200		
⁶⁴ Sc	18.970	⁵⁰ V	-50.490	⁷⁹ Cr	56.850	⁵⁹ Fe	-60.190	⁸⁵ Co	34.780	⁵⁶ Cu	-38.650		
⁶⁵ Sc	24.370	⁵¹ V	-52.840	⁸⁰ Cr	65.140	⁶⁰ Fe	-61.490	⁸⁶ Co	43.110	⁵⁷ Cu	-47.740		
⁶⁶ Sc	32.160	⁵² V	-52.140	⁸¹ Cr	74.810	⁶¹ Fe	-59.160	⁸⁷ Co	49.910	⁵⁸ Cu	-50.880		
⁶⁷ Sc	37.960	⁵³ V	-52.250	⁸² Cr	82.570	⁶² Fe	-59.410	⁸⁸ Co	58.600	⁵⁹ Cu	-56.150		
⁶⁸ Sc	46.090	⁵⁴ V	-49.730	⁸³ Cr	92.360	⁶³ Fe	-56.020	⁸⁹ Co	65.960	⁶⁰ Cu	-57.630		
⁶⁹ Sc	52.340	⁵⁵ V	-49.210	⁸⁴ Cr	100.530	⁶⁴ Fe	-55.990	⁹⁰ Co	74.960	⁶¹ Cu	-61.220		
⁷⁰ Sc	60.760	⁵⁶ V	-45.760	⁸⁵ Cr	110.960	⁶⁵ Fe	-52.410	⁹¹ Co	82.190	⁶² Cu	-61.950		
⁷¹ Sc	67.620	⁵⁷ V	-44.440	⁸⁶ Cr	119.450	⁶⁶ Fe	-51.520	⁹² Co	92.220	⁶³ Cu	-64.630		
⁷² Sc	77.040	⁵⁸ V	-40.310			⁶⁷ Fe	-46.530	⁹³ Co	100.320	⁶⁴ Cu	-64.430		
⁷³ Sc	84.940	⁵⁹ V	-38.490	⁴⁰ Mn	56.060	⁶⁸ Fe	-45.360	⁹⁴ Co	109.530	⁶⁵ Cu	-66.510		
⁷⁴ Sc	94.900	⁶⁰ V	-33.560	⁴¹ Mn	40.120	⁶⁹ Fe	-40.230	⁹⁵ Co	117.790	⁶⁶ Cu	-65.570		
⁷⁵ Sc	103.720	⁶¹ V	-31.180	⁴² Mn	28.840	⁷⁰ Fe	-38.250	⁹⁶ Co	127.660	⁶⁷ Cu	-66.940		
⁷⁶ Sc	114.940	⁶² V	-26.170	⁴³ Mn	15.020	⁷¹ Fe	-33.080			⁶⁸ Cu	-65.240		
		⁶³ V	-23.290	⁴⁴ Mn	5.470	⁷² Fe	-30.560	⁴⁶ Ni	44.730	⁶⁹ Cu	-65.730		
		⁶⁴ V	-16.890	⁴⁵ Mn	-5.920	⁷³ Fe	-24.740	⁴⁷ Ni	32.200	⁷⁰ Cu	-63.260		
³⁴ Ti	63.450	⁶⁵ V	-13.490	⁴⁶ Mn	-13.800	⁷⁴ Fe	-21.610	⁴⁸ Ni	17.590	⁷¹ Cu	-63.220		
³⁵ Ti	49.640	⁶⁶ V	-7.820	⁴⁷ Mn	-23.160	⁷⁵ Fe	-15.590	⁴⁹ Ni	7.830	⁷² Cu	-60.380		
³⁶ Ti	33.530	⁶⁷ V	-3.080	⁴⁸ Mn	-30.030	⁷⁶ Fe	-11.980	⁵⁰ Ni	-4.660	⁷³ Cu	-59.740		
³⁷ Ti	22.630	⁶⁸ V	3.400	⁴⁹ Mn	-38.580	⁷⁷ Fe	-3.970	⁵¹ Ni	-12.380	⁷⁴ Cu	-56.490		
³⁸ Ti	9.210	⁶⁹ V	8.080	⁵⁰ Mn	-42.740	⁷⁸ Fe	1.850	⁵² Ni	-23.570	⁷⁵ Cu	-55.250		
³⁹ Ti	0.580	⁷⁰ V	15.150	⁵¹ Mn	-49.110	⁷⁹ Fe	10.080	⁵³ Ni	-30.400	⁷⁶ Cu	-51.520		
⁴⁰ Ti	-10.400	⁷¹ V	20.460	⁵² Mn	-51.490	⁸⁰ Fe	16.550	⁵⁴ Ni	-40.400	⁷⁷ Cu	-49.680		
⁴¹ Ti	-17.480	⁷² V	27.630	⁵³ Mn	-55.420	⁸¹ Fe	25.490	⁵⁵ Ni	-46.390	⁷⁸ Cu	-45.520		
⁴² Ti	-26.900	⁷³ V	33.320	⁵⁴ Mn	-56.160	⁸² Fe	31.980	⁵⁶ Ni	-54.400	⁷⁹ Cu	-42.950		
⁴³ Ti	-31.520	⁷⁴ V	42.080	⁵⁵ Mn	-57.700	⁸³ Fe	41.160	⁵⁷ Ni	-56.880	⁸⁰ Cu	-36.820		
⁴⁴ Ti	-38.830	⁷⁵ V	49.410	⁵⁶ Mn	-56.570	⁸⁴ Fe	48.570	⁵⁸ Ni	-60.840	⁸¹ Cu	-32.140		
⁴⁵ Ti	-40.250	⁷⁶ V	58.850	⁵⁷ Mn	-57.420	⁸⁵ Fe	57.770	⁵⁹ Ni	-61.300	⁸² Cu	-25.290		
⁴⁶ Ti	-45.100	⁷⁷ V	66.680	⁵⁸ Mn	-55.500	⁸⁶ Fe	64.450	⁶⁰ Ni	-64.640	⁸³ Cu	-20.330		
⁴⁷ Ti	-45.860	⁷⁸ V	76.330	⁵⁹ Mn	-55.570	⁸⁷ Fe	74.040	⁶¹ Ni	-64.180	⁸⁴ Cu	-13.110		
⁴⁸ Ti	-49.890	⁷⁹ V	84.450	⁶⁰ Mn	-52.950	⁸⁸ Fe	81.630	⁶² Ni	-66.440	⁸⁵ Cu	-7.670		
⁴⁹ Ti	-50.130	⁸⁰ V	94.330	⁶¹ Mn	-52.150	⁸⁹ Fe	91.220	⁶³ Ni	-65.260	⁸⁶ Cu	0.040		
⁵⁰ Ti	-52.300	⁸¹ V	102.910	⁶² Mn	-48.420	⁹⁰ Fe	98.680	⁶⁴ Ni	-66.960	⁸⁷ Cu	6.550		
⁵¹ Ti	-50.340	⁸² V	113.180	⁶³ Mn	-47.190	⁹¹ Fe	109.430	⁶⁵ Ni	-65.230	⁸⁸ Cu	14.260		
⁵² Ti	-50.220	⁸³ V	122.230	⁶⁴ Mn	-42.980	⁹² Fe	116.360	⁶⁶ Ni	-66.270	⁸⁹ Cu	19.900		
⁵³ Ti	-46.560			⁶⁵ Mn	-40.950			⁶⁷ Ni	-64.120	⁹⁰ Cu	27.810		
⁵⁴ Ti	-45.530	³⁸ Cr	55.650	⁶⁶ Mn	-36.250	⁴⁴ Co	50.510	⁶⁸ Ni	-64.310	⁹¹ Cu	34.400		
⁵⁵ Ti	-41.200	³⁹ Cr	43.310	⁶⁷ Mn	-34.480	⁴⁵ Co	34.720	⁶⁹ Ni	-60.410	⁹² Cu	42.490		
⁵⁶ Ti	-39.580	⁴⁰ Cr	28.040	⁶⁸ Mn	-29.290	⁴⁶ Co	23.330	⁷⁰ Ni	-60.470	⁹³ Cu	49.190		
⁵⁷ Ti	-34.260	⁴¹ Cr	17.700	⁶⁹ Mn	-26.390	⁴⁷ Co	9.580	⁷¹ Ni	-56.320	⁹⁴ Cu	58.210		
⁵⁸ Ti	-32.120	⁴² Cr	5.440	⁷⁰ Mn	-20.940	⁴⁸ Co	0.260	⁷² Ni	-55.190	⁹⁵ Cu	65.670		
⁵⁹ Ti	-26.470	⁴³ Cr	-3.490	⁷¹ Mn	-17.440	⁴⁹ Co	-11.210	⁷³ Ni	-51.090	⁹⁶ Cu	74.640		
⁶⁰ Ti	-23.950	⁴⁴ Cr	-14.660	⁷² Mn	-11.520	⁵⁰ Co	-18.710	⁷⁴ Ni	-49.520	⁹⁷ Cu	81.890		
⁶¹ Ti	-18.000	⁴⁵ Cr	-21.080	⁷³ Mn	-7.380	⁵¹ Co	-28.680	⁷⁵ Ni	-45.130	⁹⁸ Cu	90.960		
⁶² Ti	-14.680	⁴⁶ Cr	-30.120	⁷⁴ Mn	-1.260	⁵² Co	-35.080	⁷⁶ Ni	-43.120	⁹⁹ Cu	98.510		
⁶³ Ti	-7.550	⁴⁷ Cr	-34.640	⁷⁵ Mn	3.380	⁵³ Co	-43.780	⁷⁷ Ni	-38.130	¹⁰⁰ Cu	108.340		
⁶⁴ Ti	-4.070	⁴⁸ Cr	-42.510	⁷⁶ Mn	11.380	⁵⁴ Co	-48.210	⁷⁸ Ni	-36.040	¹⁰¹ Cu	116.710		
⁶⁵ Ti	3.590	⁴⁹ Cr	-46.290	⁷⁷ Mn	17.990	⁵⁵ Co	-54.920	⁷⁹ Ni	-28.490	¹⁰² Cu	126.400		
⁶⁶ Ti	7.750	⁵⁰ Cr	-50.600	⁷⁸ Mn	26.460	⁵⁶ Co	-56.560	⁸⁰ Ni	-24.120				
⁶⁷ Ti	15.430	⁵¹ Cr	-52.760	⁷⁹ Mn	33.350	⁵⁷ Co	-59.800	⁸¹ Ni	-16.220	⁵¹ Zn	29.040		
⁶⁸ Ti	20.410	⁵² Cr	-56.350	⁸⁰ Mn	42.240	⁵⁸ Co	-59.900	⁸² Ni	-11.160	⁵² Zn	15.180		
⁶⁹ Ti	28.390	⁵³ Cr	-55.990	⁸¹ Mn	49.420	⁵⁹ Co	-61.970	⁸³ Ni	-2.510	⁵³ Zn	6.180		
⁷⁰ Ti	33.650	⁵⁴ Cr	-57.470	⁸² Mn	59.160	⁶⁰ Co	-61.390	⁸⁴ Ni	3.210	⁵⁴ Zn	-6.700		
⁷¹ Ti	41.820	⁵⁵ Cr	-55.160	⁸³ Mn	67.000	⁶¹ Co	-62.700	⁸⁵ Ni	11.680	⁵⁵ Zn	-14.620		
⁷² Ti	47.470	⁵⁶ Cr	-55.800	⁸⁴ Mn	76.190	⁶² Co	-61.170	⁸⁶ Ni	18.350	⁵⁶ Zn	-25.950		
⁷³ Ti	57.160	⁵⁷ Cr	-52.640	⁸⁵ Mn	83.850	⁶³ Co	-61.800	⁸⁷ Ni	26.810	⁵⁷ Zn	-32.890		
⁷⁴ Ti	64.430	⁵⁸ Cr	-52.480	⁸⁶ Mn	93.540	⁶⁴ Co	-59.490	⁸⁸ Ni	32.820	⁵⁸ Zn	-42.470		
⁷⁵ Ti	74.620	⁵⁹ Cr	-48.680	⁸⁷ Mn	101.790	⁶⁵ Co	-59.610	⁸⁹ Ni	41.430	⁵⁹ Zn	-46.800		
⁷⁶ Ti	82.790	⁶⁰ Cr	-47.910	⁸⁸ Mn	111.750	⁶⁶ Co	-56.920	⁹⁰ Ni	47.920	⁶⁰ Zn	-53.600		
⁷⁷ Ti	93.690	⁶¹ Cr	-42.700	⁸⁹ Mn	119.890	⁶⁷ Co	-56.240	⁹¹ Ni	56.830	⁶¹ Zn	-55.530		

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
⁶² Zn	-60.330	⁸⁴ Ga	-43.550	¹⁰⁵ Ge	72.410	⁶⁶ Se	-41.170	⁸³ Br	-79.440	⁹⁹ Kr	-40.310
⁶³ Zn	-61.270	⁸⁵ Ga	-39.580	¹⁰⁶ Ge	79.390	⁶⁷ Se	-46.050	⁸⁴ Br	-77.860	¹⁰⁰ Kr	-36.710
⁶⁴ Zn	-65.070	⁸⁶ Ga	-33.380	¹⁰⁷ Ge	88.520	⁶⁸ Se	-53.550	⁸⁵ Br	-78.220	¹⁰¹ Kr	-30.720
⁶⁵ Zn	-65.320	⁸⁷ Ga	-28.950	¹⁰⁸ Ge	95.770	⁶⁹ Se	-56.330	⁸⁶ Br	-75.100	¹⁰² Kr	-26.930
⁶⁶ Zn	-68.340	⁸⁸ Ga	-22.290	¹⁰⁹ Ge	104.300	⁷⁰ Se	-61.870	⁸⁷ Br	-73.510	¹⁰³ Kr	-20.770
⁶⁷ Zn	-67.720	⁸⁹ Ga	-17.260	¹¹⁰ Ge	111.820	⁷¹ Se	-63.390	⁸⁸ Br	-69.620	¹⁰⁴ Kr	-16.760
⁶⁸ Zn	-69.950	⁹⁰ Ga	-10.180	¹¹¹ Ge	121.120	⁷² Se	-67.770	⁸⁹ Br	-67.230	¹⁰⁵ Kr	-10.040
⁶⁹ Zn	-68.370	⁹¹ Ga	-5.340	¹¹² Ge	128.930	⁷³ Se	-68.560	⁹⁰ Br	-63.010	¹⁰⁶ Kr	-5.390
⁷⁰ Zn	-69.920	⁹² Ga	1.790			⁷⁴ Se	-72.320	⁹¹ Br	-60.520	¹⁰⁷ Kr	1.820
⁷¹ Zn	-67.560	⁹³ Ga	7.270	⁵⁷ As	25.990	⁷⁵ Se	-72.500	⁹² Br	-55.830	¹⁰⁸ Kr	7.400
⁷² Zn	-68.540	⁹⁴ Ga	14.770	⁵⁸ As	15.470	⁷⁶ Se	-75.490	⁹³ Br	-52.820	¹⁰⁹ Kr	14.910
⁷³ Zn	-65.880	⁹⁵ Ga	20.930	⁵⁹ As	2.860	⁷⁷ Se	-74.930	⁹⁴ Br	-48.040	¹¹⁰ Kr	21.650
⁷⁴ Zn	-66.560	⁹⁶ Ga	29.160	⁶⁰ As	-6.250	⁷⁸ Se	-77.460	⁹⁵ Br	-44.710	¹¹¹ Kr	29.640
⁷⁵ Zn	-63.430	⁹⁷ Ga	35.530	⁶¹ As	-17.270	⁷⁹ Se	-76.510	⁹⁶ Br	-39.510	¹¹² Kr	35.600
⁷⁶ Zn	-63.130	⁹⁸ Ga	43.590	⁶² As	-24.050	⁸⁰ Se	-78.450	⁹⁷ Br	-35.720	¹¹³ Kr	41.500
⁷⁷ Zn	-59.440	⁹⁹ Ga	50.060	⁶³ As	-32.720	⁸¹ Se	-77.010	⁹⁸ Br	-29.830	¹¹⁴ Kr	47.400
⁷⁸ Zn	-58.510	¹⁰⁰ Ga	58.150	⁶⁴ As	-38.350	⁸² Se	-78.110	⁹⁹ Br	-25.460	¹¹⁵ Kr	55.200
⁷⁹ Zn	-54.280	¹⁰¹ Ga	64.900	⁶⁵ As	-45.880	⁸³ Se	-75.720	¹⁰⁰ Br	-19.380	¹¹⁶ Kr	61.100
⁸⁰ Zn	-52.620	¹⁰² Ga	73.890	⁶⁶ As	-49.970	⁸⁴ Se	-75.680	¹⁰¹ Br	-14.980	¹¹⁷ Kr	67.640
⁸¹ Zn	-46.700	¹⁰³ Ga	81.500	⁶⁷ As	-55.960	⁸⁵ Se	-71.780	¹⁰² Br	-8.720	¹¹⁸ Kr	73.830
⁸² Zn	-42.790	¹⁰⁴ Ga	90.570	⁶⁸ As	-58.460	⁸⁶ Se	-70.180	¹⁰³ Br	-3.870	¹¹⁹ Kr	83.490
⁸³ Zn	-36.260	¹⁰⁵ Ga	98.180	⁶⁹ As	-63.030	⁸⁷ Se	-65.410	¹⁰⁴ Br	2.810	¹²⁰ Kr	91.710
⁸⁴ Zn	-32.180	¹⁰⁶ Ga	107.280	⁷⁰ As	-64.330	⁸⁸ Se	-63.170	¹⁰⁵ Br	8.150	¹²¹ Kr	102.130
⁸⁵ Zn	-25.270	¹⁰⁷ Ga	114.250	⁷¹ As	-67.780	⁸⁹ Se	-58.140	¹⁰⁶ Br	15.480	¹²² Kr	110.810
⁸⁶ Zn	-20.720	¹⁰⁸ Ga	123.360	⁷² As	-68.580	⁹⁰ Se	-55.440	¹⁰⁷ Br	21.500	¹²³ Kr	121.100
⁸⁷ Zn	-13.000			⁷³ As	-71.230	⁹¹ Se	-49.910	¹⁰⁸ Br	29.120	¹²⁴ Kr	130.400
⁸⁸ Zn	-7.580	⁵⁵ Ge	27.470	⁷⁴ As	-71.240	⁹² Se	-46.820	¹⁰⁹ Br	35.410	⁶⁶ Rb	13.700
⁸⁹ Zn	0.250	⁵⁶ Ge	13.350	⁷⁵ As	-73.230	⁹³ Se	-40.940	¹¹⁰ Br	44.340	⁶⁷ Rb	2.210
⁹⁰ Zn	5.250	⁵⁷ Ge	4.020	⁷⁶ As	-72.510	⁹⁴ Se	-37.500	¹¹¹ Br	50.960	⁶⁸ Rb	-5.770
⁹¹ Zn	13.300	⁵⁸ Ge	-8.370	⁷⁷ As	-74.360	⁹⁵ Se	-31.510	¹¹² Br	57.170	⁶⁹ Rb	-15.920
⁹² Zn	19.100	⁵⁹ Ge	-16.590	⁷⁸ As	-73.230	⁹⁶ Se	-27.560	¹¹³ Br	63.750	⁷⁰ Rb	-23.380
⁹³ Zn	26.890	⁶⁰ Ge	-27.380	⁷⁹ As	-74.260	⁹⁷ Se	-20.950	¹¹⁴ Br	71.660	⁷¹ Rb	-32.510
⁹⁴ Zn	32.870	⁶¹ Ge	-33.220	⁸⁰ As	-72.630	⁹⁸ Se	-16.440	¹¹⁵ Br	78.540	⁷² Rb	-38.300
⁹⁵ Zn	41.660	⁶² Ge	-41.360	⁸¹ As	-72.700	⁹⁹ Se	-9.670	¹¹⁶ Br	84.550	⁷³ Rb	-46.430
⁹⁶ Zn	48.480	⁶³ Ge	-45.860	⁸² As	-70.520	¹⁰⁰ Se	-5.360	¹¹⁷ Br	91.520	⁷⁴ Rb	-51.160
⁹⁷ Zn	57.330	⁶⁴ Ge	-53.040	⁸³ As	-69.580	¹⁰¹ Se	1.570	¹¹⁸ Br	101.170	⁷⁵ Rb	-57.790
⁹⁸ Zn	63.840	⁶⁵ Ge	-55.580	⁸⁴ As	-65.670	¹⁰² Se	6.700	¹¹⁹ Br	109.960	⁷⁶ Rb	-61.010
⁹⁹ Zn	72.480	⁶⁶ Ge	-60.780	⁸⁵ As	-63.050	¹⁰³ Se	13.900	¹²⁰ Br	120.630	⁷⁷ Rb	-65.680
¹⁰⁰ Zn	79.380	⁶⁷ Ge	-62.120	⁸⁶ As	-58.200	¹⁰⁴ Se	19.270	¹²¹ Br	129.850	⁷⁸ Rb	-67.650
¹⁰¹ Zn	89.410	⁶⁸ Ge	-66.480	⁸⁷ As	-55.120	¹⁰⁵ Se	27.300			⁷⁹ Rb	-70.720
¹⁰² Zn	97.170	⁶⁹ Ge	-66.830	⁸⁸ As	-49.890	¹⁰⁶ Se	33.430	⁶³ Kr	23.840	⁸⁰ Rb	-72.220
¹⁰³ Zn	106.790	⁷⁰ Ge	-70.170	⁸⁹ As	-46.380	¹⁰⁷ Se	41.620	⁶⁴ Kr	10.200	⁸¹ Rb	-75.240
¹⁰⁴ Zn	114.540	⁷¹ Ge	-69.950	⁹⁰ As	-40.770	¹⁰⁸ Se	47.780	⁶⁵ Kr	1.720	⁸² Rb	-76.360
¹⁰⁵ Zn	124.360	⁷² Ge	-72.510	⁹¹ As	-36.820	¹⁰⁹ Se	56.230	⁶⁶ Kr	-9.410	⁸³ Rb	-79.620
		⁷³ Ge	-71.500	⁹² As	-30.760	¹¹⁰ Se	62.900	⁶⁷ Kr	-16.440	⁸⁴ Rb	-80.230
		⁷⁴ Ge	-73.340	⁹³ As	-26.460	¹¹¹ Se	71.290	⁶⁸ Kr	-26.390	⁸⁵ Rb	-82.650
⁵³ Ga	27.900	⁷⁵ Ge	-71.720	⁹⁴ As	-20.330	¹¹² Se	77.700	⁶⁹ Kr	-32.550	⁸⁶ Rb	-82.430
⁵⁴ Ga	17.640	⁷⁶ Ge	-73.600	⁹⁵ As	-15.690	¹¹³ Se	86.490	⁷⁰ Kr	-41.500	⁸⁷ Rb	-83.910
⁵⁵ Ga	4.680	⁷⁷ Ge	-71.530	⁹⁶ As	-8.950	¹¹⁴ Se	93.490	⁷¹ Kr	-46.390	⁸⁸ Rb	-81.650
⁵⁶ Ga	-4.400	⁷⁸ Ge	-72.360	⁹⁷ As	-3.720	¹¹⁵ Se	100.310	⁷² Kr	-54.030	⁸⁹ Rb	-80.860
⁵⁷ Ga	-15.730	⁷⁹ Ge	-69.790	⁹⁸ As	3.210	¹¹⁶ Se	107.450	⁷³ Kr	-56.860	⁹⁰ Rb	-77.700
⁵⁸ Ga	-23.830	⁸⁰ Ge	-69.820	⁹⁹ As	8.520	¹¹⁷ Se	117.570	⁷⁴ Kr	-62.870	⁹¹ Rb	-76.290
⁵⁹ Ga	-33.780	⁸¹ Ge	-66.480	¹⁰⁰ As	15.550	¹¹⁸ Se	126.430	⁷⁵ Kr	-64.830	⁹² Rb	-73.110
⁶⁰ Ga	-39.030	⁸² Ge	-65.490	¹⁰¹ As	21.350			⁷⁶ Kr	-69.560	⁹³ Rb	-71.590
⁶¹ Ga	-46.220	⁸³ Ge	-60.780	¹⁰² As	28.690	⁶¹ Br	23.960	⁷⁷ Kr	-69.960	⁹⁴ Rb	-67.890
⁶² Ga	-49.830	⁸⁴ Ge	-58.060	¹⁰³ As	34.640	⁶² Br	14.190	⁷⁸ Kr	-74.160	⁹⁵ Rb	-66.040
⁶³ Ga	-55.420	⁸⁵ Ge	-52.470	¹⁰⁴ As	42.810	⁶³ Br	1.580	⁷⁹ Kr	-74.780	⁹⁶ Rb	-62.260
⁶⁴ Ga	-57.650	⁸⁶ Ge	-49.330	¹⁰⁵ As	49.550	⁶⁴ Br	-6.600	⁸⁰ Kr	-77.500	⁹⁷ Rb	-59.900
⁶⁵ Ga	-61.740	⁸⁷ Ge	-43.320	¹⁰⁶ As	57.860	⁶⁵ Br	-16.710	⁸¹ Kr	-77.830	⁹⁸ Rb	-55.580
⁶⁶ Ga	-62.960	⁸⁸ Ge	-39.650	¹⁰⁷ As	64.730	⁶⁶ Br	-23.580	⁸² Kr	-80.880	⁹⁹ Rb	-52.610
⁶⁷ Ga	-65.920	⁸⁹ Ge	-33.200	¹⁰⁸ As	73.080	⁶⁷ Br	-32.480	⁸³ Kr	-80.920	¹⁰⁰ Rb	-47.650
⁶⁸ Ga	-66.380	⁹⁰ Ge	-29.070	¹⁰⁹ As	80.340	⁶⁸ Br	-38.430	⁸⁴ Kr	-82.860	¹⁰¹ Rb	-44.130
⁶⁹ Ga	-68.750	⁹¹ Ge	-22.190	¹¹⁰ As	88.590	⁶⁹ Br	-46.350	⁸⁵ Kr	-81.680	¹⁰² Rb	-38.860
⁷⁰ Ga	-68.350	⁹² Ge	-17.830	¹¹¹ As	96.140	⁷⁰ Br	-50.580	⁸⁶ Kr	-83.000	¹⁰³ Rb	-35.120
⁷¹ Ga	-69.940	⁹³ Ge	-11.030	¹¹² As	104.780	⁷¹ Br	-56.790	⁸⁷ Kr	-79.930	¹⁰⁴ Rb	-29.560
⁷² Ga	-68.640	⁹⁴ Ge	-6.220	¹¹³ As	112.340	⁷² Br	-59.450	⁸⁸ Kr	-79.100	¹⁰⁵ Rb	-25.650
⁷³ Ga	-69.710	⁹⁵ Ge	1.290	¹¹⁴ As	119.060	⁷³ Br	-63.810	⁸⁹ Kr	-75.240	¹⁰⁶ Rb	-19.740
⁷⁴ Ga	-68.340	⁹⁶ Ge	6.610	¹¹⁵ As	126.630	⁷⁴ Br	-65.910	⁹⁰ Kr	-73.690	¹⁰⁷ Rb	-14.990
⁷⁵ Ga	-68.850	⁹⁷ Ge	14.510			⁷⁵ Br	-69.400	⁹¹ Kr	-69.610	¹⁰⁸ Rb	-8.650
⁷⁶ Ga	-66.610	⁹⁸ Ge	20.000	⁵⁹ Se	25.080	⁷⁶ Br	-70.620	⁹² Kr	-67.950	¹⁰⁹ Rb	-3.190
⁷⁷ Ga	-66.480	⁹⁹ Ge	27.850	⁶⁰ Se	11.390	⁷⁷ Br	-73.730	⁹³ Kr	-63.330	¹¹⁰ Rb	4.030
⁷⁸ Ga	-63.760	¹⁰⁰ Ge	33.520	⁶¹ Se	2.030	⁷⁸ Br	-74.120	⁹⁴ Kr	-61.310	¹¹¹ Rb	10.570
⁷⁹ Ga	-62.960	¹⁰¹ Ge	41.520	⁶² Se	-9.770	⁷⁹ Br	-76.200	⁹⁵ Kr	-56.710	¹¹² Rb	18.010
⁸⁰ Ga	-59.740	¹⁰² Ge	47.710	⁶³ Se	-16.930	⁸⁰ Br	-76.480	⁹⁶ Kr	-54.160	¹¹³ Rb	22.260
⁸¹ Ga	-57.900	¹⁰³ Ge	56.600	⁶⁴ Se	-26.650	⁸¹ Br	-78.660	⁹⁷ Kr	-49.110	¹¹⁴ Rb	29.110
⁸² Ga	-53.080	¹⁰⁴ Ge	63.540	⁶⁵ Se	-32.560	⁸² Br	-78.150	⁹⁸ Kr	-46.040		

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
¹¹⁵ Rb	34.800	¹²⁹ Sr	125.010	⁷⁸ Zr	-41.820	⁸⁹ Nb	-81.030	¹⁰⁰ Mo	-85.990	¹⁰⁸ Tc	-73.690		
¹¹⁶ Rb	42.010	¹³⁰ Sr	132.790	⁷⁹ Zr	-47.180	⁹⁰ Nb	-82.880	¹⁰¹ Mo	-83.710	¹¹⁰ Tc	-70.460		
¹¹⁷ Rb	47.790	¹³¹ Sr	142.580	⁸⁰ Zr	-54.840	⁹¹ Nb	-86.620	¹⁰² Mo	-83.800	¹¹¹ Tc	-68.850		
¹¹⁸ Rb	53.740			⁸¹ Zr	-58.010	⁹² Nb	-86.070	¹⁰³ Mo	-81.270	¹¹² Tc	-65.210		
¹¹⁹ Rb	59.720	⁷⁰ Y	13.760	⁸² Zr	-61.740	⁹³ Nb	-86.970	¹⁰⁴ Mo	-80.770	¹¹³ Tc	-63.060		
¹²⁰ Rb	68.900	⁷¹ Y	2.510	⁸³ Zr	-64.610	⁹⁴ Nb	-85.530	¹⁰⁵ Mo	-77.660	¹¹⁴ Tc	-58.890		
¹²¹ Rb	76.970	⁷² Y	-5.780	⁸⁴ Zr	-70.530	⁹⁵ Nb	-85.800	¹⁰⁶ Mo	-76.520	¹¹⁵ Tc	-56.310		
¹²² Rb	86.940	⁷³ Y	-16.010	⁸⁵ Zr	-72.820	⁹⁶ Nb	-84.270	¹⁰⁷ Mo	-72.860	¹¹⁶ Tc	-51.970		
¹²³ Rb	95.400	⁷⁴ Y	-23.350	⁸⁶ Zr	-77.960	⁹⁷ Nb	-84.440	¹⁰⁸ Mo	-71.280	¹¹⁷ Tc	-49.050		
¹²⁴ Rb	105.340	⁷⁵ Y	-32.770	⁸⁷ Zr	-79.720	⁹⁸ Nb	-82.420	¹⁰⁹ Mo	-67.360	¹¹⁸ Tc	-44.600		
¹²⁵ Rb	114.480	⁷⁶ Y	-39.180	⁸⁸ Zr	-84.190	⁹⁹ Nb	-82.390	¹¹⁰ Mo	-65.570	¹¹⁹ Tc	-41.390		
¹²⁶ Rb	125.420	⁷⁷ Y	-47.420	⁸⁹ Zr	-85.240	¹⁰⁰ Nb	-80.160	¹¹¹ Mo	-61.310	¹²⁰ Tc	-36.690		
¹²⁷ Rb	133.430	⁷⁸ Y	-52.110	⁹⁰ Zr	-88.980	¹⁰¹ Nb	-79.730	¹¹² Mo	-58.780	¹²¹ Tc	-33.140		
¹²⁸ Rb	143.150	⁷⁹ Y	-58.500	⁹¹ Zr	-87.330	¹⁰² Nb	-77.080	¹¹³ Mo	-53.140	¹²² Tc	-28.090		
		⁸⁰ Y	-61.440	⁹² Zr	-88.160	¹⁰³ Nb	-75.940	¹¹⁴ Mo	-50.470	¹²³ Tc	-23.950		
⁶⁸ Sr	10.570	⁸¹ Y	-66.130	⁹³ Zr	-85.940	¹⁰⁴ Nb	-72.630	¹¹⁵ Mo	-45.520	¹²⁴ Tc	-20.280		
⁶⁹ Sr	2.430	⁸² Y	-66.790	⁹⁴ Zr	-86.000	¹⁰⁵ Nb	-70.760	¹¹⁶ Mo	-42.550	¹²⁵ Tc	-16.500		
⁷⁰ Sr	-8.720	⁸³ Y	-71.820	⁹⁵ Zr	-83.600	¹⁰⁶ Nb	-67.010	¹¹⁷ Mo	-37.430	¹²⁶ Tc	-9.130		
⁷¹ Sr	-15.850	⁸⁴ Y	-73.930	⁹⁶ Zr	-83.690	¹⁰⁷ Nb	-64.760	¹¹⁸ Mo	-34.120	¹²⁷ Tc	-2.810		
⁷² Sr	-26.070	⁸⁵ Y	-78.220	⁹⁷ Zr	-81.080	¹⁰⁸ Nb	-60.730	¹¹⁹ Mo	-28.850	¹²⁸ Tc	5.080		
⁷³ Sr	-32.380	⁸⁶ Y	-79.820	⁹⁸ Zr	-81.040	¹⁰⁹ Nb	-58.240	¹²⁰ Mo	-25.190	¹²⁹ Tc	12.090		
⁷⁴ Sr	-41.620	⁸⁷ Y	-83.410	⁹⁹ Zr	-78.160	¹¹⁰ Nb	-53.900	¹²¹ Mo	-19.570	¹³⁰ Tc	21.030		
⁷⁵ Sr	-47.040	⁸⁸ Y	-84.190	¹⁰⁰ Zr	-77.530	¹¹¹ Nb	-50.710	¹²² Mo	-15.340	¹³¹ Tc	27.830		
⁷⁶ Sr	-54.970	⁸⁹ Y	-87.120	¹⁰¹ Zr	-74.130	¹¹² Nb	-45.630	¹²³ Mo	-11.060	¹³² Tc	36.180		
⁷⁷ Sr	-58.350	⁹⁰ Y	-85.410	¹⁰² Zr	-72.830	¹¹³ Nb	-41.200	¹²⁴ Mo	-7.170	¹³³ Tc	42.990		
⁷⁸ Sr	-64.060	⁹¹ Y	-85.410	¹⁰³ Zr	-68.820	¹¹⁴ Nb	-35.870	¹²⁵ Mo	0.770	¹³⁴ Tc	50.990		
⁷⁹ Sr	-66.150	⁹² Y	-83.070	¹⁰⁴ Zr	-66.890	¹¹⁵ Nb	-32.220	¹²⁶ Mo	7.160	¹³⁵ Tc	57.690		
⁸⁰ Sr	-68.840	⁹³ Y	-82.570	¹⁰⁵ Zr	-62.490	¹¹⁶ Nb	-27.050	¹²⁷ Mo	15.570	¹³⁶ Tc	66.040		
⁸¹ Sr	-70.650	⁹⁴ Y	-79.910	¹⁰⁶ Zr	-60.160	¹¹⁷ Nb	-23.140	¹²⁸ Mo	22.390	¹³⁷ Tc	73.120		
⁸² Sr	-75.500	⁹⁵ Y	-79.430	¹⁰⁷ Zr	-55.560	¹¹⁸ Nb	-17.790	¹²⁹ Mo	32.270	¹³⁸ Tc	81.640		
⁸³ Sr	-76.770	⁹⁶ Y	-76.820	¹⁰⁸ Zr	-52.970	¹¹⁹ Nb	-13.490	¹³⁰ Mo	39.150	¹³⁹ Tc	88.830		
⁸⁴ Sr	-80.880	⁹⁷ Y	-76.060	¹⁰⁹ Zr	-47.970	¹²⁰ Nb	-7.740	¹³¹ Mo	48.070	¹⁴⁰ Tc	97.540		
⁸⁵ Sr	-81.610	⁹⁸ Y	-73.090	¹¹⁰ Zr	-44.620	¹²¹ Nb	-2.880	¹³² Mo	54.830	¹⁴¹ Tc	105.090		
⁸⁶ Sr	-85.020	⁹⁹ Y	-71.700	¹¹¹ Zr	-38.860	¹²² Nb	1.440	¹³³ Mo	63.350	¹⁴² Tc	113.790		
⁸⁷ Sr	-85.010	¹⁰⁰ Y	-68.150	¹¹² Zr	-34.870	¹²³ Nb	6.150	¹³⁴ Mo	70.240	¹⁴³ Tc	121.320		
⁸⁸ Sr	-87.540	¹⁰¹ Y	-66.110	¹¹³ Zr	-28.150	¹²⁴ Nb	14.140	¹³⁵ Mo	78.980	¹⁴⁴ Tc	130.060		
⁸⁹ Sr	-85.210	¹⁰² Y	-62.010	¹¹⁴ Zr	-24.430	¹²⁵ Nb	20.970	¹³⁶ Mo	86.120	¹⁴⁵ Tc	137.760		
⁹⁰ Sr	-85.120	¹⁰³ Y	-59.340	¹¹⁵ Zr	-18.490	¹²⁶ Nb	29.510	¹³⁷ Mo	95.180	¹⁴⁶ Tc	147.140		
⁹¹ Sr	-82.050	¹⁰⁴ Y	-54.880	¹¹⁶ Zr	-14.520	¹²⁷ Nb	36.720	¹³⁸ Mo	102.500	¹⁴⁷ Tc	155.860		
⁹² Sr	-81.230	¹⁰⁵ Y	-51.890	¹¹⁷ Zr	-8.540	¹²⁸ Nb	46.200	¹³⁹ Mo	111.680			⁸¹ Ru	4.830
⁹³ Sr	-77.990	¹⁰⁶ Y	-47.160	¹¹⁸ Zr	-4.180	¹²⁹ Nb	54.110	¹⁴⁰ Mo	119.200			⁸² Ru	-6.240
⁹⁴ Sr	-77.550	¹⁰⁷ Y	-43.920	¹¹⁹ Zr	2.250	¹³⁰ Nb	63.080	¹⁴¹ Mo	128.430			⁸³ Ru	-12.240
⁹⁵ Sr	-74.190	¹⁰⁸ Y	-38.780	¹²⁰ Zr	7.100	¹³¹ Nb	70.290	¹⁴² Mo	136.030			⁸⁴ Ru	-22.440
⁹⁶ Sr	-73.010	¹⁰⁹ Y	-34.830	¹²¹ Zr	12.360	¹³² Nb	78.690	¹⁴³ Mo	145.190			⁸⁵ Ru	-28.920
⁹⁷ Sr	-69.310	¹¹⁰ Y	-28.930	¹²² Zr	16.810	¹³³ Nb	86.100	¹⁴⁴ Mo	152.830			⁸⁶ Ru	-38.440
⁹⁸ Sr	-67.710	¹¹¹ Y	-24.200	¹²³ Zr	25.500	¹³⁴ Nb	94.850		⁷⁹ Tc	4.140		⁸⁷ Ru	-44.100
⁹⁹ Sr	-63.460	¹¹² Y	-17.430	¹²⁴ Zr	32.390	¹³⁵ Nb	102.490		⁸⁰ Tc	-3.930		⁸⁸ Ru	-52.790
¹⁰⁰ Sr	-61.290	¹¹³ Y	-12.760	¹²⁵ Zr	41.440	¹³⁶ Nb	111.560		⁸¹ Tc	-14.120		⁸⁹ Ru	-57.100
¹⁰¹ Sr	-56.470	¹¹⁴ Y	-6.440	¹²⁶ Zr	48.870	¹³⁷ Nb	119.430		⁸² Tc	-21.250		⁹⁰ Ru	-64.290
¹⁰² Sr	-53.690	¹¹⁵ Y	-1.920	¹²⁷ Zr	58.560	¹³⁸ Nb	128.590		⁸³ Tc	-30.650		⁹¹ Ru	-68.010
¹⁰³ Sr	-48.510	¹¹⁶ Y	4.090	¹²⁸ Zr	66.780	¹³⁹ Nb	136.590		⁸⁴ Tc	-36.950		⁹² Ru	-74.480
¹⁰⁴ Sr	-45.450	¹¹⁷ Y	9.150	¹²⁹ Zr	76.380	¹⁴⁰ Nb	145.830		⁸⁵ Tc	-43.890		⁹³ Ru	-77.390
¹⁰⁵ Sr	-40.040	¹¹⁸ Y	15.660	¹³⁰ Zr	83.620				⁸⁶ Tc	-49.020		⁹⁴ Ru	-83.080
¹⁰⁶ Sr	-36.740	¹¹⁹ Y	21.100	¹³¹ Zr	92.470	⁷⁷ Mo	3.590		⁸⁷ Tc	-56.540		⁹⁵ Ru	-83.320
¹⁰⁷ Sr	-30.860	¹²⁰ Y	26.390	¹³² Zr	100.000	⁷⁸ Mo	-7.050		⁸⁸ Tc	-60.650		⁹⁶ Ru	-85.970
¹⁰⁸ Sr	-26.800	¹²¹ Y	31.470	¹³³ Zr	109.240	⁷⁹ Mo	-14.100		⁸⁹ Tc	-67.020		⁹⁷ Ru	-85.540
¹⁰⁹ Sr	-20.320	¹²² Y	40.170	¹³⁴ Zr	116.910	⁸⁰ Mo	-25.370		⁹⁰ Tc	-70.600		⁹⁸ Ru	-87.880
¹¹⁰ Sr	-15.340	¹²³ Y	47.650	¹³⁵ Zr	126.560	⁸¹ Mo	-31.760		⁹¹ Tc	-76.220		⁹⁹ Ru	-87.110
¹¹¹ Sr	-8.380	¹²⁴ Y	56.720	¹³⁶ Zr	134.490	⁸² Mo	-39.590		⁹² Tc	-79.000		¹⁰⁰ Ru	-88.680
¹¹² Sr	-2.730	¹²⁵ Y	64.770	¹³⁷ Zr	144.180	⁸³ Mo	-44.990		⁹³ Tc	-83.880		¹⁰¹ Ru	-87.520
¹¹³ Sr	3.470	¹²⁶ Y	74.050			⁸⁴ Mo	-51.840		⁹⁴ Tc	-84.060		¹⁰² Ru	-88.630
¹¹⁴ Sr	8.080	¹²⁷ Y	82.790	⁷⁴ Nb	14.390	⁸⁵ Mo	-55.750		⁹⁵ Tc	-85.930		¹⁰³ Ru	-87.060
¹¹⁵ Sr	14.850	¹²⁸ Y	92.720	⁷⁵ Nb	3.470	⁸⁶ Mo	-62.720		⁹⁶ Tc	-85.380		¹⁰⁴ Ru	-87.820
¹¹⁶ Sr	20.040	¹²⁹ Y	100.300	⁷⁶ Nb	-4.970	⁸⁷ Mo	-66.030		⁹⁷ Tc	-86.950		¹⁰⁵ Ru	-85.790
¹¹⁷ Sr	27.180	¹³⁰ Y	109.440	⁷⁷ Nb	-15.460	⁸⁸ Mo	-72.200		⁹⁸ Tc	-86.040		¹⁰⁶ Ru	-86.010
¹¹⁸ Sr	32.400	¹³¹ Y	117.400	⁷⁸ Nb	-22.940	⁸⁹ Mo	-74.960		⁹⁹ Tc	-86.900		¹⁰⁷ Ru	-83.580
¹¹⁹ Sr	38.200	¹³² Y	126.550	⁷⁹ Nb	-32.410	⁹⁰ Mo	-80.440		¹⁰⁰ Tc	-85.640		¹⁰⁸ Ru	-83.260
¹²⁰ Sr	43.660	¹³³ Y	134.840	⁸⁰ Nb	-38.710	⁹¹ Mo	-82.420		¹⁰¹ Tc	-86.090		¹⁰⁹ Ru	-80.430
¹²¹ Sr	52.850	¹³⁴ Y	144.500	⁸¹ Nb	-46.550	⁹² Mo	-87.170		¹⁰² Tc	-84.530		¹¹⁰ Ru	-79.410
¹²² Sr	60.410			⁸² Nb	-51.020	⁹³ Mo	-86.590		¹⁰³ Tc	-84.750		¹¹¹ Ru	-76.300
¹²³ Sr	69.990	⁷² Zr	11.340	⁸³ Nb	-56.890	⁹⁴ Mo	-88.340		¹⁰⁴ Tc	-82.730		¹¹² Ru	-75.350
¹²⁴ Sr	78.100	⁷³ Zr	2.980	⁸⁴ Nb	-59.250	⁹⁵ Mo	-87.030		¹⁰⁵ Tc	-82.320		¹¹³ Ru	-71.810
¹²⁵ Sr	87.880	⁷⁴ Zr	-8.300	⁸⁵ Nb	-65.350	⁹⁶ Mo	-88.200		¹⁰⁶ Tc	-79.800		¹¹⁴ Ru	-70.320
¹²⁶ Sr	97.040	⁷⁵ Zr	-15.840	⁸⁶ Nb	-68.510	⁹⁷ Mo	-86.640		¹⁰⁷ Tc	-78.860		¹¹⁵ Ru	-66.240
¹²⁷ Sr	107.550	⁷⁶ Zr	-26.070	⁸⁷ Nb	-73.800	⁹⁸ Mo	-87.440		¹⁰⁸ Tc	-75.890		¹¹⁶ Ru	-64.290
¹²⁸ Sr	114.980	⁷⁷ Zr	-32.690	⁸⁸ Nb	-76.410	⁹⁹ Mo	-85.470						

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
¹¹⁷ Ru	-60.040	¹²⁴ Rh	-45.710	¹³¹ Pd	-27.930	¹³⁷ Ag	-3.840	¹⁴¹ Cd	4.900	¹⁴⁴ In	8.410		
¹¹⁸ Ru	-57.810	¹²⁵ Rh	-43.160	¹³² Pd	-22.400	¹³⁸ Ag	3.710	¹⁴² Cd	10.210	¹⁴⁵ In	13.940		
¹¹⁹ Ru	-53.410	¹²⁶ Rh	-39.550	¹³³ Pd	-13.920	¹³⁹ Ag	9.470	¹⁴³ Cd	17.690	¹⁴⁶ In	21.030		
¹²⁰ Ru	-50.840	¹²⁷ Rh	-36.500	¹³⁴ Pd	-7.990	¹⁴⁰ Ag	16.570	¹⁴⁴ Cd	23.320	¹⁴⁷ In	26.880		
¹²¹ Ru	-46.310	¹²⁸ Rh	-29.620	¹³⁵ Pd	-0.120	¹⁴¹ Ag	22.410	¹⁴⁵ Cd	30.910	¹⁴⁸ In	34.040		
¹²² Ru	-43.370	¹²⁹ Rh	-24.020	¹³⁶ Pd	5.600	¹⁴² Ag	29.900	¹⁴⁶ Cd	36.770	¹⁴⁹ In	40.040		
¹²³ Ru	-38.450	¹³⁰ Rh	-16.760	¹³⁷ Pd	13.430	¹⁴³ Ag	36.040	¹⁴⁷ Cd	44.440	¹⁵⁰ In	47.430		
¹²⁴ Ru	-35.800	¹³¹ Rh	-10.170	¹³⁸ Pd	19.120	¹⁴⁴ Ag	43.620	¹⁴⁸ Cd	50.470	¹⁵¹ In	53.740		
¹²⁵ Ru	-31.630	¹³² Rh	-2.100	¹³⁹ Pd	26.760	¹⁴⁵ Ag	50.000	¹⁴⁹ Cd	58.380	¹⁵² In	61.520		
¹²⁶ Ru	-28.430	¹³³ Rh	4.260	¹⁴⁰ Pd	32.690	¹⁴⁶ Ag	57.690	¹⁵⁰ Cd	64.730	¹⁵³ In	68.240		
¹²⁷ Ru	-21.080	¹³⁴ Rh	12.030	¹⁴¹ Pd	40.670	¹⁴⁷ Ag	64.220	¹⁵¹ Cd	72.920	¹⁵⁴ In	76.260		
¹²⁸ Ru	-15.330	¹³⁵ Rh	18.370	¹⁴² Pd	46.840	¹⁴⁸ Ag	72.200	¹⁵² Cd	79.730	¹⁵⁵ In	83.040		
¹²⁹ Ru	-7.500	¹³⁶ Rh	26.070	¹⁴³ Pd	54.950	¹⁴⁹ Ag	78.970	¹⁵³ Cd	88.360	¹⁵⁶ In	91.240		
¹³⁰ Ru	-1.350	¹³⁷ Rh	32.200	¹⁴⁴ Pd	61.390	¹⁵⁰ Ag	87.260	¹⁵⁴ Cd	95.360	¹⁵⁷ In	98.170		
¹³¹ Ru	7.720	¹³⁸ Rh	39.880	¹⁴⁵ Pd	69.580	¹⁵¹ Ag	94.560	¹⁵⁵ Cd	104.010	¹⁵⁸ In	106.390		
¹³² Ru	14.210	¹³⁹ Rh	46.470	¹⁴⁶ Pd	76.170	¹⁵² Ag	103.290	¹⁵⁶ Cd	110.900	¹⁵⁹ In	113.360		
¹³³ Ru	22.490	¹⁴⁰ Rh	54.410	¹⁴⁷ Pd	84.620	¹⁵³ Ag	110.720	¹⁵⁷ Cd	119.530	¹⁶⁰ In	121.890		
¹³⁴ Ru	28.940	¹⁴¹ Rh	61.010	¹⁴⁸ Pd	91.410	¹⁵⁴ Ag	119.380	¹⁵⁸ Cd	126.590	¹⁶¹ In	129.260		
¹³⁵ Ru	37.010	¹⁴² Rh	69.140	¹⁴⁹ Pd	100.250	¹⁵⁵ Ag	126.760	¹⁵⁹ Cd	135.280	¹⁶² In	137.890		
¹³⁶ Ru	43.250	¹⁴³ Rh	76.080	¹⁵⁰ Pd	107.690	¹⁵⁶ Ag	135.480	¹⁶⁰ Cd	142.500	¹⁶³ In	145.110		
¹³⁷ Ru	51.560	¹⁴⁴ Rh	84.240	¹⁵¹ Pd	116.860	¹⁵⁷ Ag	142.970	¹⁶¹ Cd	151.610	¹⁶⁴ In	153.620		
¹³⁸ Ru	58.110	¹⁴⁵ Rh	91.330	¹⁵² Pd	124.400	¹⁵⁸ Ag	151.650	¹⁶² Cd	159.410	¹⁶⁵ In	161.200		
¹³⁹ Ru	66.580	¹⁴⁶ Rh	99.710	¹⁵³ Pd	133.570	¹⁵⁹ Ag	159.270	¹⁶³ Cd	168.360	¹⁶⁶ In	169.870		
¹⁴⁰ Ru	73.290	¹⁴⁷ Rh	106.960	¹⁵⁴ Pd	141.030	¹⁶⁰ Ag	168.470			⁹² In	-3.380	⁹⁴ Sn	-6.700
¹⁴¹ Ru	81.920	¹⁴⁸ Rh	115.860	¹⁵⁵ Pd	150.230	⁹⁰ Cd	-5.410	⁹³ In	-14.300	⁹⁵ Sn	-14.520	⁹⁶ Sn	-25.330
¹⁴² Ru	88.920	¹⁴⁹ Rh	123.930	¹⁵⁶ Pd	157.780	⁹¹ Cd	-13.000	⁹⁴ In	-21.980	⁹⁶ Sn	-25.330	⁹⁷ Sn	-32.520
¹⁴³ Ru	97.670	¹⁵⁰ Rh	133.120			⁹² Cd	-23.710	⁹⁵ In	-31.990	⁹⁷ Sn	-32.520	⁹⁸ Sn	-42.580
¹⁴⁴ Ru	104.750	¹⁵¹ Rh	141.150	⁸⁸ Ag	-2.490	⁹³ Cd	-30.600	⁹⁶ In	-39.010	⁹⁸ Sn	-42.580	⁹⁹ Sn	-48.730
¹⁴⁵ Ru	113.570	¹⁵² Rh	150.340	⁸⁹ Ag	-13.220	⁹⁴ Cd	-40.440	⁹⁷ In	-48.220	⁹⁹ Sn	-48.730	¹⁰⁰ Sn	-57.870
¹⁴⁶ Ru	120.760	¹⁵³ Rh	158.340	⁹⁰ Ag	-20.660	⁹⁵ Cd	-46.680	⁹⁸ In	-54.130	¹⁰⁰ Sn	-57.870	¹⁰¹ Sn	-60.990
¹⁴⁷ Ru	130.180			⁹¹ Ag	-30.540	⁹⁶ Cd	-55.850	⁹⁹ In	-62.170	¹⁰¹ Sn	-60.990	¹⁰² Sn	-66.380
¹⁴⁸ Ru	138.220	⁸⁶ Pd	-4.960	⁹² Ag	-37.200	⁹⁷ Cd	-60.530	¹⁰⁰ In	-64.960	¹⁰² Sn	-66.380	¹⁰³ Sn	-68.340
¹⁴⁹ Ru	148.070	⁸⁷ Pd	-12.350	⁹³ Ag	-46.250	⁹⁸ Cd	-68.170	¹⁰¹ In	-69.540	¹⁰³ Sn	-68.340	¹⁰⁴ Sn	-72.700
¹⁵⁰ Ru	156.120	⁸⁸ Pd	-22.890	⁹⁴ Ag	-52.020	⁹⁹ Cd	-70.190	¹⁰² In	-71.530	¹⁰⁴ Sn	-72.700	¹⁰⁵ Sn	-74.200
		⁸⁹ Pd	-29.510	⁹⁵ Ag	-59.940	¹⁰⁰ Cd	-74.890	¹⁰³ In	-75.210	¹⁰⁵ Sn	-74.200	¹⁰⁶ Sn	-78.000
⁸³ Rh	4.910	⁹⁰ Pd	-39.230	⁹⁶ Ag	-64.560	¹⁰¹ Cd	-75.950	¹⁰⁴ In	-76.750	¹⁰⁶ Sn	-78.000	¹⁰⁷ Sn	-78.850
⁸⁴ Rh	-2.380	⁹¹ Pd	-45.160	⁹⁷ Ag	-71.140	¹⁰² Cd	-79.520	¹⁰⁵ In	-79.790	¹⁰⁷ Sn	-78.850	¹⁰⁸ Sn	-82.210
⁸⁵ Rh	-12.710	⁹² Pd	-54.030	⁹⁸ Ag	-73.370	¹⁰³ Cd	-80.590	¹⁰⁶ In	-80.920	¹⁰⁸ Sn	-82.210	¹⁰⁹ Sn	-85.710
⁸⁶ Rh	-19.930	⁹³ Pd	-58.680	⁹⁹ Ag	-77.080	¹⁰⁴ Cd	-83.640	¹⁰⁷ In	-83.610	¹⁰⁹ Sn	-85.710	¹¹⁰ Sn	-85.830
⁸⁷ Rh	-29.660	⁹⁴ Pd	-66.270	¹⁰⁰ Ag	-78.310	¹⁰⁵ Cd	-84.130	¹⁰⁸ In	-84.180	¹¹⁰ Sn	-85.830	¹¹¹ Sn	-85.950
⁸⁸ Rh	-36.110	⁹⁵ Pd	-69.980	¹⁰¹ Ag	-81.330	¹⁰⁶ Cd	-86.730	¹⁰⁹ In	-86.350	¹¹¹ Sn	-85.950	¹¹² Sn	-88.500
⁸⁹ Rh	-44.990	⁹⁶ Pd	-76.690	¹⁰² Ag	-82.280	¹⁰⁷ Cd	-86.640	¹¹⁰ In	-86.310	¹¹² Sn	-88.500	¹¹³ Sn	-88.040
⁹⁰ Rh	-50.430	⁹⁷ Pd	-77.840	¹⁰³ Ag	-84.660	¹⁰⁸ Cd	-88.760	¹¹¹ In	-88.080	¹¹³ Sn	-88.040	¹¹⁴ Sn	-90.300
⁹¹ Rh	-58.130	⁹⁸ Pd	-81.550	¹⁰⁴ Ag	-84.850	¹⁰⁹ Cd	-88.190	¹¹² In	-87.640	¹¹⁴ Sn	-90.300	¹¹⁵ Sn	-89.570
⁹² Rh	-62.580	⁹⁹ Pd	-81.830	¹⁰⁵ Ag	-86.820	¹¹⁰ Cd	-89.830	¹¹³ In	-89.040	¹¹⁵ Sn	-89.570	¹¹⁶ Sn	-91.260
⁹³ Rh	-69.200	¹⁰⁰ Pd	-84.880	¹⁰⁶ Ag	-86.540	¹¹¹ Cd	-88.780	¹¹⁴ In	-88.210	¹¹⁶ Sn	-91.260	¹¹⁷ Sn	-90.180
⁹⁴ Rh	-72.870	¹⁰¹ Pd	-85.030	¹⁰⁷ Ag	-87.920	¹¹² Cd	-90.070	¹¹⁵ In	-89.210	¹¹⁷ Sn	-90.180	¹¹⁸ Sn	-91.430
⁹⁵ Rh	-78.680	¹⁰² Pd	-87.430	¹⁰⁸ Ag	-87.210	¹¹³ Cd	-88.680	¹¹⁶ In	-87.940	¹¹⁸ Sn	-91.430	¹¹⁹ Sn	-89.910
⁹⁶ Rh	-79.820	¹⁰³ Pd	-87.010	¹⁰⁹ Ag	-88.210	¹¹⁴ Cd	-89.610	¹¹⁷ In	-88.660	¹¹⁹ Sn	-89.910	¹²⁰ Sn	-90.920
⁹⁷ Rh	-82.700	¹⁰⁴ Pd	-88.890	¹¹⁰ Ag	-87.150	¹¹⁵ Cd	-87.800	¹¹⁸ In	-87.120	¹²⁰ Sn	-90.920	¹²¹ Sn	-89.310
⁹⁸ Rh	-83.220	¹⁰⁵ Pd	-87.940	¹¹¹ Ag	-87.790	¹¹⁶ Cd	-88.300	¹¹⁹ In	-87.520	¹²¹ Sn	-89.310	¹²² Sn	-90.010
⁹⁹ Rh	-85.330	¹⁰⁶ Pd	-89.300	¹¹² Ag	-86.170	¹¹⁷ Cd	-86.100	¹²⁰ In	-85.680	¹²² Sn	-90.010	¹²³ Sn	-88.000
¹⁰⁰ Rh	-85.330	¹⁰⁷ Pd	-88.050	¹¹³ Ag	-86.560	¹¹⁸ Cd	-86.240	¹²¹ In	-85.770	¹²³ Sn	-88.000	¹²⁴ Sn	-88.490
¹⁰¹ Rh	-86.990	¹⁰⁸ Pd	-88.950	¹¹⁴ Ag	-84.890	¹¹⁹ Cd	-83.510	¹²² In	-83.580	¹²⁴ Sn	-88.490	¹²⁵ Sn	-86.190
¹⁰² Rh	-86.530	¹⁰⁹ Pd	-87.390	¹¹⁵ Ag	-84.820	¹²⁰ Cd	-83.640	¹²³ In	-83.430	¹²⁵ Sn	-86.190	¹²⁶ Sn	-86.360
¹⁰³ Rh	-87.730	¹¹⁰ Pd	-87.910	¹¹⁶ Ag	-82.570	¹²¹ Cd	-80.850	¹²⁴ In	-80.970	¹²⁶ Sn	-86.360	¹²⁷ Sn	-83.840
¹⁰⁴ Rh	-86.680	¹¹¹ Pd	-85.460	¹¹⁷ Ag	-82.030	¹²² Cd	-80.410	¹²⁵ In	-80.630	¹²⁷ Sn	-83.840	¹²⁸ Sn	-83.710
¹⁰⁵ Rh	-87.350	¹¹² Pd	-85.800	¹¹⁸ Ag	-79.210	¹²³ Cd	-77.260	¹²⁶ In	-77.990	¹²⁸ Sn	-83.710	¹²⁹ Sn	-80.920
¹⁰⁶ Rh	-86.180	¹¹³ Pd	-83.450	¹¹⁹ Ag	-78.310	¹²⁴ Cd	-76.940	¹²⁷ In	-77.400	¹²⁹ Sn	-80.920	¹³⁰ Sn	-80.550
¹⁰⁷ Rh	-86.330	¹¹⁴ Pd	-83.280	¹²⁰ Ag	-75.190	¹²⁵ Cd	-73.840	¹²⁸ In	-74.600	¹³⁰ Sn	-80.550	¹³¹ Sn	-77.560
¹⁰⁸ Rh	-84.720	¹¹⁵ Pd	-80.410	¹²¹ Ag	-73.940	¹²⁶ Cd	-72.780	¹²⁹ In	-73.620	¹³¹ Sn	-77.560	¹³² Sn	-76.410
¹⁰⁹ Rh	-84.010	¹¹⁶ Pd	-79.750	¹²² Ag	-70.750	¹²⁷ Cd	-69.430	¹³⁰ In	-70.560	¹³² Sn	-76.410	¹³³ Sn	-70.990
¹¹⁰ Rh	-81.950	¹¹⁷ Pd	-76.350	¹²³ Ag	-69.640	¹²⁸ Cd	-68.290	¹³¹ In	-68.690	¹³³ Sn	-70.990	¹³⁴ Sn	-67.200
¹¹¹ Rh	-81.600	¹¹⁸ Pd	-75.200	¹²⁴ Ag	-66.320	¹²⁹ Cd	-65.030	¹³² In	-63.320	¹³⁴ Sn	-67.200	¹³⁵ Sn	-61.000
¹¹² Rh	-79.150	¹¹⁹ Pd	-71.670	¹²⁵ Ag	-64.890	¹³⁰ Cd	-63.120	¹³³ In	-59.030	¹³⁵ Sn	-61.000	¹³⁶ Sn	-56.670
¹¹³ Rh	-78.310	¹²⁰ Pd	-70.310	¹²⁶ Ag	-61.500	¹³¹ Cd	-57.080	¹³⁴ In	-52.730	¹³⁶ Sn	-56.670	¹³⁷ Sn	-50.210
¹¹⁴ Rh	-75.400	¹²¹ Pd	-66.600	¹²⁷ Ag	-59.660	¹³² Cd	-52.680	¹³⁵ In	-47.920	¹³⁷ Sn	-50.210	¹³⁸ Sn	-45.700
¹¹⁵ Rh	-74.030	¹²² Pd	-64.830	¹²⁸ Ag	-56.310	¹³³ Cd	-45.930	¹³⁶ In	-41.350	¹³⁸ Sn	-45.700	¹³⁹ Sn	-38.920
¹¹⁶ Rh	-70.570	¹²³ Pd	-60.850	¹²⁹ Ag	-53.810	¹³⁴ Cd	-41.010	¹³⁷ In	-36.230	¹³⁹ Sn	-38.920	¹⁴⁰ Sn	-34.200
¹¹⁷ Rh	-68.760	¹²⁴ Pd	-59.040	¹³⁰ Ag	-47.740	¹³⁵ Cd	-33.960	¹³⁸ In	-28.820	¹⁴⁰ Sn	-34.200	¹⁴¹ Sn	-26.770
¹¹⁸ Rh	-65.100	¹²⁵ Pd	-55.160	¹³¹ Ag	-42.780	¹³⁶ Cd	-28.850	¹³⁹ In	-23.750	¹⁴¹ Sn	-26.770	¹⁴² Sn	-21.900
¹¹⁹ Rh	-												

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
¹⁴⁶ Sn	2.600	¹⁴⁶ Sb	1.010	¹⁴⁹ Te	-9.020	¹⁴⁸ I	-26.300	¹⁴⁶ Xe	-48.660	¹⁴⁴ Cs	-63.320		
¹⁴⁷ Sn	9.660	¹⁴⁹ Sb	6.280	¹⁵⁰ Te	-4.240	¹⁴⁹ I	-21.910	¹⁴⁷ Xe	-43.390	¹⁴⁵ Cs	-60.280		
¹⁴⁸ Sn	15.080	¹⁵⁰ Sb	12.990	¹⁵¹ Te	2.490	¹⁵⁰ I	-15.910	¹⁴⁸ Xe	-39.790	¹⁴⁶ Cs	-55.510		
¹⁴⁹ Sn	22.200	¹⁵¹ Sb	18.510	¹⁵² Te	7.530	¹⁵¹ I	-11.240	¹⁴⁹ Xe	-34.150	¹⁴⁷ Cs	-52.510		
¹⁵⁰ Sn	27.710	¹⁵² Sb	25.410	¹⁵³ Te	14.370	¹⁵² I	-5.160	¹⁵⁰ Xe	-30.240	¹⁴⁸ Cs	-47.800		
¹⁵¹ Sn	35.100	¹⁵³ Sb	31.190	¹⁵⁴ Te	19.620	¹⁵³ I	-0.180	¹⁵¹ Xe	-24.430	¹⁴⁹ Cs	-44.230		
¹⁵² Sn	40.910	¹⁵⁴ Sb	38.380	¹⁵⁵ Te	26.660	¹⁵⁴ I	6.120	¹⁵² Xe	-20.260	¹⁵⁰ Cs	-39.190		
¹⁵³ Sn	48.610	¹⁵⁵ Sb	44.580	¹⁵⁶ Te	32.410	¹⁵⁵ I	11.340	¹⁵³ Xe	-14.270	¹⁵¹ Cs	-35.350		
¹⁵⁴ Sn	54.870	¹⁵⁶ Sb	52.090	¹⁵⁷ Te	39.930	¹⁵⁶ I	17.780	¹⁵⁴ Xe	-9.910	¹⁵² Cs	-30.170		
¹⁵⁵ Sn	62.900	¹⁵⁷ Sb	58.440	¹⁵⁸ Te	45.850	¹⁵⁷ I	23.470	¹⁵⁵ Xe	-3.760	¹⁵³ Cs	-26.100		
¹⁵⁶ Sn	69.250	¹⁵⁸ Sb	66.180	¹⁵⁹ Te	53.570	¹⁵⁸ I	30.540	¹⁵⁶ Xe	0.920	¹⁵⁴ Cs	-20.610		
¹⁵⁷ Sn	77.420	¹⁵⁹ Sb	72.770	¹⁶⁰ Te	59.710	¹⁵⁹ I	36.410	¹⁵⁷ Xe	7.480	¹⁵⁵ Cs	-16.370		
¹⁵⁸ Sn	84.040	¹⁶⁰ Sb	80.480	¹⁶¹ Te	67.450	¹⁶⁰ I	43.630	¹⁵⁸ Xe	12.690	¹⁵⁶ Cs	-10.760		
¹⁵⁹ Sn	92.180	¹⁶¹ Sb	87.150	¹⁶² Te	73.690	¹⁶¹ I	49.670	¹⁵⁹ Xe	19.700	¹⁵⁷ Cs	-6.150		
¹⁶⁰ Sn	98.710	¹⁶² Sb	95.160	¹⁶³ Te	81.560	¹⁶² I	57.010	¹⁶⁰ Xe	25.140	¹⁵⁸ Cs	-0.090		
¹⁶¹ Sn	107.280	¹⁶³ Sb	101.880	¹⁶⁴ Te	87.910	¹⁶³ I	63.160	¹⁶¹ Xe	32.320	¹⁵⁹ Cs	5.070		
¹⁶² Sn	113.940	¹⁶⁴ Sb	109.920	¹⁶⁵ Te	96.070	¹⁶⁴ I	70.680	¹⁶² Xe	37.900	¹⁶⁰ Cs	11.660		
¹⁶³ Sn	122.460	¹⁶⁵ Sb	116.680	¹⁶⁶ Te	102.400	¹⁶⁵ I	77.160	¹⁶³ Xe	45.230	¹⁶¹ Cs	16.990		
¹⁶⁴ Sn	129.330	¹⁶⁶ Sb	124.860	¹⁶⁷ Te	110.500	¹⁶⁶ I	84.810	¹⁶⁴ Xe	50.990	¹⁶² Cs	23.720		
¹⁶⁵ Sn	137.910	¹⁶⁷ Sb	131.610	¹⁶⁸ Te	117.150	¹⁶⁷ I	91.250	¹⁶⁵ Xe	58.500	¹⁶³ Cs	29.270		
¹⁶⁶ Sn	144.770	¹⁶⁸ Sb	139.890	¹⁶⁹ Te	125.080	¹⁶⁸ I	98.830	¹⁶⁶ Xe	64.390	¹⁶⁴ Cs	36.170		
¹⁶⁷ Sn	153.390	¹⁶⁹ Sb	147.020	¹⁷⁰ Te	131.850	¹⁶⁹ I	105.500	¹⁶⁷ Xe	72.070	¹⁶⁵ Cs	41.910		
¹⁶⁸ Sn	160.550	¹⁷⁰ Sb	155.590	¹⁷¹ Te	140.560	¹⁷⁰ I	113.350	¹⁶⁸ Xe	78.240	¹⁶⁶ Cs	48.990		
¹⁶⁹ Sn	169.280	¹⁷¹ Sb	163.200	¹⁷² Te	147.230	¹⁷¹ I	119.750	¹⁶⁹ Xe	85.940	¹⁶⁷ Cs	54.790		
		¹⁷² Sb	171.460	¹⁷³ Te	155.800	¹⁷² I	128.000	¹⁷⁰ Xe	92.010	¹⁶⁸ Cs	62.080		
⁹⁷ Sb	-12.310			¹⁷⁴ Te	162.510	¹⁷³ I	134.850	¹⁷¹ Xe	100.010	¹⁶⁹ Cs	68.180		
⁹⁸ Sb	-20.220	⁹⁹ Te	-10.020	¹⁷⁵ Te	170.640	¹⁷⁴ I	142.970	¹⁷² Xe	106.280	¹⁷⁰ Cs	75.500		
⁹⁹ Sb	-30.290	¹⁰⁰ Te	-21.090	¹⁷⁶ Te	177.490	¹⁷⁵ I	149.800	¹⁷³ Xe	114.250	¹⁷¹ Cs	81.680		
¹⁰⁰ Sb	-37.330	¹⁰¹ Te	-27.920			¹⁷⁶ I	157.410	¹⁷⁴ Xe	120.750	¹⁷² Cs	89.030		
¹⁰¹ Sb	-46.600	¹⁰² Te	-38.030	¹⁰¹ I	-8.070	¹⁷⁷ I	164.260	¹⁷⁵ Xe	128.770	¹⁷³ Cs	95.350		
¹⁰² Sb	-50.660	¹⁰³ Te	-42.420	¹⁰² I	-15.830	¹⁷⁸ I	172.080	¹⁷⁶ Xe	135.080	¹⁷⁴ Cs	102.740		
¹⁰³ Sb	-56.490	¹⁰⁴ Te	-49.330	¹⁰³ I	-25.600	¹⁷⁹ I	179.340	¹⁷⁷ Xe	142.860	¹⁷⁵ Cs	109.590		
¹⁰⁴ Sb	-59.350	¹⁰⁵ Te	-52.260	¹⁰⁴ I	-31.230			¹⁷⁸ Xe	149.350	¹⁷⁶ Cs	117.180		
¹⁰⁵ Sb	-63.920	¹⁰⁶ Te	-57.940	¹⁰⁵ I	-38.440	¹⁰³ Xe	-5.290	¹⁷⁹ Xe	157.030	¹⁷⁷ Cs	123.500		
¹⁰⁶ Sb	-66.330	¹⁰⁷ Te	-60.360	¹⁰⁶ I	-42.450	¹⁰⁴ Xe	-15.870	¹⁸⁰ Xe	164.040	¹⁷⁸ Cs	130.820		
¹⁰⁷ Sb	-70.320	¹⁰⁸ Te	-65.250	¹⁰⁷ I	-48.520	¹⁰⁵ Xe	-21.520	¹⁸¹ Xe	174.400	¹⁷⁹ Cs	137.280		
¹⁰⁸ Sb	-72.140	¹⁰⁹ Te	-67.260	¹⁰⁸ I	-51.950	¹⁰⁶ Xe	-29.500	¹⁸² Xe	183.490	¹⁸⁰ Cs	144.600		
¹⁰⁹ Sb	-75.680	¹¹⁰ Te	-71.540	¹⁰⁹ I	-57.010	¹⁰⁷ Xe	-34.240			¹⁸¹ Cs	151.480		
¹¹⁰ Sb	-77.080	¹¹¹ Te	-73.040	¹¹⁰ I	-59.870	¹⁰⁸ Xe	-41.380	¹⁰⁶ Cs	-9.410	¹⁸² Cs	161.460		
¹¹¹ Sb	-80.070	¹¹² Te	-76.800	¹¹¹ I	-64.310	¹⁰⁹ Xe	-45.020	¹⁰⁷ Cs	-17.670	¹⁸³ Cs	170.380		
¹¹² Sb	-80.920	¹¹³ Te	-77.930	¹¹² I	-66.690	¹¹⁰ Xe	-50.910	¹⁰⁸ Cs	-23.330	¹⁸⁴ Cs	180.690		
¹¹³ Sb	-83.520	¹¹⁴ Te	-81.150	¹¹³ I	-70.550	¹¹¹ Xe	-53.860	¹⁰⁹ Cs	-30.690	¹⁸⁵ Cs	189.700		
¹¹⁴ Sb	-83.940	¹¹⁵ Te	-81.950	¹¹⁴ I	-72.530	¹¹² Xe	-59.200	¹¹⁰ Cs	-35.750				
¹¹⁵ Sb	-86.250	¹¹⁶ Te	-84.720	¹¹⁵ I	-75.850	¹¹³ Xe	-61.760	¹¹¹ Cs	-42.190	¹⁰⁸ Ba	-7.990		
¹¹⁶ Sb	-86.320	¹¹⁷ Te	-84.610	¹¹⁶ I	-77.280	¹¹⁴ Xe	-66.460	¹¹² Cs	-45.810	¹⁰⁹ Ba	-13.810		
¹¹⁷ Sb	-88.250	¹¹⁸ Te	-87.180	¹¹⁷ I	-80.160	¹¹⁵ Xe	-68.540	¹¹³ Cs	-51.160	¹¹⁰ Ba	-22.220		
¹¹⁸ Sb	-87.900	¹¹⁹ Te	-86.970	¹¹⁸ I	-81.060	¹¹⁶ Xe	-72.610	¹¹⁴ Cs	-54.420	¹¹¹ Ba	-27.530		
¹¹⁹ Sb	-89.340	¹²⁰ Te	-89.070	¹¹⁹ I	-83.520	¹¹⁷ Xe	-74.070	¹¹⁵ Cs	-59.480	¹¹² Ba	-34.700		
¹²⁰ Sb	-88.550	¹²¹ Te	-88.430	¹²⁰ I	-83.970	¹¹⁸ Xe	-77.670	¹¹⁶ Cs	-62.190	¹¹³ Ba	-38.580		
¹²¹ Sb	-89.610	¹²² Te	-90.010	¹²¹ I	-85.780	¹¹⁹ Xe	-78.660	¹¹⁷ Cs	-66.420	¹¹⁴ Ba	-44.940		
¹²² Sb	-88.410	¹²³ Te	-88.920	¹²² I	-85.760	¹²⁰ Xe	-81.790	¹¹⁸ Cs	-68.530	¹¹⁵ Ba	-48.500		
¹²³ Sb	-89.180	¹²⁴ Te	-90.290	¹²³ I	-87.400	¹²¹ Xe	-82.300	¹¹⁹ Cs	-72.200	¹¹⁶ Ba	-54.380		
¹²⁴ Sb	-87.710	¹²⁵ Te	-88.870	¹²⁴ I	-86.900	¹²² Xe	-84.950	¹²⁰ Cs	-73.860	¹¹⁷ Ba	-57.230		
¹²⁵ Sb	-88.260	¹²⁶ Te	-89.960	¹²⁵ I	-88.200	¹²³ Xe	-85.040	¹²¹ Cs	-77.100	¹¹⁸ Ba	-62.130		
¹²⁶ Sb	-86.450	¹²⁷ Te	-88.250	¹²⁶ I	-87.410	¹²⁴ Xe	-87.100	¹²² Cs	-78.300	¹¹⁹ Ba	-64.360		
¹²⁷ Sb	-86.850	¹²⁸ Te	-89.230	¹²⁷ I	-88.410	¹²⁵ Xe	-86.770	¹²³ Cs	-80.980	¹²⁰ Ba	-68.680		
¹²⁸ Sb	-84.850	¹²⁹ Te	-87.540	¹²⁸ I	-87.380	¹²⁶ Xe	-88.420	¹²⁴ Cs	-81.730	¹²¹ Ba	-70.410		
¹²⁹ Sb	-85.120	¹³⁰ Te	-88.030	¹²⁹ I	-88.190	¹²⁷ Xe	-87.650	¹²⁵ Cs	-83.720	¹²² Ba	-74.310		
¹³⁰ Sb	-82.830	¹³¹ Te	-85.900	¹³⁰ I	-86.880	¹²⁸ Xe	-89.080	¹²⁶ Cs	-83.980	¹²³ Ba	-75.600		
¹³¹ Sb	-82.640	¹³² Te	-86.260	¹³¹ I	-87.550	¹²⁹ Xe	-88.020	¹²⁷ Cs	-85.680	¹²⁴ Ba	-78.940		
¹³² Sb	-80.120	¹³³ Te	-83.860	¹³² I	-86.080	¹³⁰ Xe	-89.240	¹²⁸ Cs	-85.480	¹²⁵ Ba	-79.750		
¹³³ Sb	-78.970	¹³⁴ Te	-83.300	¹³³ I	-86.570	¹³¹ Xe	-87.980	¹²⁹ Cs	-86.880	¹²⁶ Ba	-82.490		
¹³⁴ Sb	-74.290	¹³⁵ Te	-78.630	¹³⁴ I	-84.680	¹³² Xe	-89.200	¹³⁰ Cs	-86.380	¹²⁷ Ba	-82.750		
¹³⁵ Sb	-70.440	¹³⁶ Te	-75.500	¹³⁵ I	-84.280	¹³³ Xe	-87.920	¹³¹ Cs	-87.430	¹²⁸ Ba	-84.900		
¹³⁶ Sb	-64.920	¹³⁷ Te	-69.960	¹³⁶ I	-80.210	¹³⁴ Xe	-88.750	¹³² Cs	-86.600	¹²⁹ Ba	-84.750		
¹³⁷ Sb	-60.690	¹³⁸ Te	-66.310	¹³⁷ I	-77.150	¹³⁵ Xe	-86.990	¹³³ Cs	-87.670	¹³⁰ Ba	-86.570		
¹³⁸ Sb	-54.090	¹³⁹ Te	-59.970	¹³⁸ I	-71.500	¹³⁶ Xe	-87.160	¹³⁴ Cs	-86.750	¹³¹ Ba	-86.070		
¹³⁹ Sb	-49.880	¹⁴⁰ Te	-56.230	¹³⁹ I	-68.250	¹³⁷ Xe	-83.230	¹³⁵ Cs	-87.950	¹³² Ba	-87.630		
¹⁴⁰ Sb	-43.730	¹⁴¹ Te	-50.110	¹⁴⁰ I	-63.150	¹³⁸ Xe	-80.610	¹³⁶ Cs	-86.810	¹³³ Ba	-86.800		
¹⁴¹ Sb	-39.250	¹⁴² Te	-46.360	¹⁴¹ I	-59.690	¹³⁹ Xe	-75.520	¹³⁷ Cs	-87.030	¹³⁴ Ba	-88.380		
¹⁴² Sb	-32.360	¹⁴³ Te	-40.390	¹⁴² I	-54.350	¹⁴⁰ Xe	-72.750	¹³⁸ Cs	-83.750	¹³⁵ Ba	-87.450		
¹⁴³ Sb	-27.860	¹⁴⁴ Te	-36.510	¹⁴³ I	-50.770	¹⁴¹ Xe	-67.980	¹³⁹ Cs	-81.110	¹³⁶ Ba	-89.180		
¹⁴⁴ Sb	-21.640	¹⁴⁵ Te	-30.430	¹⁴⁴ I	-45.370	¹⁴² Xe	-65.220	¹⁴⁰ Cs	-76.570	¹³⁷ Ba	-88.090		
¹⁴⁵ Sb	-16.910	¹⁴⁶ Te	-26.210	¹⁴⁵ I	-41.550	¹⁴³ Xe	-60.190	¹⁴¹ Cs	-74.210	¹³⁸ Ba	-88.920		
¹⁴⁶ Sb	-10.610	¹⁴⁷ Te	-19.970	¹⁴⁶ I	-36.140	¹⁴⁴ Xe	-57.050	¹⁴² Cs	-70.260	¹³⁹ Ba	-85.600		
¹⁴⁷ Sb	-5.620	¹⁴⁸ Te	-15.500	¹⁴⁷ I	-31.970	¹⁴⁵ Xe	-51.750	¹⁴³ Cs	-67.600	¹⁴⁰ Ba	-8		

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
¹⁴¹ Ba	-79.290	¹³⁶ La	-85.580	¹³¹ Ce	-79.430	¹²⁵ Pr	-58.420	¹¹⁹ Nd	-16.660	¹⁹⁴ Nd	156.900
¹⁴² Ba	-77.600	¹³⁷ La	-87.390	¹³² Ce	-81.890	¹²⁶ Pr	-60.930	¹²⁰ Nd	-24.830	¹⁹⁵ Nd	165.550
¹⁴³ Ba	-73.830	¹³⁸ La	-86.840	¹³³ Ce	-81.960	¹²⁷ Pr	-64.940	¹²¹ Nd	-29.400	¹⁹⁶ Nd	172.750
¹⁴⁴ Ba	-71.920	¹³⁹ La	-87.780	¹³⁴ Ce	-84.020	¹²⁸ Pr	-66.900	¹²² Nd	-35.900	¹⁹⁷ Nd	181.490
¹⁴⁵ Ba	-67.670	¹⁴⁰ La	-84.920	¹³⁵ Ce	-83.760	¹²⁹ Pr	-70.280	¹²³ Nd	-39.560	¹⁹⁸ Nd	189.060
¹⁴⁶ Ba	-65.200	¹⁴¹ La	-83.260	¹³⁶ Ce	-85.670	¹³⁰ Pr	-71.620	¹²⁴ Nd	-45.300	¹⁹⁹ Nd	198.120
¹⁴⁷ Ba	-60.740	¹⁴² La	-79.310	¹³⁷ Ce	-85.320	¹³¹ Pr	-74.360	¹²⁵ Nd	-48.360	²⁰⁰ Nd	205.850
¹⁴⁸ Ba	-58.300	¹⁴³ La	-77.870	¹³⁸ Ce	-87.620	¹³² Pr	-75.260	¹²⁶ Nd	-53.540	²⁰¹ Nd	215.010
¹⁴⁹ Ba	-53.780	¹⁴⁴ La	-74.780	¹³⁹ Ce	-87.150	¹³³ Pr	-77.640	¹²⁷ Nd	-56.130		
¹⁵⁰ Ba	-50.820	¹⁴⁵ La	-73.050	¹⁴⁰ Ce	-88.680	¹³⁴ Pr	-78.100	¹²⁸ Nd	-60.750	¹²⁰ Pm	-5.910
¹⁵¹ Ba	-45.940	¹⁴⁶ La	-69.240	¹⁴¹ Ce	-85.880	¹³⁵ Pr	-80.130	¹²⁹ Nd	-62.800	¹²¹ Pm	-14.240
¹⁵² Ba	-42.600	¹⁴⁷ La	-66.980	¹⁴² Ce	-84.780	¹³⁶ Pr	-80.460	¹³⁰ Nd	-66.760	¹²² Pm	-19.750
¹⁵³ Ba	-37.440	¹⁴⁸ La	-63.410	¹⁴³ Ce	-81.040	¹³⁷ Pr	-82.350	¹³¹ Nd	-68.170	¹²³ Pm	-26.630
¹⁵⁴ Ba	-33.900	¹⁴⁹ La	-61.120	¹⁴⁴ Ce	-80.230	¹³⁸ Pr	-82.540	¹³² Nd	-71.490	¹²⁴ Pm	-30.930
¹⁵⁵ Ba	-28.510	¹⁵⁰ La	-57.230	¹⁴⁵ Ce	-77.190	¹³⁹ Pr	-84.830	¹³³ Nd	-72.200	¹²⁵ Pm	-36.770
¹⁵⁶ Ba	-24.740	¹⁵¹ La	-54.360	¹⁴⁶ Ce	-76.000	¹⁴⁰ Pr	-84.880	¹³⁴ Nd	-75.130	¹²⁶ Pm	-40.490
¹⁵⁷ Ba	-19.210	¹⁵² La	-50.010	¹⁴⁷ Ce	-72.330	¹⁴¹ Pr	-86.530	¹³⁵ Nd	-75.730	¹²⁷ Pm	-45.730
¹⁵⁸ Ba	-15.160	¹⁵³ La	-46.780	¹⁴⁸ Ce	-70.830	¹⁴² Pr	-84.300	¹³⁶ Nd	-78.320	¹²⁸ Pm	-48.910
¹⁵⁹ Ba	-9.100	¹⁵⁴ La	-42.140	¹⁴⁹ Ce	-67.490	¹⁴³ Pr	-83.280	¹³⁷ Nd	-78.620	¹²⁹ Pm	-53.600
¹⁶⁰ Ba	-4.450	¹⁵⁵ La	-38.630	¹⁵⁰ Ce	-65.800	¹⁴⁴ Pr	-80.250	¹³⁸ Nd	-81.010	¹³⁰ Pm	-56.270
¹⁶¹ Ba	2.060	¹⁵⁶ La	-33.720	¹⁵¹ Ce	-62.050	¹⁴⁵ Pr	-79.410	¹³⁹ Nd	-81.300	¹³¹ Pm	-60.300
¹⁶² Ba	6.950	¹⁵⁷ La	-30.010	¹⁵² Ce	-59.780	¹⁴⁶ Pr	-76.970	¹⁴⁰ Nd	-84.100	¹³² Pm	-62.370
¹⁶³ Ba	13.660	¹⁵⁸ La	-24.980	¹⁵³ Ce	-55.560	¹⁴⁷ Pr	-75.790	¹⁴¹ Nd	-84.290	¹³³ Pm	-65.720
¹⁶⁴ Ba	18.780	¹⁵⁹ La	-21.020	¹⁵⁴ Ce	-52.900	¹⁴⁸ Pr	-72.980	¹⁴² Nd	-86.480	¹³⁴ Pm	-67.060
¹⁶⁵ Ba	25.620	¹⁶⁰ La	-15.380	¹⁵⁵ Ce	-48.380	¹⁴⁹ Pr	-71.860	¹⁴³ Nd	-84.330	¹³⁵ Pm	-69.880
¹⁶⁶ Ba	30.960	¹⁶¹ La	-10.770	¹⁵⁶ Ce	-45.400	¹⁵⁰ Pr	-69.090	¹⁴⁴ Nd	-83.820	¹³⁶ Pm	-71.070
¹⁶⁷ Ba	38.010	¹⁶² La	-4.700	¹⁵⁷ Ce	-40.550	¹⁵¹ Pr	-67.470	¹⁴⁵ Nd	-80.850	¹³⁷ Pm	-73.610
¹⁶⁸ Ba	43.450	¹⁶³ La	0.180	¹⁵⁸ Ce	-37.290	¹⁵² Pr	-64.310	¹⁴⁶ Nd	-80.520	¹³⁸ Pm	-74.290
¹⁶⁹ Ba	50.540	¹⁶⁴ La	6.410	¹⁵⁹ Ce	-32.320	¹⁵³ Pr	-62.170	¹⁴⁷ Nd	-78.220	¹³⁹ Pm	-76.710
¹⁷⁰ Ba	56.290	¹⁶⁵ La	11.510	¹⁶⁰ Ce	-28.700	¹⁵⁴ Pr	-58.510	¹⁴⁸ Nd	-77.710	¹⁴⁰ Pm	-77.480
¹⁷¹ Ba	63.620	¹⁶⁶ La	17.980	¹⁶¹ Ce	-23.230	¹⁵⁵ Pr	-55.930	¹⁴⁹ Nd	-75.160	¹⁴¹ Pm	-80.310
¹⁷² Ba	69.400	¹⁶⁷ La	23.250	¹⁶² Ce	-19.010	¹⁵⁶ Pr	-51.910	¹⁵⁰ Nd	-74.700	¹⁴² Pm	-81.010
¹⁷³ Ba	76.640	¹⁶⁸ La	29.790	¹⁶³ Ce	-13.040	¹⁵⁷ Pr	-48.990	¹⁵¹ Nd	-72.020	¹⁴³ Pm	-83.330
¹⁷⁴ Ba	82.690	¹⁶⁹ La	35.200	¹⁶⁴ Ce	-8.620	¹⁵⁸ Pr	-44.640	¹⁵² Nd	-71.020	¹⁴⁴ Pm	-81.750
¹⁷⁵ Ba	90.110	¹⁷⁰ La	41.810	¹⁶⁵ Ce	-2.430	¹⁵⁹ Pr	-41.530	¹⁵³ Nd	-67.890	¹⁴⁵ Pm	-81.310
¹⁷⁶ Ba	96.610	¹⁷¹ La	47.530	¹⁶⁶ Ce	2.230	¹⁶⁰ Pr	-36.930	¹⁵⁴ Nd	-66.400	¹⁴⁶ Pm	-78.920
¹⁷⁷ Ba	104.030	¹⁷² La	54.420	¹⁶⁷ Ce	8.610	¹⁶¹ Pr	-33.350	¹⁵⁵ Nd	-62.800	¹⁴⁷ Pm	-78.780
¹⁷⁸ Ba	110.130	¹⁷³ La	60.190	¹⁶⁸ Ce	13.430	¹⁶² Pr	-28.360	¹⁵⁶ Nd	-60.820	¹⁴⁸ Pm	-77.100
¹⁷⁹ Ba	117.450	¹⁷⁴ La	67.000	¹⁶⁹ Ce	20.030	¹⁶³ Pr	-24.300	¹⁵⁷ Nd	-56.900	¹⁴⁹ Pm	-76.770
¹⁸⁰ Ba	123.510	¹⁷⁵ La	73.030	¹⁷⁰ Ce	25.000	¹⁶⁴ Pr	-18.680	¹⁵⁸ Nd	-54.540	¹⁵⁰ Pm	-74.780
¹⁸¹ Ba	130.710	¹⁷⁶ La	80.050	¹⁷¹ Ce	31.560	¹⁶⁵ Pr	-14.340	¹⁵⁹ Nd	-50.280	¹⁵¹ Pm	-74.420
¹⁸² Ba	137.380	¹⁷⁷ La	86.750	¹⁷² Ce	36.820	¹⁶⁶ Pr	-8.580	¹⁶⁰ Nd	-47.660	¹⁵² Pm	-72.290
¹⁸³ Ba	147.290	¹⁷⁸ La	93.620	¹⁷³ Ce	43.720	¹⁶⁷ Pr	-3.950	¹⁶¹ Nd	-43.190	¹⁵³ Pm	-71.400
¹⁸⁴ Ba	155.590	¹⁷⁹ La	99.690	¹⁷⁴ Ce	49.070	¹⁶⁸ Pr	2.040	¹⁶² Nd	-40.190	¹⁵⁴ Pm	-68.870
¹⁸⁵ Ba	165.930	¹⁸⁰ La	106.520	¹⁷⁵ Ce	55.930	¹⁶⁹ Pr	6.850	¹⁶³ Nd	-35.200	¹⁵⁵ Pm	-67.470
¹⁸⁶ Ba	174.640	¹⁸¹ La	112.620	¹⁷⁶ Ce	61.530	¹⁷⁰ Pr	13.000	¹⁶⁴ Nd	-31.540	¹⁵⁶ Pm	-64.440
¹⁸⁷ Ba	184.200	¹⁸² La	119.490	¹⁷⁷ Ce	68.900	¹⁷¹ Pr	17.960	¹⁶⁵ Nd	-25.930	¹⁵⁷ Pm	-62.610
¹⁸⁸ Ba	192.490	¹⁸³ La	126.040	¹⁷⁸ Ce	74.940	¹⁷² Pr	24.180	¹⁶⁶ Nd	-21.930	¹⁵⁸ Pm	-59.240
¹⁸⁹ Ba	201.880	¹⁸⁴ La	135.320	¹⁷⁹ Ce	81.870	¹⁷³ Pr	29.230	¹⁶⁷ Nd	-16.240	¹⁵⁹ Pm	-57.020
		¹⁸⁵ La	143.790	¹⁸⁰ Ce	87.480	¹⁷⁴ Pr	35.700	¹⁶⁸ Nd	-12.080	¹⁶⁰ Pm	-53.310
¹¹⁰ La	-2.100	¹⁸⁶ La	153.730	¹⁸¹ Ce	94.390	¹⁷⁵ Pr	41.050	¹⁶⁹ Nd	-6.120	¹⁶¹ Pm	-50.770
¹¹¹ La	-10.610	¹⁸⁷ La	162.310	¹⁸² Ce	99.940	¹⁷⁶ Pr	47.500	¹⁷⁰ Nd	-1.750	¹⁶² Pm	-46.780
¹¹² La	-16.450	¹⁸⁸ La	171.380	¹⁸³ Ce	106.820	¹⁷⁷ Pr	53.070	¹⁷¹ Nd	4.340	¹⁶³ Pm	-43.860
¹¹³ La	-24.340	¹⁸⁹ La	179.700	¹⁸⁴ Ce	112.900	¹⁷⁸ Pr	60.010	¹⁷² Nd	8.840	¹⁶⁴ Pm	-39.340
¹¹⁴ La	-29.400	¹⁹⁰ La	188.780	¹⁸⁵ Ce	122.330	¹⁷⁹ Pr	66.040	¹⁷³ Nd	15.040	¹⁶⁵ Pm	-35.760
¹¹⁵ La	-36.140	¹⁹¹ La	197.280	¹⁸⁶ Ce	130.130	¹⁸⁰ Pr	72.600	¹⁷⁴ Nd	19.680	¹⁶⁶ Pm	-30.610
¹¹⁶ La	-40.530	¹⁹² La	206.600	¹⁸⁷ Ce	140.240	¹⁸¹ Pr	78.280	¹⁷⁵ Nd	26.150	¹⁶⁷ Pm	-26.650
¹¹⁷ La	-46.590			¹⁸⁸ Ce	148.270	¹⁸² Pr	84.660	¹⁷⁶ Nd	31.070	¹⁶⁸ Pm	-21.280
¹¹⁸ La	-50.100	¹¹³ Ce	-7.190	¹⁸⁹ Ce	157.280	¹⁸³ Pr	90.220	¹⁷⁷ Nd	37.700	¹⁶⁹ Pm	-17.190
¹¹⁹ La	-55.150	¹¹⁴ Ce	-15.560	¹⁹⁰ Ce	165.150	¹⁸⁴ Pr	96.720	¹⁷⁸ Nd	42.760	¹⁷⁰ Pm	-11.700
¹²⁰ La	-57.920	¹¹⁵ Ce	-21.220	¹⁹¹ Ce	174.310	¹⁸⁵ Pr	102.750	¹⁷⁹ Nd	50.260	¹⁷¹ Pm	-7.320
¹²¹ La	-62.310	¹¹⁶ Ce	-29.210	¹⁹² Ce	182.800	¹⁸⁶ Pr	111.730	¹⁸⁰ Nd	55.310	¹⁷² Pm	-1.600
¹²² La	-64.680	¹¹⁷ Ce	-33.800	¹⁹³ Ce	191.680	¹⁸⁷ Pr	119.620	¹⁸¹ Nd	61.950	¹⁷³ Pm	2.890
¹²³ La	-68.640	¹¹⁸ Ce	-40.570	¹⁹⁴ Ce	199.330	¹⁸⁸ Pr	129.220	¹⁸² Nd	67.170	¹⁷⁴ Pm	8.660
¹²⁴ La	-70.500	¹¹⁹ Ce	-44.270	¹⁹⁵ Ce	208.780	¹⁸⁹ Pr	137.070	¹⁸³ Nd	73.550	¹⁷⁵ Pm	13.280
¹²⁵ La	-73.890	¹²⁰ Ce	-50.010			¹⁹⁰ Pr	145.580	¹⁸⁴ Nd	78.660	¹⁷⁶ Pm	19.330
¹²⁶ La	-75.270	¹²¹ Ce	-52.950	¹¹⁵ Pr	-4.410	¹⁹¹ Pr	153.460	¹⁸⁵ Nd	85.130	¹⁷⁷ Pm	24.220
¹²⁷ La	-78.020	¹²² Ce	-57.990	¹¹⁶ Pr	-10.870	¹⁹² Pr	162.710	¹⁸⁶ Nd	90.810	¹⁷⁸ Pm	30.490
¹²⁸ La	-78.840	¹²³ Ce	-60.410	¹¹⁷ Pr	-19.110	¹⁹³ Pr	170.700	¹⁸⁷ Nd	99.770	¹⁷⁹ Pm	35.470
¹²⁹ La	-81.000	¹²⁴ Ce	-64.930	¹¹⁸ Pr	-24.690	¹⁹⁴ Pr	179.170	¹⁸⁸ Nd	107.120	¹⁸⁰ Pm	42.490
¹³⁰ La	-81.380	¹²⁵ Ce	-66.870	¹¹⁹ Pr	-31.870	¹⁹⁵ Pr	186.870	¹⁸⁹ Nd	116.690	¹⁸¹ Pm	47.540
¹³¹ La	-83.210	¹²⁶ Ce	-70.820	¹²⁰ Pr	-36.330	¹⁹⁶ Pr	195.760	¹⁹⁰ Nd	124.060	¹⁸² Pm	53.710
¹³² La	-83.240	¹²⁷ Ce	-72.240	¹²¹ Pr	-42.190	¹⁹⁷ Pr	203.760	¹⁹¹ Nd	132.730	¹⁸³ Pm	59.000
¹³³ La	-84.840	¹²⁸ Ce	-75.540	¹²² Pr	-45.750	¹⁹⁸ Pr	212.890	¹⁹² Nd	140.250	¹⁸⁴ Pm	65.050
¹³⁴ La	-84.570	¹²⁹ Ce	-76.390	¹²³ Pr	-50.830			¹⁹³ Nd	149.410	¹⁸⁵ Pm	70.050
¹³⁵ La	-85.970	¹³⁰ Ce	-79.170	¹²⁴ Pr	-53.850					¹⁸⁶ Pm	76.100

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
¹⁸⁷ Pm	81.760	¹⁷⁹ Sm	21.650	¹⁷⁰ Eu	-31.730	¹⁶¹ Gd	-65.500	¹⁵¹ Tb	-71.760	¹⁴⁰ Dy	-43.460		
¹⁸⁸ Pm	90.310	¹⁸⁰ Sm	26.210	¹⁷¹ Eu	-28.210	¹⁶² Gd	-64.510	¹⁵² Tb	-71.130	¹⁴¹ Dy	-45.830		
¹⁸⁹ Pm	97.640	¹⁸¹ Sm	33.190	¹⁷² Eu	-23.220	¹⁶³ Gd	-61.540	¹⁵³ Tb	-72.060	¹⁴² Dy	-50.280		
¹⁹⁰ Pm	106.530	¹⁸² Sm	37.810	¹⁷³ Eu	-19.350	¹⁶⁴ Gd	-60.180	¹⁵⁴ Tb	-71.160	¹⁴³ Dy	-51.270		
¹⁹¹ Pm	113.820	¹⁸³ Sm	44.060	¹⁷⁴ Eu	-14.110	¹⁶⁵ Gd	-56.870	¹⁵⁵ Tb	-71.970	¹⁴⁴ Dy	-56.030		
¹⁹² Pm	122.340	¹⁸⁴ Sm	48.880	¹⁷⁵ Eu	-10.050	¹⁶⁶ Gd	-55.030	¹⁵⁶ Tb	-70.920	¹⁴⁵ Dy	-58.060		
¹⁹³ Pm	129.780	¹⁸⁵ Sm	54.940	¹⁷⁶ Eu	-4.740	¹⁶⁷ Gd	-51.240	¹⁵⁷ Tb	-71.210	¹⁴⁶ Dy	-62.210		
¹⁹⁴ Pm	138.620	¹⁸⁶ Sm	59.570	¹⁷⁷ Eu	-0.560	¹⁶⁸ Gd	-48.790	¹⁵⁸ Tb	-69.770	¹⁴⁷ Dy	-64.250		
¹⁹⁵ Pm	145.940	¹⁸⁷ Sm	65.650	¹⁷⁸ Eu	4.970	¹⁶⁹ Gd	-44.400	¹⁵⁹ Tb	-69.640	¹⁴⁸ Dy	-68.310		
¹⁹⁶ Pm	154.040	¹⁸⁸ Sm	70.900	¹⁷⁹ Eu	9.510	¹⁷⁰ Gd	-41.710	¹⁶⁰ Tb	-67.830	¹⁴⁹ Dy	-67.960		
¹⁹⁷ Pm	161.310	¹⁸⁹ Sm	79.420	¹⁸⁰ Eu	15.380	¹⁷¹ Gd	-37.120	¹⁶¹ Tb	-67.350	¹⁵⁰ Dy	-69.430		
¹⁹⁸ Pm	169.650	¹⁹⁰ Sm	86.320	¹⁸¹ Eu	20.000	¹⁷² Gd	-34.100	¹⁶² Tb	-65.210	¹⁵¹ Dy	-68.410		
¹⁹⁹ Pm	177.200	¹⁹¹ Sm	95.180	¹⁸² Eu	26.420	¹⁷³ Gd	-29.190	¹⁶³ Tb	-64.400	¹⁵² Dy	-69.930		
²⁰⁰ Pm	185.840	¹⁹² Sm	102.040	¹⁸³ Eu	31.000	¹⁷⁴ Gd	-25.830	¹⁶⁴ Tb	-61.920	¹⁵³ Dy	-69.270		
²⁰¹ Pm	193.520	¹⁹³ Sm	110.640	¹⁸⁴ Eu	36.860	¹⁷⁵ Gd	-20.640	¹⁶⁵ Tb	-60.630	¹⁵⁴ Dy	-70.720		
²⁰² Pm	202.320	¹⁹⁴ Sm	117.720	¹⁸⁵ Eu	41.710	¹⁷⁶ Gd	-17.050	¹⁶⁶ Tb	-57.820	¹⁵⁵ Dy	-69.840		
²⁰³ Pm	209.860	¹⁹⁵ Sm	126.420	¹⁸⁶ Eu	47.390	¹⁷⁷ Gd	-11.760	¹⁶⁷ Tb	-56.130	¹⁵⁶ Dy	-71.110		
²⁰⁴ Pm	218.650	¹⁹⁶ Sm	133.390	¹⁸⁷ Eu	52.110	¹⁷⁸ Gd	-8.000	¹⁶⁸ Tb	-52.840	¹⁵⁷ Dy	-70.090		
²⁰⁵ Pm	226.490	¹⁹⁷ Sm	141.420	¹⁸⁸ Eu	57.690	¹⁷⁹ Gd	-2.460	¹⁶⁹ Tb	-50.530	¹⁵⁸ Dy	-70.910		
		¹⁹⁸ Sm	148.210	¹⁸⁹ Eu	62.910	¹⁸⁰ Gd	1.670	¹⁷⁰ Tb	-46.720	¹⁵⁹ Dy	-69.490		
¹²³ Sm	-11.090	¹⁹⁹ Sm	156.660	¹⁹⁰ Eu	71.030	¹⁸¹ Gd	7.490	¹⁷¹ Tb	-44.130	¹⁶⁰ Dy	-69.900		
¹²⁴ Sm	-18.860	²⁰⁰ Sm	163.800	¹⁹¹ Eu	77.920	¹⁸² Gd	11.800	¹⁷² Tb	-40.030	¹⁶¹ Dy	-68.160		
¹²⁵ Sm	-23.290	²⁰¹ Sm	172.340	¹⁹² Eu	86.180	¹⁸³ Gd	18.130	¹⁷³ Tb	-37.080	¹⁶² Dy	-68.240		
¹²⁶ Sm	-29.690	²⁰² Sm	179.750	¹⁹³ Eu	93.000	¹⁸⁴ Gd	22.270	¹⁷⁴ Tb	-32.660	¹⁶³ Dy	-66.170		
¹²⁷ Sm	-33.540	²⁰³ Sm	188.410	¹⁹⁴ Eu	101.430	¹⁸⁵ Gd	28.150	¹⁷⁵ Tb	-29.330	¹⁶⁴ Dy	-65.910		
¹²⁸ Sm	-39.440	²⁰⁴ Sm	195.920	¹⁹⁵ Eu	108.400	¹⁸⁶ Gd	32.600	¹⁷⁶ Tb	-24.560	¹⁶⁵ Dy	-63.520		
¹²⁹ Sm	-42.680	²⁰⁵ Sm	204.270	¹⁹⁶ Eu	116.710	¹⁸⁷ Gd	38.320	¹⁷⁷ Tb	-20.920	¹⁶⁶ Dy	-62.780		
¹³⁰ Sm	-48.050	²⁰⁶ Sm	211.710	¹⁹⁷ Eu	123.550	¹⁸⁸ Gd	42.680	¹⁷⁸ Tb	-16.170	¹⁶⁷ Dy	-60.060		
¹³¹ Sm	-50.770	²⁰⁷ Sm	220.340	¹⁹⁸ Eu	131.240	¹⁸⁹ Gd	48.260	¹⁷⁹ Tb	-12.390	¹⁶⁸ Dy	-58.900		
¹³² Sm	-55.560	²⁰⁸ Sm	228.050	¹⁹⁹ Eu	138.070	¹⁹⁰ Gd	53.090	¹⁸⁰ Tb	-7.330	¹⁶⁹ Dy	-55.760		
¹³³ Sm	-57.620			²⁰⁰ Eu	146.060	¹⁹¹ Gd	61.180	¹⁸¹ Tb	-3.190	¹⁷⁰ Dy	-53.960		
¹³⁴ Sm	-61.590	¹²⁵ Eu	-7.590	²⁰¹ Eu	153.180	¹⁹² Gd	67.640	¹⁸² Tb	2.260	¹⁷¹ Dy	-50.280		
¹³⁵ Sm	-63.070	¹²⁶ Eu	-12.810	²⁰² Eu	161.380	¹⁹³ Gd	75.960	¹⁸³ Tb	6.590	¹⁷² Dy	-48.220		
¹³⁶ Sm	-66.520	¹²⁷ Eu	-19.700	²⁰³ Eu	168.630	¹⁹⁴ Gd	82.400	¹⁸⁴ Tb	12.410	¹⁷³ Dy	-44.240		
¹³⁷ Sm	-67.740	¹²⁸ Eu	-24.240	²⁰⁴ Eu	176.910	¹⁹⁵ Gd	90.760	¹⁸⁵ Tb	16.520	¹⁷⁴ Dy	-41.850		
¹³⁸ Sm	-70.830	¹²⁹ Eu	-30.300	²⁰⁵ Eu	184.010	¹⁹⁶ Gd	97.330	¹⁸⁶ Tb	21.960	¹⁷⁵ Dy	-37.490		
¹³⁹ Sm	-71.550	¹³⁰ Eu	-34.220	²⁰⁶ Eu	192.370	¹⁹⁷ Gd	105.500	¹⁸⁷ Tb	26.430	¹⁷⁶ Dy	-34.670		
¹⁴⁰ Sm	-74.510	¹³¹ Eu	-39.750	²⁰⁷ Eu	199.790	¹⁹⁸ Gd	112.080	¹⁸⁸ Tb	31.850	¹⁷⁷ Dy	-30.000		
¹⁴¹ Sm	-75.340	¹³² Eu	-43.160	²⁰⁸ Eu	208.000	¹⁹⁹ Gd	119.790	¹⁸⁹ Tb	36.200	¹⁷⁸ Dy	-26.920		
¹⁴² Sm	-78.660	¹³³ Eu	-48.030	²⁰⁹ Eu	215.570	²⁰⁰ Gd	126.150	¹⁹⁰ Tb	41.570	¹⁷⁹ Dy	-22.080		
¹⁴³ Sm	-79.440	¹³⁴ Eu	-50.660	²¹⁰ Eu	224.440	²⁰¹ Gd	134.180	¹⁹¹ Tb	46.170	¹⁸⁰ Dy	-18.770		
¹⁴⁴ Sm	-82.320	¹³⁵ Eu	-54.730	²¹¹ Eu	232.480	²⁰² Gd	140.880	¹⁹² Tb	53.980	¹⁸¹ Dy	-13.700		
¹⁴⁵ Sm	-80.790	¹³⁶ Eu	-56.740			²⁰³ Gd	149.050	¹⁹³ Tb	60.470	¹⁸² Dy	-10.010		
¹⁴⁶ Sm	-80.900	¹³⁷ Eu	-60.230	¹²⁸ Gd	-11.350	²⁰⁴ Gd	155.870	¹⁹⁴ Tb	68.280	¹⁸³ Dy	-4.550		
¹⁴⁷ Sm	-78.620	¹³⁸ Eu	-62.010	¹²⁹ Gd	-16.060	²⁰⁵ Gd	164.120	¹⁹⁵ Tb	74.750	¹⁸⁴ Dy	-0.640		
¹⁴⁸ Sm	-78.940	¹³⁹ Eu	-65.270	¹³⁰ Gd	-22.810	²⁰⁶ Gd	170.890	¹⁹⁶ Tb	82.560	¹⁸⁵ Dy	5.130		
¹⁴⁹ Sm	-77.220	¹⁴⁰ Eu	-66.400	¹³¹ Gd	-26.880	²⁰⁷ Gd	179.210	¹⁹⁷ Tb	89.070	¹⁸⁶ Dy	8.790		
¹⁵⁰ Sm	-77.470	¹⁴¹ Eu	-69.300	¹³² Gd	-33.150	²⁰⁸ Gd	186.130	¹⁹⁸ Tb	96.850	¹⁸⁷ Dy	14.270		
¹⁵¹ Sm	-75.500	¹⁴² Eu	-70.650	¹³³ Gd	-36.680	²⁰⁹ Gd	194.480	¹⁹⁹ Tb	105.540	¹⁸⁸ Dy	18.330		
¹⁵² Sm	-75.770	¹⁴³ Eu	-73.960	¹³⁴ Gd	-42.200	²¹⁰ Gd	201.740	²⁰⁰ Tb	110.690	¹⁸⁹ Dy	23.730		
¹⁵³ Sm	-73.720	¹⁴⁴ Eu	-75.190	¹³⁵ Gd	-44.940	²¹¹ Gd	210.420	²⁰¹ Tb	117.040	¹⁹⁰ Dy	27.690		
¹⁵⁴ Sm	-73.380	¹⁴⁵ Eu	-78.190	¹³⁶ Gd	-49.600	²¹² Gd	218.040	²⁰² Tb	124.660	¹⁹¹ Dy	32.980		
¹⁵⁵ Sm	-70.900	¹⁴⁶ Eu	-77.110	¹³⁷ Gd	-51.710	²¹³ Gd	227.250	²⁰³ Tb	131.300	¹⁹² Dy	37.300		
¹⁵⁶ Sm	-70.090	¹⁴⁷ Eu	-77.410	¹³⁸ Gd	-55.990	²¹⁴ Gd	235.170	²⁰⁴ Tb	139.110	¹⁹³ Dy	45.080		
¹⁵⁷ Sm	-67.130	¹⁴⁸ Eu	-75.780	¹³⁹ Gd	-57.680			²⁰⁵ Tb	145.850	¹⁹⁴ Dy	50.950		
¹⁵⁸ Sm	-65.820	¹⁴⁹ Eu	-76.290	¹⁴⁰ Gd	-61.560	¹³⁰ Tb	-5.600	²⁰⁶ Tb	153.730	¹⁹⁵ Dy	58.940		
¹⁵⁹ Sm	-62.620	¹⁵⁰ Eu	-75.080	¹⁴¹ Gd	-62.030	¹³¹ Tb	-12.750	²⁰⁷ Tb	160.720	¹⁹⁶ Dy	65.180		
¹⁶⁰ Sm	-60.950	¹⁵¹ Eu	-75.420	¹⁴² Gd	-66.210	¹³² Tb	-17.520	²⁰⁸ Tb	168.420	¹⁹⁷ Dy	73.010		
¹⁶¹ Sm	-57.380	¹⁵² Eu	-74.030	¹⁴³ Gd	-67.640	¹³³ Tb	-23.890	²⁰⁹ Tb	175.250	¹⁹⁸ Dy	79.100		
¹⁶² Sm	-55.360	¹⁵³ Eu	-74.280	¹⁴⁴ Gd	-71.330	¹³⁴ Tb	-28.110	²¹⁰ Tb	183.290	¹⁹⁹ Dy	86.850		
¹⁶³ Sm	-51.450	¹⁵⁴ Eu	-72.710	¹⁴⁵ Gd	-72.780	¹³⁵ Tb	-33.760	²¹¹ Tb	190.540	²⁰⁰ Dy	92.930		
¹⁶⁴ Sm	-49.050	¹⁵⁵ Eu	-72.460	¹⁴⁶ Gd	-76.250	¹³⁶ Tb	-37.110	²¹² Tb	198.950	²⁰¹ Dy	100.310		
¹⁶⁵ Sm	-44.580	¹⁵⁶ Eu	-70.470	¹⁴⁷ Gd	-75.240	¹³⁷ Tb	-41.800	²¹³ Tb	206.540	²⁰² Dy	106.250		
¹⁶⁶ Sm	-41.380	¹⁵⁷ Eu	-69.700	¹⁴⁸ Gd	-76.070	¹³⁸ Tb	-44.470	²¹⁴ Tb	215.340	²⁰³ Dy	113.870		
¹⁶⁷ Sm	-36.320	¹⁵⁸ Eu	-67.340	¹⁴⁹ Gd	-74.490	¹³⁹ Tb	-48.650	²¹⁵ Tb	223.180	²⁰⁴ Dy	120.120		
¹⁶⁸ Sm	-32.980	¹⁵⁹ Eu	-66.150	¹⁵⁰ Gd	-75.430	¹⁴⁰ Tb	-51.140	²¹⁶ Tb	231.880	²⁰⁵ Dy	127.870		
¹⁶⁹ Sm	-27.770	¹⁶⁰ Eu	-63.480	¹⁵¹ Gd	-74.220	¹⁴¹ Tb	-54.990	²¹⁷ Tb	239.820	²⁰⁶ Dy	134.210		
¹⁷⁰ Sm	-24.170	¹⁶¹ Eu	-61.950	¹⁵² Gd	-75.100	¹⁴² Tb	-55.960	²¹⁸ Tb	248.910	²⁰⁷ Dy	142.120		
¹⁷¹ Sm	-18.730	¹⁶² Eu	-58.870	¹⁵³ Gd	-73.680	¹⁴³ Tb	-60.090			²⁰⁸ Dy	148.640		
¹⁷² Sm	-14.830	¹⁶³ Eu	-56.950	¹⁵⁴ Gd	-74.460	¹⁴⁴ Tb	-62.050	¹³³ Dy	-9.380	²⁰⁹ Dy	156.620		
¹⁷³ Sm	-9.190	¹⁶⁴ Eu	-53.560	¹⁵⁵ Gd	-72.920	¹⁴⁵ Tb	-65.740	¹³⁴ Dy	-16.420	²¹⁰ Dy	162.960		
¹⁷⁴ Sm	-5.150	¹⁶⁵ Eu	-51.250	¹⁵⁶ Gd	-73.180	¹⁴⁶ Tb	-67.500	¹³⁵ Dy	-20.710	²¹¹ Dy	170.960		
¹⁷⁵ Sm	0.590	¹⁶⁶ Eu	-47.340	¹⁵⁷ Gd	-71.240	¹⁴⁷ Tb	-71.180	¹³⁶ Dy	-27.020	²¹² Dy	177.700		
¹⁷⁶ Sm	4.760	¹⁶⁷ Eu	-44.370	¹⁵⁸ Gd	-71.020	¹⁴⁸ Tb	-70.560	¹³⁷ Dy	-30.480	²¹³ Dy	186.080		
¹⁷⁷ Sm	10.770	¹⁶⁸ Eu	-39.870	¹⁵⁹ Gd	-68.740	¹⁴⁹ Tb	-71.590	¹³⁸ Dy	-35.790	²¹⁴ Dy	193.320		
¹⁷⁸ Sm	15.330	¹⁶⁹ Eu	-36.460	¹⁶⁰ Gd	-68.120	¹⁵⁰ Tb	-70.670	¹³⁹ Dy	-38.620				

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
²¹⁵ Dy	201.990	²⁰⁴ Ho	105.380	¹⁹² Er	14.540	¹⁸⁰ Tm	-39.080	¹⁶⁷ Yb	-61.030	¹⁵³ Lu	-38.840		
²¹⁶ Dy	209.430	²⁰⁵ Ho	111.590	¹⁹³ Er	19.430	¹⁸¹ Tm	-36.520	¹⁶⁸ Yb	-61.990	¹⁵⁴ Lu	-40.150		
²¹⁷ Dy	218.090	²⁰⁶ Ho	118.960	¹⁹⁴ Er	23.390	¹⁸² Tm	-32.670	¹⁶⁹ Yb	-60.800	¹⁵⁵ Lu	-43.040		
²¹⁸ Dy	225.610	²⁰⁷ Ho	125.270	¹⁹⁵ Er	30.730	¹⁸³ Tm	-29.860	¹⁷⁰ Yb	-61.290	¹⁵⁶ Lu	-43.790		
²¹⁹ Dy	234.800	²⁰⁸ Ho	132.770	¹⁹⁶ Er	36.140	¹⁸⁴ Tm	-25.680	¹⁷¹ Yb	-59.730	¹⁵⁷ Lu	-46.590		
²²⁰ Dy	242.690	²⁰⁹ Ho	139.370	¹⁹⁷ Er	43.950	¹⁸⁵ Tm	-22.520	¹⁷² Yb	-59.800	¹⁵⁸ Lu	-47.490		
²²¹ Dy	252.070	²¹⁰ Ho	146.870	¹⁹⁸ Er	49.710	¹⁸⁶ Tm	-17.980	¹⁷³ Yb	-57.830	¹⁵⁹ Lu	-49.920		
		²¹¹ Ho	153.220	¹⁹⁹ Er	57.180	¹⁸⁷ Tm	-14.370	¹⁷⁴ Yb	-57.350	¹⁶⁰ Lu	-50.520		
¹³⁶ Ho	-11.270	²¹² Ho	160.840	²⁰⁰ Er	62.810	¹⁸⁸ Tm	-9.570	¹⁷⁵ Yb	-55.060	¹⁶¹ Lu	-52.720		
¹³⁷ Ho	-17.710	²¹³ Ho	167.700	²⁰¹ Er	70.140	¹⁸⁹ Tm	-6.440	¹⁷⁶ Yb	-54.290	¹⁶² Lu	-53.040		
¹³⁸ Ho	-21.750	²¹⁴ Ho	175.620	²⁰² Er	75.770	¹⁹⁰ Tm	-1.720	¹⁷⁷ Yb	-51.650	¹⁶³ Lu	-54.900		
¹³⁹ Ho	-27.160	²¹⁵ Ho	182.730	²⁰³ Er	82.860	¹⁹¹ Tm	1.850	¹⁷⁸ Yb	-50.480	¹⁶⁴ Lu	-55.040		
¹⁴⁰ Ho	-30.520	²¹⁶ Ho	190.970	²⁰⁴ Er	88.440	¹⁹² Tm	6.360	¹⁷⁹ Yb	-47.290	¹⁶⁵ Lu	-56.780		
¹⁴¹ Ho	-35.280	²¹⁷ Ho	198.310	²⁰⁵ Er	95.640	¹⁹³ Tm	9.920	¹⁸⁰ Yb	-45.610	¹⁶⁶ Lu	-56.650		
¹⁴² Ho	-38.430	²¹⁸ Ho	206.550	²⁰⁶ Er	101.460	¹⁹⁴ Tm	14.420	¹⁸¹ Yb	-42.080	¹⁶⁷ Lu	-57.910		
¹⁴³ Ho	-42.850	²¹⁹ Ho	214.010	²⁰⁷ Er	108.840	¹⁹⁵ Tm	18.280	¹⁸² Yb	-40.100	¹⁶⁸ Lu	-57.460		
¹⁴⁴ Ho	-44.240	²²⁰ Ho	222.690	²⁰⁸ Er	114.770	¹⁹⁶ Tm	25.280	¹⁸³ Yb	-36.190	¹⁶⁹ Lu	-58.490		
¹⁴⁵ Ho	-48.990	²²¹ Ho	230.640	²⁰⁹ Er	122.220	¹⁹⁷ Tm	30.660	¹⁸⁴ Yb	-33.970	¹⁷⁰ Lu	-55.730		
¹⁴⁶ Ho	-51.570	²²² Ho	239.600	²¹⁰ Er	128.400	¹⁹⁸ Tm	38.110	¹⁸⁵ Yb	-29.900	¹⁷¹ Lu	-58.290		
¹⁴⁷ Ho	-55.760	²²³ Ho	247.630	²¹¹ Er	136.060	¹⁹⁹ Tm	44.020	¹⁸⁶ Yb	-27.120	¹⁷² Lu	-57.230		
¹⁴⁸ Ho	-58.000	²²⁴ Ho	256.620	²¹² Er	142.200	²⁰⁰ Tm	50.800	¹⁸⁷ Yb	-22.650	¹⁷³ Lu	-57.320		
¹⁴⁹ Ho	-62.170			²¹³ Er	149.630	²⁰¹ Tm	56.470	¹⁸⁸ Yb	-19.540	¹⁷⁴ Lu	-55.900		
¹⁵⁰ Ho	-62.240	¹³⁸ Er	-9.870	²¹⁴ Er	155.960	²⁰² Tm	63.450	¹⁸⁹ Yb	-14.730	¹⁷⁵ Lu	-55.530		
¹⁵¹ Ho	-63.960	¹³⁹ Er	-14.060	²¹⁵ Er	163.900	²⁰³ Tm	69.080	¹⁹⁰ Yb	-12.040	¹⁷⁶ Lu	-53.720		
¹⁵² Ho	-63.640	¹⁴⁰ Er	-19.980	²¹⁶ Er	170.580	²⁰⁴ Tm	75.800	¹⁹¹ Yb	-7.390	¹⁷⁷ Lu	-53.150		
¹⁵³ Ho	-65.250	¹⁴¹ Er	-23.500	²¹⁷ Er	178.750	²⁰⁵ Tm	81.400	¹⁹² Yb	-4.280	¹⁷⁸ Lu	-51.010		
¹⁵⁴ Ho	-65.080	¹⁴² Er	-28.870	²¹⁸ Er	185.640	²⁰⁶ Tm	88.190	¹⁹³ Yb	0.160	¹⁷⁹ Lu	-49.940		
¹⁵⁵ Ho	-66.640	¹⁴³ Er	-31.960	²¹⁹ Er	193.840	²⁰⁷ Tm	93.980	¹⁹⁴ Yb	3.290	¹⁸⁰ Lu	-47.240		
¹⁵⁶ Ho	-66.290	¹⁴⁴ Er	-36.920	²²⁰ Er	200.900	²⁰⁸ Tm	100.960	¹⁹⁵ Yb	7.750	¹⁸¹ Lu	-45.690		
¹⁵⁷ Ho	-67.580	¹⁴⁵ Er	-38.510	²²¹ Er	209.600	²⁰⁹ Tm	106.860	¹⁹⁶ Yb	11.250	¹⁸² Lu	-42.670		
¹⁵⁸ Ho	-67.030	¹⁴⁶ Er	-43.840	²²² Er	217.050	²¹⁰ Tm	113.920	¹⁹⁷ Yb	18.050	¹⁸³ Lu	-40.680		
¹⁵⁹ Ho	-67.850	¹⁴⁷ Er	-46.490	²²³ Er	225.940	²¹¹ Tm	120.070	¹⁹⁸ Yb	23.130	¹⁸⁴ Lu	-37.520		
¹⁶⁰ Ho	-66.980	¹⁴⁸ Er	-51.230	²²⁴ Er	233.520	²¹² Tm	127.280	¹⁹⁹ Yb	30.690	¹⁸⁵ Lu	-35.200		
¹⁶¹ Ho	-67.470	¹⁴⁹ Er	-53.580	²²⁵ Er	242.530	²¹³ Tm	133.390	²⁰⁰ Yb	36.130	¹⁸⁶ Lu	-31.630		
¹⁶² Ho	-66.260	¹⁵⁰ Er	-58.270	²²⁶ Er	250.210	²¹⁴ Tm	140.790	²⁰¹ Yb	43.010	¹⁸⁷ Lu	-28.980		
¹⁶³ Ho	-66.430	¹⁵¹ Er	-58.420	²²⁷ Er	259.200	²¹⁵ Tm	146.900	²⁰² Yb	48.330	¹⁸⁸ Lu	-24.990		
¹⁶⁴ Ho	-64.890	¹⁵² Er	-60.670			²¹⁶ Tm	154.320	²⁰³ Yb	55.180	¹⁸⁹ Lu	-21.910		
¹⁶⁵ Ho	-64.720	¹⁵³ Er	-60.480	¹⁴¹ Tm	-10.360	²¹⁷ Tm	161.040	²⁰⁴ Yb	60.620	¹⁹⁰ Lu	-17.380		
¹⁶⁶ Ho	-62.880	¹⁵⁴ Er	-62.460	¹⁴² Tm	-14.380	²¹⁸ Tm	168.810	²⁰⁵ Yb	67.440	¹⁹¹ Lu	-14.750		
¹⁶⁷ Ho	-62.210	¹⁵⁵ Er	-62.240	¹⁴³ Tm	-19.780	²¹⁹ Tm	175.670	²⁰⁶ Yb	72.680	¹⁹² Lu	-10.560		
¹⁶⁸ Ho	-60.020	¹⁵⁶ Er	-64.220	¹⁴⁴ Tm	-23.600	²²⁰ Tm	183.490	²⁰⁷ Yb	79.470	¹⁹³ Lu	-7.500		
¹⁶⁹ Ho	-59.000	¹⁵⁷ Er	-63.860	¹⁴⁵ Tm	-28.630	²²¹ Tm	190.510	²⁰⁸ Yb	84.880	¹⁹⁴ Lu	-5.520		
¹⁷⁰ Ho	-56.340	¹⁵⁸ Er	-65.560	¹⁴⁶ Tm	-30.620	²²² Tm	198.800	²⁰⁹ Yb	91.840	¹⁹⁵ Lu	-0.410		
¹⁷¹ Ho	-54.660	¹⁵⁹ Er	-65.070	¹⁴⁷ Tm	-36.000	²²³ Tm	206.210	²¹⁰ Yb	97.360	¹⁹⁶ Lu	3.690		
¹⁷² Ho	-51.530	¹⁶⁰ Er	-66.480	¹⁴⁸ Tm	-39.220	²²⁴ Tm	214.660	²¹¹ Yb	104.460	¹⁹⁷ Lu	7.210		
¹⁷³ Ho	-49.610	¹⁶¹ Er	-65.620	¹⁴⁹ Tm	-44.020	²²⁵ Tm	222.230	²¹² Yb	110.180	¹⁹⁸ Lu	13.470		
¹⁷⁴ Ho	-46.190	¹⁶² Er	-66.640	¹⁵⁰ Tm	-46.620	²²⁶ Tm	230.790	²¹³ Yb	117.370	¹⁹⁹ Lu	18.530		
¹⁷⁵ Ho	-43.840	¹⁶³ Er	-65.500	¹⁵¹ Tm	-51.300	²²⁷ Tm	238.420	²¹⁴ Yb	123.250	²⁰⁰ Lu	25.610		
¹⁷⁶ Ho	-39.950	¹⁶⁴ Er	-66.180	¹⁵² Tm	-52.020	²²⁸ Tm	247.050	²¹⁵ Yb	130.490	²⁰¹ Lu	31.130		
¹⁷⁷ Ho	-37.170	¹⁶⁵ Er	-64.760	¹⁵³ Tm	-54.310	²²⁹ Tm	254.750	²¹⁶ Yb	136.260	²⁰² Lu	37.620		
¹⁷⁸ Ho	-32.970	¹⁶⁶ Er	-65.100	¹⁵⁴ Tm	-54.760	²³⁰ Tm	263.470	²¹⁷ Yb	143.780	²⁰³ Lu	42.930		
¹⁷⁹ Ho	-29.860	¹⁶⁷ Er	-63.350	¹⁵⁵ Tm	-56.820			²¹⁸ Yb	150.020	²⁰⁴ Lu	49.430		
¹⁸⁰ Ho	-25.500	¹⁶⁸ Er	-63.240	¹⁵⁶ Tm	-57.160	¹⁴³ Yb	-6.290	²¹⁹ Yb	157.710	²⁰⁵ Lu	54.840		
¹⁸¹ Ho	-22.190	¹⁶⁹ Er	-61.150	¹⁵⁷ Tm	-59.180	¹⁴⁴ Yb	-12.280	²²⁰ Yb	164.180	²⁰⁶ Lu	61.280		
¹⁸² Ho	-17.560	¹⁷⁰ Er	-60.580	¹⁵⁸ Tm	-59.300	¹⁴⁵ Yb	-16.120	²²¹ Yb	171.980	²⁰⁷ Lu	66.560		
¹⁸³ Ho	-13.880	¹⁷¹ Er	-58.060	¹⁵⁹ Tm	-61.040	¹⁴⁶ Yb	-20.170	²²² Yb	178.630	²⁰⁸ Lu	73.040		
¹⁸⁴ Ho	-8.900	¹⁷² Er	-56.930	¹⁶⁰ Tm	-60.910	¹⁴⁷ Yb	-23.950	²²³ Yb	186.910	²⁰⁹ Lu	78.380		
¹⁸⁵ Ho	-4.860	¹⁷³ Er	-53.920	¹⁶¹ Tm	-62.400	¹⁴⁸ Yb	-29.940	²²⁴ Yb	193.940	²¹⁰ Lu	84.940		
¹⁸⁶ Ho	0.400	¹⁷⁴ Er	-52.520	¹⁶² Tm	-62.060	¹⁴⁹ Yb	-33.210	²²⁵ Yb	202.360	²¹¹ Lu	90.450		
¹⁸⁷ Ho	4.020	¹⁷⁵ Er	-49.210	¹⁶³ Tm	-63.120	¹⁵⁰ Yb	-38.620	²²⁶ Yb	209.500	²¹² Lu	97.170		
¹⁸⁸ Ho	9.150	¹⁷⁶ Er	-47.400	¹⁶⁴ Tm	-62.530	¹⁵¹ Yb	-41.280	²²⁷ Yb	217.990	²¹³ Lu	102.840		
¹⁸⁹ Ho	13.160	¹⁷⁷ Er	-43.610	¹⁶⁵ Tm	-63.270	¹⁵² Yb	-46.540	²²⁸ Yb	225.240	²¹⁴ Lu	109.680		
¹⁹⁰ Ho	18.140	¹⁷⁸ Er	-41.310	¹⁶⁶ Tm	-62.350	¹⁵³ Yb	-47.300	²²⁹ Yb	233.720	²¹⁵ Lu	115.520		
¹⁹¹ Ho	22.100	¹⁷⁹ Er	-37.230	¹⁶⁷ Tm	-62.790	¹⁵⁴ Yb	-50.130	²³⁰ Yb	240.990	²¹⁶ Lu	122.410		
¹⁹² Ho	27.130	¹⁸⁰ Er	-34.620	¹⁶⁸ Tm	-61.580	¹⁵⁵ Yb	-50.260	²³¹ Yb	249.630	²¹⁷ Lu	128.440		
¹⁹³ Ho	31.350	¹⁸¹ Er	-30.330	¹⁶⁹ Tm	-61.530	¹⁵⁶ Yb	-53.050	²³² Yb	257.100	²¹⁸ Lu	135.590		
¹⁹⁴ Ho	38.710	¹⁸² Er	-27.490	¹⁷⁰ Tm	-59.940	¹⁵⁷ Yb	-53.450	²³³ Yb	266.350	²¹⁹ Lu	141.460		
¹⁹⁵ Ho	44.620	¹⁸³ Er	-22.870	¹⁷¹ Tm	-59.490	¹⁵⁸ Yb	-55.810	²³⁴ Yb	274.470	²²⁰ Lu	148.820		
¹⁹⁶ Ho	52.390	¹⁸⁴ Er	-19.630	¹⁷² Tm	-57.440	¹⁵⁹ Yb	-55.930			²²¹ Lu	155.240		
¹⁹⁷ Ho	58.510	¹⁸⁵ Er	-14.680	¹⁷³ Tm	-56.450	¹⁶⁰ Yb	-58.140	¹⁴⁶ Lu	-6.430	²²² Lu	162.660		
¹⁹⁸ Ho	65.850	¹⁸⁶ Er	-11.050	¹⁷⁴ Tm	-53.960	¹⁶¹ Yb	-58.010	¹⁴⁷ Lu	-10.800	²²³ Lu	169.270		
¹⁹⁹ Ho	71.880	¹⁸⁷ Er	-5.880	¹⁷⁵ Tm	-52.700	¹⁶² Yb	-59.900	¹⁴⁸ Lu	-15.080	²²⁴ Lu	177.170		
²⁰⁰ Ho	79.230	¹⁸⁸ Er	-2.680	¹⁷⁶ Tm	-49.970	¹⁶³ Yb	-59.640	¹⁴⁹ Lu	-21.140	²²⁵ Lu	184.140		
²⁰¹ Ho	85.220	¹⁸⁹ Er	2.440	¹⁷⁷ Tm	-48.210	¹⁶⁴ Yb	-61.250	¹⁵⁰ Lu	-24.920	²²⁶ Lu	192.200		
²⁰² Ho	92.220	¹⁹⁰ Er	6.020	¹⁷⁸ Tm	-44.930	¹⁶⁵ Yb	-60.650	¹⁵¹ Lu	-30.340	²²⁷ Lu	199.320		
²⁰³ Ho	98.170	¹⁹¹ Er	10.980	¹⁷⁹ Tm	-42.720	¹⁶⁶ Yb	-61.950						

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
²²⁶ Lu	207.440	²¹⁴ Hf	93.990	¹⁹⁹ Ta	-2.120	¹⁸⁴ W	-46.390	¹⁶⁷ Re	-35.040	²⁴² Re	241.490
²²⁹ Lu	214.610	²¹⁵ Hf	100.810	²⁰⁰ Ta	3.690	¹⁸⁵ W	-44.030	¹⁶⁸ Re	-36.110	²⁴³ Re	248.800
²³⁰ Lu	222.710	²¹⁶ Hf	106.250	²⁰¹ Ta	8.270	¹⁸⁶ W	-43.330	¹⁶⁹ Re	-38.630	²⁴⁴ Re	257.090
²³¹ Lu	229.910	²¹⁷ Hf	113.180	²⁰² Ta	14.810	¹⁸⁷ W	-40.730	¹⁷⁰ Re	-39.360	²⁴⁵ Re	265.140
²³² Lu	238.150	²¹⁸ Hf	118.820	²⁰³ Ta	19.880	¹⁸⁸ W	-39.600	¹⁷¹ Re	-41.650	²⁴⁶ Re	275.020
²³³ Lu	245.560	²¹⁹ Hf	125.970	²⁰⁴ Ta	26.220	¹⁸⁹ W	-36.680	¹⁷² Re	-42.120	²⁴⁷ Re	282.390
²³⁴ Lu	254.490	²²⁰ Hf	131.770	²⁰⁵ Ta	31.210	¹⁹⁰ W	-35.110	¹⁷³ Re	-44.020	²⁴⁸ Re	291.340
²³⁵ Lu	262.420	²²¹ Hf	138.850	²⁰⁶ Ta	37.400	¹⁹¹ W	-32.170	¹⁷⁴ Re	-44.240	²⁴⁹ Re	298.720
²³⁶ Lu	271.520	²²² Hf	144.850	²⁰⁷ Ta	42.290	¹⁹² W	-30.470	¹⁷⁵ Re	-45.810	²⁵⁰ Re	307.220
²³⁷ Lu	279.640	²²³ Hf	152.320	²⁰⁸ Ta	48.660	¹⁹³ W	-26.170	¹⁷⁶ Re	-45.690	¹⁵⁹ Os	-4.330
¹⁴⁹ Hf	-7.260	²²⁴ Hf	158.480	²⁰⁹ Ta	53.580	¹⁹⁴ W	-24.550	¹⁷⁷ Re	-46.920	¹⁶⁰ Os	-9.070
¹⁵⁰ Hf	-13.980	²²⁵ Hf	166.480	²¹⁰ Ta	59.710	¹⁹⁵ W	-21.040	¹⁷⁸ Re	-46.470	¹⁶¹ Os	-10.710
¹⁵¹ Hf	-17.850	²²⁶ Hf	173.010	²¹¹ Ta	64.780	¹⁹⁶ W	-19.220	¹⁷⁹ Re	-47.410	¹⁶² Os	-14.690
¹⁵² Hf	-23.900	²²⁷ Hf	181.330	²¹² Ta	70.910	¹⁹⁷ W	-15.680	¹⁸⁰ Re	-46.620	¹⁶³ Os	-16.410
¹⁵³ Hf	-27.260	²²⁸ Hf	187.990	²¹³ Ta	76.010	¹⁹⁸ W	-13.610	¹⁸¹ Re	-47.240	¹⁶⁴ Os	-20.240
¹⁵⁴ Hf	-33.250	²²⁹ Hf	196.020	²¹⁴ Ta	82.340	¹⁹⁹ W	-10.010	¹⁸² Re	-46.180	¹⁶⁵ Os	-21.840
¹⁵⁵ Hf	-34.530	²³⁰ Hf	202.560	²¹⁵ Ta	87.640	²⁰⁰ W	-7.340	¹⁸³ Re	-46.330	¹⁶⁶ Os	-25.440
¹⁵⁶ Hf	-37.990	²³¹ Hf	210.600	²¹⁶ Ta	94.140	²⁰¹ W	-1.530	¹⁸⁴ Re	-44.740	¹⁶⁷ Os	-26.770
¹⁵⁷ Hf	-38.820	²³² Hf	217.400	²¹⁷ Ta	99.550	²⁰² W	2.560	¹⁸⁵ Re	-44.330	¹⁶⁸ Os	-30.020
¹⁵⁸ Hf	-41.800	²³³ Hf	225.590	²¹⁸ Ta	106.220	²⁰³ W	8.940	¹⁸⁶ Re	-42.440	¹⁶⁹ Os	-30.970
¹⁵⁹ Hf	-42.830	²³⁴ Hf	232.600	²¹⁹ Ta	111.830	²⁰⁴ W	13.620	¹⁸⁷ Re	-41.710	¹⁷⁰ Os	-33.980
¹⁶⁰ Hf	-45.740	²³⁵ Hf	241.440	²²⁰ Ta	118.560	²⁰⁵ W	20.220	¹⁸⁸ Re	-39.610	¹⁷¹ Os	-34.770
¹⁶¹ Hf	-46.320	²³⁶ Hf	249.110	²²¹ Ta	124.340	²⁰⁶ W	24.840	¹⁸⁹ Re	-38.510	¹⁷² Os	-37.450
¹⁶² Hf	-48.980	²³⁷ Hf	258.020	²²² Ta	131.250	²⁰⁷ W	31.240	¹⁹⁰ Re	-36.130	¹⁷³ Os	-37.920
¹⁶³ Hf	-49.320	²³⁸ Hf	265.780	²²³ Ta	137.230	²⁰⁸ W	35.710	¹⁹¹ Re	-34.950	¹⁷⁴ Os	-40.340
¹⁶⁴ Hf	-51.630	²³⁹ Hf	274.820	²²⁴ Ta	144.360	²⁰⁹ W	41.970	¹⁹² Re	-32.490	¹⁷⁵ Os	-40.350
¹⁶⁵ Hf	-51.730	²⁴⁰ Hf	284.420	²²⁵ Ta	150.260	²¹⁰ W	46.720	¹⁹³ Re	-30.900	¹⁷⁶ Os	-42.450
¹⁶⁶ Hf	-53.820	¹⁵¹ Ta	-4.330	²²⁶ Ta	158.120	²¹¹ W	52.920	¹⁹⁴ Re	-27.600	¹⁷⁷ Os	-42.300
¹⁶⁷ Hf	-53.740	¹⁵² Ta	-8.780	²²⁷ Ta	164.570	²¹² W	57.580	¹⁹⁵ Re	-25.410	¹⁷⁸ Os	-44.040
¹⁶⁸ Hf	-55.550	¹⁵³ Ta	-14.920	²²⁸ Ta	172.370	²¹³ W	63.810	¹⁹⁶ Re	-22.340	¹⁷⁹ Os	-43.560
¹⁶⁹ Hf	-55.110	¹⁵⁴ Ta	-18.780	²²⁹ Ta	178.980	²¹⁴ W	68.540	¹⁹⁷ Re	-20.660	¹⁸⁰ Os	-45.060
¹⁷⁰ Hf	-56.580	¹⁵⁵ Ta	-24.870	²³⁰ Ta	186.620	²¹⁵ W	74.880	¹⁹⁸ Re	-17.530	¹⁸¹ Os	-44.260
¹⁷¹ Hf	-55.850	¹⁵⁶ Ta	-26.640	²³¹ Ta	193.280	²¹⁶ W	79.810	¹⁹⁹ Re	-15.500	¹⁸² Os	-45.390
¹⁷² Hf	-56.890	¹⁵⁷ Ta	-30.220	²³² Ta	200.780	²¹⁷ W	86.290	²⁰⁰ Re	-12.130	¹⁸³ Os	-44.330
¹⁷³ Hf	-55.820	¹⁵⁸ Ta	-31.440	²³³ Ta	207.510	²¹⁸ W	91.330	²⁰¹ Re	-9.530	¹⁸⁴ Os	-45.020
¹⁷⁴ Hf	-56.470	¹⁵⁹ Ta	-34.620	²³⁴ Ta	215.350	²¹⁹ W	97.920	²⁰² Re	-4.190	¹⁸⁵ Os	-43.450
¹⁷⁵ Hf	-55.090	¹⁶⁰ Ta	-36.090	²³⁵ Ta	222.300	²²⁰ W	103.210	²⁰³ Re	0.000	¹⁸⁶ Os	-43.560
¹⁷⁶ Hf	-55.260	¹⁶¹ Ta	-38.970	²³⁶ Ta	230.760	²²¹ W	109.920	²⁰⁴ Re	6.050	¹⁸⁷ Os	-41.720
¹⁷⁷ Hf	-53.540	¹⁶² Ta	-40.090	²³⁷ Ta	238.240	²²² W	115.360	²⁰⁵ Re	10.560	¹⁸⁸ Os	-41.350
¹⁷⁸ Hf	-53.450	¹⁶³ Ta	-42.750	²³⁸ Ta	246.860	²²³ W	122.250	²⁰⁶ Re	16.570	¹⁸⁹ Os	-39.260
¹⁷⁹ Hf	-51.400	¹⁶⁴ Ta	-43.550	²³⁹ Ta	254.570	²²⁴ W	127.870	²⁰⁷ Re	21.180	¹⁹⁰ Os	-38.690
¹⁸⁰ Hf	-50.790	¹⁶⁵ Ta	-45.880	²⁴⁰ Ta	263.860	²²⁵ W	135.000	²⁰⁸ Re	27.160	¹⁹¹ Os	-36.530
¹⁸¹ Hf	-48.170	¹⁶⁶ Ta	-46.420	²⁴¹ Ta	272.550	²²⁶ W	140.850	²⁰⁹ Re	31.720	¹⁹² Os	-36.020
¹⁸² Hf	-47.160	¹⁶⁷ Ta	-48.520	²⁴² Ta	281.490	²²⁷ W	148.380	²¹⁰ Re	37.610	¹⁹³ Os	-33.620
¹⁸³ Hf	-44.230	¹⁶⁸ Ta	-48.800	²⁴³ Ta	289.210	²²⁸ W	154.590	²¹¹ Re	42.400	¹⁹⁴ Os	-32.620
¹⁸⁴ Hf	-42.820	¹⁶⁹ Ta	-50.670	¹⁵⁴ W	-7.650	²²⁹ W	162.190	²¹² Re	48.260	¹⁹⁵ Os	-29.610
¹⁸⁵ Hf	-39.500	¹⁷⁰ Ta	-50.690	¹⁵⁵ W	-11.700	²³⁰ W	168.400	²¹³ Re	52.950	¹⁹⁶ Os	-27.970
¹⁸⁶ Hf	-37.920	¹⁷¹ Ta	-52.190	¹⁵⁶ W	-18.170	²³¹ W	176.020	²¹⁴ Re	58.830	¹⁹⁷ Os	-25.090
¹⁸⁷ Hf	-34.420	¹⁷² Ta	-51.890	¹⁵⁷ W	-20.160	²³² W	182.300	²¹⁵ Re	63.560	¹⁹⁸ Os	-23.900
¹⁸⁸ Hf	-32.290	¹⁷³ Ta	-52.970	¹⁵⁸ W	-24.280	²³³ W	189.910	²¹⁶ Re	69.510	¹⁹⁹ Os	-20.850
¹⁸⁹ Hf	-28.300	¹⁷⁴ Ta	-52.320	¹⁵⁹ W	-25.420	²³⁴ W	196.290	²¹⁷ Re	74.440	²⁰⁰ Os	-19.290
¹⁹⁰ Hf	-26.010	¹⁷⁵ Ta	-53.040	¹⁶⁰ W	-29.040	²³⁵ W	204.090	²¹⁸ Re	80.560	²⁰¹ Os	-16.140
¹⁹¹ Hf	-21.470	¹⁷⁶ Ta	-52.140	¹⁶¹ W	-30.430	²³⁶ W	210.650	²¹⁹ Re	85.590	²⁰² Os	-13.900
¹⁹² Hf	-19.310	¹⁷⁷ Ta	-52.390	¹⁶² W	-33.850	²³⁷ W	218.950	²²⁰ Re	91.840	²⁰³ Os	-8.640
¹⁹³ Hf	-15.220	¹⁷⁸ Ta	-51.130	¹⁶³ W	-35.000	²³⁸ W	226.160	²²¹ Re	97.050	²⁰⁴ Os	-4.890
¹⁹⁴ Hf	-12.770	¹⁷⁹ Ta	-51.210	¹⁶⁴ W	-38.110	²³⁹ W	234.840	²²² Re	103.460	²⁰⁵ Os	1.110
¹⁹⁵ Hf	-8.740	¹⁸⁰ Ta	-49.590	¹⁶⁵ W	-38.950	²⁴⁰ W	242.390	²²³ Re	108.860	²⁰⁶ Os	5.250
¹⁹⁶ Hf	-6.090	¹⁸¹ Ta	-49.090	¹⁶⁶ W	-41.740	²⁴¹ W	251.190	²²⁴ Re	115.370	²⁰⁷ Os	11.390
¹⁹⁷ Hf	-2.000	¹⁸² Ta	-47.000	¹⁶⁷ W	-42.310	²⁴² W	259.530	²²⁵ Re	121.010	²⁰⁸ Os	15.660
¹⁹⁸ Hf	1.060	¹⁸³ Ta	-46.000	¹⁶⁸ W	-44.830	²⁴³ W	268.150	²²⁶ Re	127.720	²⁰⁹ Os	21.820
¹⁹⁹ Hf	7.300	¹⁸⁴ Ta	-43.640	¹⁶⁹ W	-45.110	²⁴⁴ W	275.330	²²⁷ Re	133.550	²¹⁰ Os	26.040
²⁰⁰ Hf	11.930	¹⁸⁵ Ta	-42.330	¹⁷⁰ W	-47.400	²⁴⁵ W	286.500	²²⁸ Re	140.750	²¹¹ Os	31.940
²⁰¹ Hf	18.790	¹⁸⁶ Ta	-39.640	¹⁷¹ W	-47.400	²⁴⁶ W	293.780	²²⁹ Re	146.820	²¹² Os	36.260
²⁰² Hf	23.980	¹⁸⁷ Ta	-38.150	¹⁷² W	-49.310	²⁴⁷ W	303.290	²³⁰ Re	154.050	²¹³ Os	42.330
²⁰³ Hf	30.780	¹⁸⁸ Ta	-35.030	¹⁷³ W	-49.020	¹⁵⁶ Re	-2.460	²³¹ Re	160.260	²¹⁴ Os	46.680
²⁰⁴ Hf	35.710	¹⁸⁹ Ta	-33.030	¹⁷⁴ W	-50.550	¹⁵⁷ Re	-9.060	²³² Re	167.610	²¹⁵ Os	52.600
²⁰⁵ Hf	42.340	¹⁹⁰ Ta	-29.530	¹⁷⁵ W	-49.900	¹⁵⁸ Re	-11.490	²³³ Re	173.850	²¹⁶ Os	57.000
²⁰⁶ Hf	47.180	¹⁹¹ Ta	-27.470	¹⁷⁶ W	-51.140	¹⁵⁹ Re	-15.710	²³⁴ Re	181.150	²¹⁷ Os	63.030
²⁰⁷ Hf	53.890	¹⁹² Ta	-23.150	¹⁷⁷ W	-50.220	¹⁶⁰ Re	-17.480	²³⁵ Re	187.420	²¹⁸ Os	67.580
²⁰⁸ Hf	58.810	¹⁹³ Ta	-21.050	¹⁷⁸ W	-51.050	¹⁶¹ Re	-21.030	²³⁶ Re	194.940	²¹⁹ Os	73.740
²⁰⁹ Hf	65.270	¹⁹⁴ Ta	-17.440	¹⁷⁹ W	-49.830	¹⁶² Re	-22.960	²³⁷ Re	201.420	²²⁰ Os	78.360
²¹⁰ Hf	70.300	¹⁹⁵ Ta	-15.070	¹⁸⁰ W	-50.410	¹⁶³ Re	-26.330	²³⁸ Re	209.400	²²¹ Os	84.620
²¹¹ Hf	76.860	¹⁹⁶ Ta	-11.470	¹⁸¹ W	-48.850	¹⁶⁴ Re	-27.890	²³⁹ Re	216.630	²²² Os	89.480
²¹² Hf	81.960	¹⁹⁷ Ta	-8.860	¹⁸² W	-48.840	¹⁶⁵ Re	-31.030	²⁴⁰ Re	224.900	²²³ Os	95.840
²¹³ Hf	88.670	¹⁹⁸ Ta	-5.170	¹⁸³ W	-46.830	¹⁶⁶ Re	-32.300	²⁴¹ Re	232.800	²²⁴ Os	100.850

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
²²⁵ Os	107.400	²⁰⁸ Ir	8.640	¹⁹¹ Pt	-35.090	¹⁷² Au	-9.550	²⁴⁷ Au	210.560	²²⁸ Hg	78.070		
²²⁶ Os	112.640	²⁰⁹ Ir	12.890	¹⁹² Pt	-35.540	¹⁷³ Au	-12.870	²⁴⁸ Au	218.200	²²⁹ Hg	83.920		
²²⁷ Os	119.390	²¹⁰ Ir	18.710	¹⁹³ Pt	-33.880	¹⁷⁴ Au	-14.300	²⁴⁹ Au	224.540	²³⁰ Hg	88.460		
²²⁸ Os	124.860	²¹¹ Ir	22.930	¹⁹⁴ Pt	-34.130	¹⁷⁵ Au	-17.340	²⁵⁰ Au	230.820	²³¹ Hg	94.530		
²²⁹ Os	132.040	²¹² Ir	28.500	¹⁹⁵ Pt	-32.290	¹⁷⁶ Au	-18.520	²⁵¹ Au	237.450	²³² Hg	99.290		
²³⁰ Os	137.760	²¹³ Ir	32.800	¹⁹⁶ Pt	-32.270	¹⁷⁷ Au	-21.320	²⁵² Au	245.170	²³³ Hg	105.830		
²³¹ Os	145.000	²¹⁴ Ir	38.610	¹⁹⁷ Pt	-30.010	¹⁷⁸ Au	-22.280	²⁵³ Au	253.030	²³⁴ Hg	110.910		
²³² Os	150.890	²¹⁵ Ir	42.930	¹⁹⁸ Pt	-29.640	¹⁷⁹ Au	-24.820	²⁵⁴ Au	260.850	²³⁵ Hg	117.580		
²³³ Os	158.300	²¹⁶ Ir	48.610	¹⁹⁹ Pt	-27.490	¹⁸⁰ Au	-25.530	²⁵⁵ Au	266.770	²³⁶ Hg	122.730		
²³⁴ Os	164.190	²¹⁷ Ir	52.970	²⁰⁰ Pt	-26.730	¹⁸¹ Au	-27.810	²⁵⁶ Au	274.740	²³⁷ Hg	129.440		
²³⁵ Os	171.490	²¹⁸ Ir	58.620	²⁰¹ Pt	-24.160	¹⁸² Au	-28.240	²⁵⁷ Au	281.970	²³⁸ Hg	134.670		
²³⁶ Os	177.430	²¹⁹ Ir	63.160	²⁰² Pt	-23.060	¹⁸³ Au	-30.250	²⁵⁸ Au	290.840	²³⁹ Hg	141.450		
²³⁷ Os	184.900	²²⁰ Ir	68.960	²⁰³ Pt	-20.350	¹⁸⁴ Au	-30.370	²⁵⁹ Au	298.140	²⁴⁰ Hg	146.620		
²³⁸ Os	190.990	²²¹ Ir	73.680	²⁰⁴ Pt	-18.540	¹⁸⁵ Au	-32.010	²⁶⁰ Au	306.560	²⁴¹ Hg	153.480		
²³⁹ Os	199.020	²²² Ir	79.570	²⁰⁵ Pt	-13.710	¹⁸⁶ Au	-31.820	²⁶¹ Au	314.170	²⁴² Hg	158.990		
²⁴⁰ Os	205.990	²²³ Ir	84.440	²⁰⁶ Pt	-10.430	¹⁸⁷ Au	-33.130	²⁶² Au	322.810	²⁴³ Hg	166.220		
²⁴¹ Os	214.460	²²⁴ Ir	90.410	²⁰⁷ Pt	-4.800	¹⁸⁸ Au	-32.550	²⁶³ Au	330.900	²⁴⁴ Hg	174.310		
²⁴² Os	221.930	²²⁵ Ir	95.430	²⁰⁸ Pt	-1.120	¹⁸⁹ Au	-33.570	¹⁷⁰ Hg	4.840	²⁴⁵ Hg	181.550		
²⁴³ Os	230.190	²²⁶ Ir	101.560	²⁰⁹ Pt	4.530	¹⁹⁰ Au	-32.800	¹⁷¹ Hg	2.890	²⁴⁶ Hg	187.020		
²⁴⁴ Os	237.370	²²⁷ Ir	106.790	²¹⁰ Pt	8.440	¹⁹¹ Au	-33.560	¹⁷² Hg	-1.160	²⁴⁷ Hg	194.060		
²⁴⁵ Os	247.150	²²⁸ Ir	113.180	²¹¹ Pt	14.230	¹⁹² Au	-32.550	¹⁷³ Hg	-2.880	²⁴⁸ Hg	199.570		
²⁴⁶ Os	254.940	²²⁹ Ir	118.670	²¹² Pt	18.210	¹⁹³ Au	-33.100	¹⁷⁴ Hg	-6.640	²⁴⁹ Hg	206.790		
²⁴⁷ Os	262.360	²³⁰ Ir	125.510	²¹³ Pt	23.850	¹⁹⁴ Au	-31.860	¹⁷⁵ Hg	-8.110	²⁵⁰ Hg	212.820		
²⁴⁸ Os	269.330	²³¹ Ir	131.310	²¹⁴ Pt	27.850	¹⁹⁵ Au	-32.190	¹⁷⁶ Hg	-11.610	²⁵¹ Hg	220.370		
²⁴⁹ Os	278.660	²³² Ir	138.350	²¹⁵ Pt	33.540	¹⁹⁶ Au	-30.760	¹⁷⁷ Hg	-12.790	²⁵² Hg	226.600		
²⁵⁰ Os	285.710	²³³ Ir	144.200	²¹⁶ Pt	37.530	¹⁹⁷ Au	-30.810	¹⁷⁸ Hg	-16.010	²⁵³ Hg	234.340		
²⁵¹ Os	294.130	²³⁴ Ir	151.350	²¹⁷ Pt	43.290	¹⁹⁸ Au	-29.100	¹⁷⁹ Hg	-16.990	²⁵⁴ Hg	240.850		
²⁵² Os	301.560	²³⁵ Ir	157.220	²¹⁸ Pt	47.350	¹⁹⁹ Au	-28.720	¹⁸⁰ Hg	-19.940	²⁵⁵ Hg	248.570		
²⁵³ Os	309.850	²³⁶ Ir	164.220	²¹⁹ Pt	53.060	²⁰⁰ Au	-27.040	¹⁸¹ Hg	-20.680	²⁵⁶ Hg	255.160		
¹⁶² Ir	-2.200	²³⁷ Ir	170.130	²²⁰ Pt	57.270	²⁰¹ Au	-26.320	¹⁸² Hg	-23.410	²⁵⁷ Hg	263.170		
¹⁶³ Ir	-6.120	²³⁸ Ir	177.140	²²¹ Pt	63.080	²⁰² Au	-24.140	¹⁸³ Hg	-23.860	²⁵⁸ Hg	270.060		
¹⁶⁴ Ir	-8.160	²³⁹ Ir	183.280	²²² Pt	67.390	²⁰³ Au	-23.140	¹⁸⁴ Hg	-26.330	²⁵⁹ Hg	278.760		
¹⁶⁵ Ir	-11.880	²⁴⁰ Ir	190.970	²²³ Pt	73.270	²⁰⁴ Au	-20.860	¹⁸⁵ Hg	-26.520	²⁶⁰ Hg	285.760		
¹⁶⁶ Ir	-13.830	²⁴¹ Ir	197.880	²²⁴ Pt	77.790	²⁰⁵ Au	-19.180	¹⁸⁶ Hg	-28.580	²⁶¹ Hg	294.190		
¹⁶⁷ Ir	-17.370	²⁴² Ir	206.210	²²⁵ Pt	83.820	²⁰⁶ Au	-14.620	¹⁸⁷ Hg	-28.480	²⁶² Hg	301.450		
¹⁶⁸ Ir	-19.150	²⁴³ Ir	213.160	²²⁶ Pt	88.480	²⁰⁷ Au	-11.470	¹⁸⁸ Hg	-30.270	²⁶³ Hg	310.040		
¹⁶⁹ Ir	-22.340	²⁴⁴ Ir	221.120	²²⁷ Pt	94.680	²⁰⁸ Au	-6.390	¹⁸⁹ Hg	-29.810	²⁶⁴ Hg	317.820		
¹⁷⁰ Ir	-23.760	²⁴⁵ Ir	229.400	²²⁸ Pt	99.560	²⁰⁹ Au	-2.600	¹⁹⁰ Hg	-31.330	²⁶⁵ Hg	327.930		
¹⁷¹ Ir	-26.700	²⁴⁶ Ir	237.590	²²⁹ Pt	105.940	²¹⁰ Au	2.690	¹⁹¹ Hg	-30.640	²⁶⁶ Hg	336.390		
¹⁷² Ir	-27.810	²⁴⁷ Ir	245.030	²³⁰ Pt	111.080	²¹¹ Au	6.550	¹⁹² Hg	-31.890	¹⁷³ Tl	8.000		
¹⁷³ Ir	-30.400	²⁴⁸ Ir	251.820	²³¹ Pt	117.930	²¹² Au	11.830	¹⁹³ Hg	-30.940	¹⁷⁴ Tl	5.920		
¹⁷⁴ Ir	-31.290	²⁴⁹ Ir	258.800	²³² Pt	123.360	²¹³ Au	15.790	¹⁹⁴ Hg	-31.940	¹⁷⁵ Tl	2.120		
¹⁷⁵ Ir	-33.660	²⁵⁰ Ir	267.750	²³³ Pt	130.260	²¹⁴ Au	21.240	¹⁹⁵ Hg	-30.800	¹⁷⁶ Tl	0.300		
¹⁷⁶ Ir	-34.510	²⁵¹ Ir	275.060	²³⁴ Pt	135.900	²¹⁵ Au	25.230	¹⁹⁶ Hg	-31.660	¹⁷⁷ Tl	-3.240		
¹⁷⁷ Ir	-36.330	²⁵² Ir	283.150	²³⁵ Pt	142.980	²¹⁶ Au	30.710	¹⁹⁷ Hg	-30.170	¹⁷⁸ Tl	-4.870		
¹⁷⁸ Ir	-36.810	²⁵³ Ir	290.380	²³⁶ Pt	148.590	²¹⁷ Au	34.710	¹⁹⁸ Hg	-30.750	¹⁷⁹ Tl	-8.170		
¹⁷⁹ Ir	-38.700	²⁵⁴ Ir	298.280	²³⁷ Pt	155.590	²¹⁸ Au	40.170	¹⁹⁹ Hg	-29.120	¹⁸⁰ Tl	-9.500		
¹⁸⁰ Ir	-38.630	²⁵⁵ Ir	305.960	²³⁸ Pt	161.180	²¹⁹ Au	44.230	²⁰⁰ Hg	-29.300	¹⁸¹ Tl	-12.570		
¹⁸¹ Ir	-40.170	²⁵⁶ Ir	315.230	²³⁹ Pt	168.200	²²⁰ Au	49.600	²⁰¹ Hg	-27.450	¹⁸² Tl	-13.650		
¹⁸² Ir	-39.670	¹⁶⁵ Pt	-0.810	²⁴⁰ Pt	174.010	²²¹ Au	53.860	²⁰² Hg	-27.280	¹⁸³ Tl	-16.440		
¹⁸³ Ir	-40.920	¹⁶⁶ Pt	-5.000	²⁴¹ Pt	181.680	²²² Au	59.340	²⁰³ Hg	-25.190	¹⁸⁴ Tl	-17.260		
¹⁸⁴ Ir	-40.260	¹⁶⁷ Pt	-6.770	²⁴² Pt	188.150	²²³ Au	63.620	²⁰⁴ Hg	-24.660	¹⁸⁵ Tl	-19.740		
¹⁸⁵ Ir	-41.100	¹⁶⁸ Pt	-10.630	²⁴³ Pt	196.490	²²⁴ Au	69.190	²⁰⁵ Hg	-22.520	¹⁸⁶ Tl	-20.360		
¹⁸⁶ Ir	-39.970	¹⁶⁹ Pt	-12.530	²⁴⁴ Pt	203.110	²²⁵ Au	73.690	²⁰⁶ Hg	-21.200	¹⁸⁷ Tl	-22.510		
¹⁸⁷ Ir	-39.920	¹⁷⁰ Pt	-16.110	²⁴⁵ Pt	213.160	²²⁶ Au	79.400	²⁰⁷ Hg	-16.780	¹⁸⁸ Tl	-22.880		
¹⁸⁸ Ir	-38.410	²⁴⁶ Pt	218.800	²⁴⁷ Pt	227.030	²²⁷ Au	84.060	²⁰⁸ Hg	-13.990	¹⁸⁹ Tl	-24.760		
¹⁸⁹ Ir	-38.280	¹⁷¹ Pt	-17.530	²⁴⁸ Pt	233.850	²²⁸ Au	89.910	²⁰⁹ Hg	-8.950	¹⁹⁰ Tl	-24.840		
¹⁹⁰ Ir	-36.820	¹⁷² Pt	-20.930	²⁴⁹ Pt	241.760	²²⁹ Au	94.770	²¹⁰ Hg	-5.580	¹⁹¹ Tl	-26.490		
¹⁹¹ Ir	-36.530	¹⁷³ Pt	-22.180	²⁵⁰ Pt	248.140	²³⁰ Au	100.840	²¹¹ Hg	-0.320	¹⁹² Tl	-26.300		
¹⁹² Ir	-34.800	¹⁷⁴ Pt	-25.250	²⁵¹ Pt	256.180	²³¹ Au	105.940	²¹² Hg	3.130	¹⁹³ Tl	-27.710		
¹⁹³ Ir	-34.410	¹⁷⁵ Pt	-26.250	²⁵² Pt	262.890	²³² Au	112.470	²¹³ Hg	8.510	¹⁹⁴ Tl	-27.190		
¹⁹⁴ Ir	-32.390	¹⁷⁶ Pt	-29.000	²⁵³ Pt	271.060	²³³ Au	117.890	²¹⁴ Hg	12.020	¹⁹⁵ Tl	-28.420		
¹⁹⁵ Ir	-31.680	¹⁷⁷ Pt	-29.580	²⁵⁴ Pt	277.930	²³⁴ Au	124.450	²¹⁵ Hg	17.640	¹⁹⁶ Tl	-27.750		
¹⁹⁶ Ir	-29.220	¹⁷⁸ Pt	-32.180	²⁵⁵ Pt	285.360	²³⁵ Au	130.040	²¹⁶ Hg	21.350	¹⁹⁷ Tl	-28.590		
¹⁹⁷ Ir	-27.920	¹⁷⁹ Pt	-32.410	²⁵⁶ Pt	292.680	²³⁶ Au	136.760	²¹⁷ Hg	27.010	¹⁹⁸ Tl	-27.680		
¹⁹⁸ Ir	-25.770	¹⁸⁰ Pt	-34.580	²⁵⁷ Pt	301.920	²³⁷ Au	142.310	²¹⁸ Hg	30.710	¹⁹⁹ Tl	-28.220		
¹⁹⁹ Ir	-24.520	¹⁸¹ Pt	-34.640	²⁵⁸ Pt	309.210	²³⁸ Au	149.220	²¹⁹ Hg	36.120	²⁰⁰ Tl	-27.100		
²⁰⁰ Ir	-21.890	¹⁸² Pt	-36.470	²⁵⁹ Pt	317.960	²³⁹ Au	154.630	²²⁰ Hg	39.800	²⁰¹ Tl	-27.330		
²⁰¹ Ir	-20.390	¹⁸³ Pt	-36.200	²⁶⁰ Pt	325.590	²⁴⁰ Au	161.410	²²¹ Hg	45.080	²⁰² Tl	-26.040		
²⁰² Ir	-17.620	¹⁸⁴ Pt	-37.780	¹⁶⁷ Au	3.730	²⁴¹ Au	167.180	²²² Hg	48.980	²⁰³ Tl	-25.900		
²⁰³ Ir	-15.430	¹⁸⁵ Pt	-37.150	¹⁶⁸ Au	1.510	²⁴² Au	174.550	²²³ Hg	54.460	²⁰⁴ Tl	-24.190		
²⁰⁴ Ir	-10.430	¹⁸⁶ Pt	-37.250	¹⁶⁹ Au	-2.350	²⁴³ Au	181.310	²²⁴ Hg	58.380	²⁰⁵ Tl	-23.780		
²⁰⁵ Ir	-6.880	¹⁸⁷ Pt	-37.140	¹⁷⁰ Au	-4.290	²⁴⁴ Au	191.250	²²⁵ Hg	63.930	²⁰⁶ Tl	-21.920		
²⁰⁶ Ir	-1.250	¹⁸⁸ Pt	-35.880	¹⁷¹ Au	-7.890	²⁴⁵ Au	197.390	²²⁶ Hg	68.090	²⁰⁷ Tl	-20.710		
²⁰⁷ Ir	2.800	¹⁸⁹ Pt	-36.560</										

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
²⁰⁹ Tl	-13.890	¹⁸⁹ Pb	-18.520	²⁶⁴ Pb	279.930	²⁴³ Bi	130.810	²²² Po	23.610	²⁰¹ At	-10.620
²¹⁰ Tl	-9.190	¹⁹⁰ Pb	-20.870	²⁶⁵ Pb	288.320	²⁴⁴ Bi	137.180	²²³ Po	27.990	²⁰² At	-10.660
²¹¹ Tl	-5.970	¹⁹¹ Pb	-20.880	²⁶⁶ Pb	295.780	²⁴⁵ Bi	142.120	²²⁴ Po	30.890	²⁰³ At	-12.090
²¹² Tl	-1.220	¹⁹² Pb	-23.090	²⁶⁷ Pb	305.610	²⁴⁶ Bi	148.510	²²⁵ Po	35.350	²⁰⁴ At	-12.060
²¹³ Tl	2.250	¹⁹³ Pb	-22.830	²⁶⁸ Pb	313.710	²⁴⁷ Bi	153.720	²²⁶ Po	38.450	²⁰⁵ At	-12.960
²¹⁴ Tl	7.200	¹⁹⁴ Pb	-24.790	²⁶⁹ Pb	323.860	²⁴⁸ Bi	160.180	²²⁷ Po	43.120	²⁰⁶ At	-12.770
²¹⁵ Tl	10.790	¹⁹⁵ Pb	-24.300	²⁷⁰ Pb	332.270	²⁴⁹ Bi	165.600	²²⁸ Po	46.240	²⁰⁷ At	-13.580
²¹⁶ Tl	15.990	¹⁹⁶ Pb	-25.960	²⁷¹ Pb	342.060	²⁵⁰ Bi	172.090	²²⁹ Po	51.000	²⁰⁸ At	-12.770
²¹⁷ Tl	19.590	¹⁹⁷ Pb	-25.260	²⁷² Pb	350.380	²⁵¹ Bi	177.560	²³⁰ Po	54.400	²⁰⁹ At	-13.280
²¹⁸ Tl	24.490	¹⁹⁸ Pb	-26.610	²⁷³ Pb	360.040	²⁵² Bi	184.380	²³¹ Po	59.220	²¹⁰ At	-12.270
²¹⁹ Tl	28.270	¹⁹⁹ Pb	-25.670			²⁵³ Bi	190.120	²³² Po	62.810	²¹¹ At	-11.870
²²⁰ Tl	33.670	²⁰⁰ Pb	-26.710	¹⁷⁸ Bi	18.310	²⁵⁴ Bi	197.040	²³³ Po	67.910	²¹² At	-8.750
²²¹ Tl	37.680	²⁰¹ Pb	-25.610	¹⁷⁹ Bi	14.270	²⁵⁵ Bi	202.880	²³⁴ Po	71.720	²¹³ At	-6.990
²²² Tl	42.630	²⁰² Pb	-26.300	¹⁸⁰ Bi	12.100	²⁵⁶ Bi	210.000	²³⁵ Po	77.010	²¹⁴ At	-3.230
²²³ Tl	46.540	²⁰³ Pb	-24.990	¹⁸¹ Bi	8.530	²⁵⁷ Bi	216.070	²³⁶ Po	81.120	²¹⁵ At	-0.960
²²⁴ Tl	51.670	²⁰⁴ Pb	-25.440	¹⁸² Bi	6.410	²⁵⁸ Bi	223.260	²³⁷ Po	86.950	²¹⁶ At	2.940
²²⁵ Tl	55.600	²⁰⁵ Pb	-23.900	¹⁸³ Bi	3.020	²⁵⁹ Bi	229.210	²³⁸ Po	91.380	²¹⁷ At	4.890
²²⁶ Tl	60.850	²⁰⁶ Pb	-23.980	¹⁸⁴ Bi	1.390	²⁶⁰ Bi	236.650	²³⁹ Po	97.370	²¹⁸ At	8.460
²²⁷ Tl	65.000	²⁰⁷ Pb	-22.020	¹⁸⁵ Bi	-1.930	²⁶¹ Bi	243.050	²⁴⁰ Po	101.920	²¹⁹ At	10.940
²²⁸ Tl	70.300	²⁰⁸ Pb	-21.150	¹⁸⁶ Bi	-3.300	²⁶² Bi	250.390	²⁴¹ Po	107.960	²²⁰ At	14.610
²²⁹ Tl	74.600	²⁰⁹ Pb	-17.170	¹⁸⁷ Bi	-6.280	²⁶³ Bi	257.040	²⁴² Po	112.560	²²¹ At	17.200
²³⁰ Tl	80.080	²¹⁰ Pb	-14.800	¹⁸⁸ Bi	-7.350	²⁶⁴ Bi	264.770	²⁴³ Po	118.610	²²² At	21.350
²³¹ Tl	84.590	²¹¹ Pb	-10.160	¹⁸⁹ Bi	-10.050	²⁶⁵ Bi	271.720	²⁴⁴ Po	123.270	²²³ At	24.140
²³² Tl	90.310	²¹² Pb	-7.390	¹⁹⁰ Bi	-10.880	²⁶⁶ Bi	279.790	²⁴⁵ Po	129.450	²²⁴ At	28.090
²³³ Tl	95.070	²¹³ Pb	-2.520	¹⁹¹ Bi	-13.310	²⁶⁷ Bi	287.290	²⁴⁶ Po	134.370	²²⁵ At	30.900
²³⁴ Tl	101.260	²¹⁴ Pb	0.410	¹⁹² Bi	-13.860	²⁶⁸ Bi	296.790	²⁴⁷ Po	142.140	²²⁶ At	34.950
²³⁵ Tl	106.370	²¹⁵ Pb	5.320	¹⁹³ Bi	-16.050	²⁶⁹ Bi	304.870	²⁴⁸ Po	146.840	²²⁷ At	37.980
²³⁶ Tl	112.640	²¹⁶ Pb	8.340	¹⁹⁴ Bi	-16.320	²⁷⁰ Bi	314.720	²⁴⁹ Po	153.410	²²⁸ At	42.250
²³⁷ Tl	117.820	²¹⁷ Pb	13.270	¹⁹⁵ Bi	-18.250	²⁷¹ Bi	323.080	²⁵⁰ Po	158.510	²²⁹ At	45.330
²³⁸ Tl	124.190	²¹⁸ Pb	16.480	¹⁹⁶ Bi	-18.230	²⁷² Bi	332.570	²⁵¹ Po	164.980	²³⁰ At	49.710
²³⁹ Tl	129.430	²¹⁹ Pb	21.600	¹⁹⁷ Bi	-19.940	²⁷³ Bi	340.920	²⁵² Po	170.120	²³¹ At	53.070
²⁴⁰ Tl	135.790	²²⁰ Pb	25.000	¹⁹⁸ Bi	-19.750	²⁷⁴ Bi	350.230	²⁵³ Po	176.960	²³² At	57.540
²⁴¹ Tl	142.950	²²¹ Pb	30.970	¹⁹⁹ Bi	-21.140	²⁷⁵ Bi	358.710	²⁵⁴ Po	182.350	²³³ At	61.140
²⁴² Tl	149.600	²²² Pb	34.320	²⁰⁰ Bi	-20.680	²⁷⁶ Bi	370.620	²⁵⁵ Po	189.270	²³⁴ At	65.860
²⁴³ Tl	154.920	²²³ Pb	39.220	²⁰¹ Bi	-21.730			²⁵⁶ Po	194.190	²³⁵ At	69.680
²⁴⁴ Tl	161.710	²²⁴ Pb	42.660	²⁰² Bi	-21.060	¹⁸¹ Po	20.060	²⁵⁷ Po	201.900	²³⁶ At	74.600
²⁴⁵ Tl	167.210	²²⁵ Pb	47.860	²⁰³ Bi	-21.810	¹⁸² Po	15.550	²⁵⁸ Po	207.650	²³⁷ At	78.550
²⁴⁶ Tl	174.170	²²⁶ Pb	51.370	²⁰⁴ Bi	-20.900	¹⁸³ Po	13.240	²⁵⁹ Po	214.770	²³⁸ At	84.220
²⁴⁷ Tl	179.920	²²⁷ Pb	56.540	²⁰⁵ Bi	-21.310	¹⁸⁴ Po	9.130	²⁶⁰ Po	220.530	²³⁹ At	88.610
²⁴⁸ Tl	186.810	²²⁸ Pb	60.310	²⁰⁶ Bi	-20.110	¹⁸⁵ Po	7.200	²⁶¹ Po	227.920	²⁴⁰ At	94.350
²⁴⁹ Tl	192.570	²²⁹ Pb	65.590	²⁰⁷ Bi	-20.200	¹⁸⁶ Po	3.630	²⁶² Po	234.010	²⁴¹ At	98.860
²⁵⁰ Tl	199.730	²³⁰ Pb	69.540	²⁰⁸ Bi	-18.740	¹⁸⁷ Po	2.220	²⁶³ Po	241.360	²⁴² At	104.560
²⁵¹ Tl	205.790	²³¹ Pb	75.010	²⁰⁹ Bi	-17.990	¹⁸⁸ Po	-0.770	²⁶⁴ Po	247.620	²⁴³ At	109.140
²⁵² Tl	213.090	²³² Pb	79.180	²¹⁰ Bi	-14.430	¹⁸⁹ Po	-1.660	²⁶⁵ Po	255.370	²⁴⁴ At	114.870
²⁵³ Tl	219.190	²³³ Pb	84.850	²¹¹ Bi	-12.050	¹⁹⁰ Po	-4.430	²⁶⁶ Po	261.990	²⁴⁵ At	119.520
²⁵⁴ Tl	226.630	²³⁴ Pb	89.320	²¹² Bi	-7.870	¹⁹¹ Po	-5.060	²⁶⁷ Po	270.070	²⁴⁶ At	125.400
²⁵⁵ Tl	232.990	²³⁵ Pb	95.510	²¹³ Bi	-5.180	¹⁹² Po	-8.060	²⁶⁸ Po	277.240	²⁴⁷ At	130.270
²⁵⁶ Tl	240.470	²³⁶ Pb	100.260	²¹⁴ Bi	-0.660	¹⁹³ Po	-8.570	²⁶⁹ Po	286.750	²⁴⁸ At	137.690
²⁵⁷ Tl	246.560	²³⁷ Pb	106.570	²¹⁵ Bi	2.140	¹⁹⁴ Po	-10.850	²⁷⁰ Po	294.490	²⁴⁹ At	142.600
²⁵⁸ Tl	254.410	²³⁸ Pb	111.450	²¹⁶ Bi	6.550	¹⁹⁵ Po	-11.190	²⁷¹ Po	304.230	²⁵⁰ At	148.830
²⁵⁹ Tl	261.170	²³⁹ Pb	117.790	²¹⁷ Bi	9.480	¹⁹⁶ Po	-13.400	²⁷² Po	312.300	²⁵¹ At	153.870
²⁶⁰ Tl	268.890	²⁴⁰ Pb	122.710	²¹⁸ Bi	13.940	¹⁹⁷ Po	-13.540	²⁷³ Po	321.640	²⁵² At	160.070
²⁶¹ Tl	275.880	²⁴¹ Pb	129.100	²¹⁹ Bi	17.170	¹⁹⁸ Po	-15.530	²⁷⁴ Po	329.640	²⁵³ At	165.140
²⁶² Tl	283.920	²⁴² Pb	135.490	²²⁰ Bi	21.810	¹⁹⁹ Po	-15.320	²⁷⁵ Po	338.900	²⁵⁴ At	171.590
²⁶³ Tl	291.140	²⁴³ Pb	142.100	²²¹ Bi	25.080	²⁰⁰ Po	-17.170	²⁷⁶ Po	349.460	²⁵⁵ At	177.020
²⁶⁴ Tl	299.520	²⁴⁴ Pb	147.080	²²² Bi	29.890	²⁰¹ Po	-16.700	²⁷⁷ Po	358.450	²⁵⁶ At	183.610
²⁶⁵ Tl	307.300	²⁴⁵ Pb	153.850	²²³ Bi	33.190	²⁰² Po	-18.220	²⁷⁸ Po	366.190	²⁵⁷ At	188.290
²⁶⁶ Tl	317.110	²⁴⁶ Pb	158.810	²²⁴ Bi	37.740	²⁰³ Po	-17.570	²⁷⁹ Po	375.510	²⁵⁸ At	195.950
²⁶⁷ Tl	325.540	²⁴⁷ Pb	165.920	²²⁵ Bi	41.290	²⁰⁴ Po	-18.740			²⁵⁹ At	201.680
²⁶⁸ Tl	335.770	²⁴⁸ Pb	171.320	²²⁶ Bi	46.030	²⁰⁵ Po	-17.860	¹⁸⁴ At	22.630	²⁶⁰ At	208.530
²⁶⁹ Tl	344.560	²⁴⁹ Pb	178.190	²²⁷ Bi	49.540	²⁰⁶ Po	-18.830	¹⁸⁵ At	18.320	²⁶¹ At	214.220
		²⁵⁰ Pb	183.640	²²⁸ Bi	54.340	²⁰⁷ Po	-17.720	¹⁸⁶ At	15.970	²⁶² At	221.320
¹⁷⁵ Pb	13.720	²⁵¹ Pb	190.790	²²⁹ Bi	58.130	²⁰⁸ Po	-18.230	¹⁸⁷ At	12.340	²⁶³ At	227.400
¹⁷⁶ Pb	9.420	²⁵² Pb	196.460	²³⁰ Bi	63.040	²⁰⁹ Po	-16.780	¹⁸⁸ At	10.590	²⁶⁴ At	234.610
¹⁷⁷ Pb	7.450	²⁵³ Pb	203.740	²³¹ Bi	66.990	²¹⁰ Po	-16.330	¹⁸⁹ At	7.440	²⁶⁵ At	240.890
¹⁷⁸ Pb	3.430	²⁵⁴ Pb	209.640	²³² Bi	72.090	²¹¹ Po	-12.840	¹⁹⁰ At	6.140	²⁶⁶ At	248.310
¹⁷⁹ Pb	1.770	²⁵⁵ Pb	217.070	²³³ Bi	76.270	²¹² Po	-10.940	¹⁹¹ At	3.590	²⁶⁷ At	254.960
¹⁸⁰ Pb	-2.030	²⁵⁶ Pb	223.130	²³⁴ Bi	81.610	²¹³ Po	-6.770	¹⁹² At	2.280	²⁶⁸ At	262.700
¹⁸¹ Pb	-3.430	²⁵⁷ Pb	230.650	²³⁵ Bi	86.040	²¹⁴ Po	-4.460	¹⁹³ At	-0.470	²⁶⁹ At	269.900
¹⁸² Pb	-6.930	²⁵⁸ Pb	236.760	²³⁶ Bi	91.890	²¹⁵ Po	-0.090	¹⁹⁴ At	-1.430	²⁷⁰ At	279.080
¹⁸³ Pb	-8.090	²⁵⁹ Pb	244.280	²³⁷ Bi	96.630	²¹⁶ Po	2.290	¹⁹⁵ At	-3.780	²⁷¹ At	286.780
¹⁸⁴ Pb	-11.240	²⁶⁰ Pb	250.570	²³⁸ Bi	102.600	²¹⁷ Po	6.390	¹⁹⁶ At	-4.300	²⁷² At	296.280
¹⁸⁵ Pb	-12.090	²⁶¹ Pb	258.310	²³⁹ Bi	107.450	²¹⁸ Po	8.880	¹⁹⁷ At	-6.370	²⁷³ At	304.320
¹⁸⁶ Pb	-14.990	²⁶² Pb	265.000	²⁴⁰ Bi	113.470	²¹⁹ Po	13.470	¹⁹⁸ At	-6.690	²⁷⁴ At	313.440
¹⁸⁷ Pb	-15.520	²⁶³ Pb	272.990	²⁴¹ Bi	118.380	²²⁰ Po	16.240	¹⁹⁹ At	-8.640	²⁷⁵ At	321.300
¹⁸⁸ Pb	-18.180			²⁴² Bi	124.440	²²¹ Po	20.760	²⁰⁰ At	-8.900		

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
²⁷⁶ At	332.150	²⁵⁴ Rn	158.730	²³¹ Fr	42.820	²⁰⁸ Ra	1.380	²⁸³ Ra	334.030	²⁶⁰ Ac	162.230		
²⁷⁷ At	339.790	²⁵⁵ Rn	165.130	²³² Fr	46.740	²⁰⁹ Ra	1.590	²⁸⁴ Ra	341.320	²⁶¹ Ac	166.060		
²⁷⁸ At	348.480	²⁵⁶ Rn	170.230	²³³ Fr	49.670	²¹⁰ Ra	0.150	²⁸⁵ Ra	350.580	²⁶² Ac	173.250		
²⁷⁹ At	356.230	²⁵⁷ Rn	176.820	²³⁴ Fr	53.790	²¹¹ Ra	0.530	²⁸⁶ Ra	358.020	²⁶³ Ac	178.420		
²⁸⁰ At	365.010	²⁵⁸ Rn	181.160	²³⁵ Fr	57.010	²¹² Ra	-0.810	²⁸⁷ Ra	366.850	²⁶⁴ Ac	184.590		
²⁸¹ At	373.060	²⁵⁹ Rn	188.870	²³⁶ Fr	61.360	²¹³ Ra	-0.170	²⁸⁸ Ra	373.410	²⁶⁵ Ac	189.470		
²⁸² At	382.030	²⁶⁰ Rn	194.310	²³⁷ Fr	64.820	²¹⁴ Ra	-0.620	²⁸⁹ Ra	384.150	²⁶⁶ Ac	195.920		
		²⁶¹ Rn	201.160	²³⁸ Fr	69.350	²¹⁵ Ra	1.930	²⁹⁰ Ra	391.860	²⁶⁷ Ac	201.590		
¹⁸⁶ Rn	25.910	²⁶² Rn	206.370	²³⁹ Fr	72.910	²¹⁶ Ra	2.850	²⁹¹ Ra	398.870	²⁶⁸ Ac	208.400		
¹⁸⁷ Rn	23.490	²⁶³ Rn	213.440	²⁴⁰ Fr	78.180	²¹⁷ Ra	6.050	²⁹² Ra	406.700	²⁶⁹ Ac	214.140		
¹⁸⁸ Rn	19.430	²⁶⁴ Rn	219.400	²⁴¹ Fr	82.360	²¹⁸ Ra	7.360			²⁷⁰ Ac	220.990		
¹⁸⁹ Rn	17.570	²⁶⁵ Rn	226.590	²⁴² Fr	87.700	²¹⁹ Ra	9.360	¹⁹⁵ Ac	34.820	²⁷¹ Ac	227.090		
¹⁹⁰ Rn	14.040	²⁶⁶ Rn	232.600	²⁴³ Fr	91.910	²²⁰ Ra	10.480	¹⁹⁶ Ac	32.900	²⁷² Ac	234.200		
¹⁹¹ Rn	12.790	²⁶⁷ Rn	240.090	²⁴⁴ Fr	97.350	²²¹ Ra	13.130	¹⁹⁷ Ac	29.580	²⁷³ Ac	240.790		
¹⁹² Rn	9.690	²⁶⁸ Rn	246.450	²⁴⁵ Fr	101.640	²²² Ra	14.340	¹⁹⁸ Ac	28.050	²⁷⁴ Ac	249.300		
¹⁹³ Rn	8.700	²⁶⁹ Rn	254.190	²⁴⁶ Fr	107.000	²²³ Ra	17.740	¹⁹⁹ Ac	25.380	²⁷⁵ Ac	256.300		
¹⁹⁴ Rn	5.750	²⁷⁰ Rn	261.080	²⁴⁷ Fr	111.310	²²⁴ Ra	19.380	²⁰⁰ Ac	24.330	²⁷⁶ Ac	265.080		
¹⁹⁵ Rn	4.740	²⁷¹ Rn	270.260	²⁴⁸ Fr	116.810	²²⁵ Ra	22.470	²⁰¹ Ac	21.420	²⁷⁷ Ac	272.350		
¹⁹⁶ Rn	1.930	²⁷² Rn	277.610	²⁴⁹ Fr	121.380	²²⁶ Ra	24.240	²⁰² Ac	20.170	²⁷⁸ Ac	280.230		
¹⁹⁷ Rn	1.270	²⁷³ Rn	287.050	²⁵⁰ Fr	127.180	²²⁷ Ra	27.680	²⁰³ Ac	17.520	²⁷⁹ Ac	287.060		
¹⁹⁸ Rn	-1.130	²⁷⁴ Rn	294.650	²⁵¹ Fr	133.340	²²⁸ Ra	29.620	²⁰⁴ Ac	16.520	²⁸⁰ Ac	295.060		
¹⁹⁹ Rn	-1.530	²⁷⁵ Rn	303.680	²⁵² Fr	139.310	²²⁹ Ra	33.120	²⁰⁵ Ac	14.050	²⁸¹ Ac	301.990		
²⁰⁰ Rn	-3.660	²⁷⁶ Rn	311.290	²⁵³ Fr	144.000	²³⁰ Ra	35.150	²⁰⁶ Ac	13.270	²⁸² Ac	309.980		
²⁰¹ Rn	-3.820	²⁷⁷ Rn	321.350	²⁵⁴ Fr	149.870	²³¹ Ra	38.860	²⁰⁷ Ac	11.010	²⁸³ Ac	317.170		
²⁰² Rn	-6.100	²⁷⁸ Rn	328.680	²⁵⁵ Fr	154.580	²³² Ra	41.140	²⁰⁸ Ac	10.500	²⁸⁴ Ac	325.390		
²⁰³ Rn	-6.140	²⁷⁹ Rn	337.330	²⁵⁶ Fr	160.690	²³³ Ra	45.020	²⁰⁹ Ac	8.340	²⁸⁵ Ac	332.810		
²⁰⁴ Rn	-8.060	²⁸⁰ Rn	344.750	²⁵⁷ Fr	165.720	²³⁴ Ra	47.630	²¹⁰ Ac	8.240	²⁸⁶ Ac	341.420		
²⁰⁵ Rn	-7.920	²⁸¹ Rn	353.670	²⁵⁸ Fr	171.970	²³⁵ Ra	51.630	²¹¹ Ac	6.860	²⁸⁷ Ac	348.860		
²⁰⁶ Rn	-9.280	²⁸² Rn	361.370	²⁵⁹ Fr	176.410	²³⁶ Ra	54.460	²¹² Ac	6.930	²⁸⁸ Ac	356.740		
²⁰⁷ Rn	-8.930	²⁸³ Rn	370.380	²⁶⁰ Fr	183.750	²³⁷ Ra	58.780	²¹³ Ac	5.600	²⁸⁹ Ac	364.330		
²⁰⁸ Rn	-10.060	²⁸⁴ Rn	377.820	²⁶¹ Fr	189.280	²³⁸ Ra	61.880	²¹⁴ Ac	5.800	²⁹⁰ Ac	374.700		
²⁰⁹ Rn	-9.300	²⁸⁵ Rn	386.970	²⁶² Fr	195.750	²³⁹ Ra	66.510	²¹⁵ Ac	5.280	²⁹¹ Ac	382.370		
²¹⁰ Rn	-10.270	²⁸⁶ Rn	394.850	²⁶³ Fr	200.910	²⁴⁰ Ra	69.710	²¹⁶ Ac	7.480	²⁹² Ac	389.170		
²¹¹ Rn	-9.280			²⁶⁴ Fr	207.690	²⁴¹ Ra	74.980	²¹⁷ Ac	8.350	²⁹³ Ac	397.030		
²¹² Rn	-9.260	¹⁸⁹ Fr	28.990	²⁶⁵ Fr	213.770	²⁴² Ra	78.850	²¹⁸ Ac	10.900	²⁹⁴ Ac	405.880		
²¹³ Rn	-6.170	¹⁹⁰ Fr	26.710	²⁶⁶ Fr	220.650	²⁴³ Ra	84.180	²¹⁹ Ac	12.240	²⁹⁵ Ac	413.930		
²¹⁴ Rn	-4.770	¹⁹¹ Fr	23.090	²⁶⁷ Fr	226.720	²⁴⁴ Ra	87.990	²²⁰ Ac	13.430				
²¹⁵ Rn	-1.040	¹⁹² Fr	21.230	²⁶⁸ Fr	233.820	²⁴⁵ Ra	93.410	²²¹ Ac	14.340	¹⁹⁸ Th	37.160		
²¹⁶ Rn	0.700	¹⁹³ Fr	18.120	²⁶⁹ Fr	240.210	²⁴⁶ Ra	97.410	²²² Ac	16.530	¹⁹⁹ Th	35.540		
²¹⁷ Rn	4.140	¹⁹⁴ Fr	16.900	²⁷⁰ Fr	247.620	²⁴⁷ Ra	102.780	²²³ Ac	17.920	²⁰⁰ Th	32.230		
²¹⁸ Rn	5.920	¹⁹⁵ Fr	13.920	²⁷¹ Fr	254.510	²⁴⁸ Ra	106.790	²²⁴ Ac	20.690	²⁰¹ Th	31.360		
²¹⁹ Rn	9.200	¹⁹⁶ Fr	13.010	²⁷² Fr	263.370	²⁴⁹ Ra	112.290	²²⁵ Ac	22.050	²⁰² Th	28.400		
²²⁰ Rn	11.070	¹⁹⁷ Fr	10.150	²⁷³ Fr	270.710	²⁵⁰ Ra	116.490	²²⁶ Ac	24.740	²⁰³ Th	27.140		
²²¹ Rn	14.600	¹⁹⁸ Fr	9.040	²⁷⁴ Fr	279.880	²⁵¹ Ra	122.340	²²⁷ Ac	26.400	²⁰⁴ Th	24.100		
²²² Rn	16.930	¹⁹⁹ Fr	6.520	²⁷⁵ Fr	287.500	²⁵² Ra	126.990	²²⁸ Ac	29.400	²⁰⁵ Th	23.070		
²²³ Rn	20.930	²⁰⁰ Fr	5.770	²⁷⁶ Fr	297.140	²⁵³ Ra	134.260	²²⁹ Ac	31.280	²⁰⁶ Th	20.170		
²²⁴ Rn	23.230	²⁰¹ Fr	3.550	²⁷⁷ Fr	304.340	²⁵⁴ Ra	138.770	²³⁰ Ac	34.320	²⁰⁷ Th	19.320		
²²⁵ Rn	27.080	²⁰² Fr	3.020	²⁷⁸ Fr	312.650	²⁵⁵ Ra	144.510	²³¹ Ac	36.300	²⁰⁸ Th	16.580		
²²⁶ Rn	29.470	²⁰³ Fr	1.000	²⁷⁹ Fr	319.950	²⁵⁶ Ra	148.980	²³² Ac	39.630	²⁰⁹ Th	16.010		
²²⁷ Rn	33.430	²⁰⁴ Fr	0.670	²⁸⁰ Fr	328.300	²⁵⁷ Ra	154.980	²³³ Ac	41.860	²¹⁰ Th	13.660		
²²⁸ Rn	36.000	²⁰⁵ Fr	-1.450	²⁸¹ Fr	335.700	²⁵⁸ Ra	159.740	²³⁴ Ac	45.410	²¹¹ Th	13.500		
²²⁹ Rn	40.160	²⁰⁶ Fr	-1.690	²⁸² Fr	344.440	²⁵⁹ Ra	165.990	²³⁵ Ac	48.000	²¹² Th	11.760		
²³⁰ Rn	42.870	²⁰⁷ Fr	-3.180	²⁸³ Fr	352.000	²⁶⁰ Ra	169.940	²³⁶ Ac	51.640	²¹³ Th	11.750		
²³¹ Rn	47.170	²⁰⁸ Fr	-2.960	²⁸⁴ Fr	361.100	²⁶¹ Ra	177.480	²³⁷ Ac	54.460	²¹⁴ Th	10.120		
²³² Rn	50.150	²⁰⁹ Fr	-4.090	²⁸⁵ Fr	369.180	²⁶² Ra	182.650	²³⁸ Ac	58.400	²¹⁵ Th	10.300		
²³³ Rn	54.600	²¹⁰ Fr	-3.670	²⁸⁶ Fr	376.950	²⁶³ Ra	189.160	²³⁹ Ac	61.480	²¹⁶ Th	9.420		
²³⁴ Rn	57.820	²¹¹ Fr	-4.640	²⁸⁷ Fr	384.870	²⁶⁴ Ra	193.900	²⁴⁰ Ac	65.580	²¹⁷ Th	11.520		
²³⁵ Rn	62.560	²¹² Fr	-4.030	²⁸⁸ Fr	395.700	²⁶⁵ Ra	200.790	²⁴¹ Ac	68.940	²¹⁸ Th	11.960		
²³⁶ Rn	66.000	²¹³ Fr	-4.010	²⁸⁹ Fr	403.740	²⁶⁶ Ra	206.460	²⁴² Ac	73.870	²¹⁹ Th	14.400		
²³⁷ Rn	70.920	²¹⁴ Fr	-1.350			²⁶⁷ Ra	213.510	²⁴³ Ac	77.590	²²⁰ Th	15.100		
²³⁸ Rn	74.510	²¹⁵ Fr	-0.070	¹⁹² Ra	30.700	²⁶⁸ Ra	219.240	²⁴⁴ Ac	82.740	²²¹ Th	16.370		
²³⁹ Rn	80.220	²¹⁶ Fr	3.240	¹⁹³ Ra	28.930	²⁶⁹ Ra	226.410	²⁴⁵ Ac	86.590	²²² Th	16.850		
²⁴⁰ Rn	84.240	²¹⁷ Fr	5.000	¹⁹⁴ Ra	25.370	²⁷⁰ Ra	232.470	²⁴⁶ Ac	91.690	²²³ Th	19.010		
²⁴¹ Rn	89.910	²¹⁸ Fr	7.450	¹⁹⁵ Ra	24.020	²⁷¹ Ra	239.910	²⁴⁷ Ac	95.630	²²⁴ Th	20.200		
²⁴² Rn	94.150	²¹⁹ Fr	8.840	¹⁹⁶ Ra	20.700	²⁷² Ra	246.490	²⁴⁸ Ac	100.690	²²⁵ Th	22.510		
²⁴³ Rn	99.880	²²⁰ Fr	11.720	¹⁹⁷ Ra	19.440	²⁷³ Ra	255.350	²⁴⁹ Ac	104.690	²²⁶ Th	23.780		
²⁴⁴ Rn	104.150	²²¹ Fr	13.400	¹⁹⁸ Ra	16.760	²⁷⁴ Ra	262.350	²⁵⁰ Ac	109.890	²²⁷ Th	26.210		
²⁴⁵ Rn	109.880	²²² Fr	16.730	¹⁹⁹ Ra	15.600	²⁷⁵ Ra	271.450	²⁵¹ Ac	114.120	²²⁸ Th	27.330		
²⁴⁶ Rn	114.190	²²³ Fr	18.800	²⁰⁰ Ra	12.760	²⁷⁶ Ra	278.740	²⁵² Ac	119.610	²²⁹ Th	30.070		
²⁴⁷ Rn	120.040	²²⁴ Fr	22.280	²⁰¹ Ra	11.910	²⁷⁷ Ra	287.650	²⁵³ Ac	124.260	²³⁰ Th	31.390		
²⁴⁸ Rn	124.590	²²⁵ Fr	24.410	²⁰² Ra	9.340	²⁷⁸ Ra	294.550	²⁵⁴ Ac	131.310	²³¹ Th	34.360		
²⁴⁹ Rn	130.740	²²⁶ Fr	27.920	²⁰³ Ra	8.770	²⁷⁹ Ra	302.790	²⁵⁵ Ac	135.910	²³² Th	35.940		
²⁵⁰ Rn	136.770	²²⁷ Fr	30.280	²⁰⁴ Ra	6.310	²⁸⁰ Ra	309.740	²⁵⁶ Ac	141.450	²³³ Th	39.220		
²⁵¹ Rn	143.180	²²⁸ Fr	33.900	²⁰⁵ Ra	5.930	²⁸¹ Ra	318.100	²⁵⁷ Ac	145.760	²³⁴ Th	41.090		
²⁵² Rn	147.860	²²⁹ Fr	36.370	²⁰⁶ Ra	3.470	²⁸² Ra	325.400	²⁵⁸ Ac	151.540	²³⁵ Th</			

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
237Th	50.400	212Pa	20.930	287Pa	315.350	262U	143.750	237Np	45.330	212Pu	46.920		
238Th	52.850	213Pa	19.170	288Pa	323.380	263U	149.420	238Np	48.080	213Pu	45.630		
239Th	56.810	214Pa	18.830	289Pa	330.460	264U	152.900	239Np	49.690	214Pu	42.500		
240Th	59.520	215Pa	17.190	290Pa	338.620	265U	159.560	240Np	52.650	215Pu	41.550		
241Th	63.590	216Pa	17.010	291Pa	347.190	266U	164.140	241Np	54.680	216Pu	39.120		
242Th	66.590	217Pa	16.080	292Pa	355.380	267U	170.020	242Np	57.900	217Pu	38.380		
243Th	71.510	218Pa	17.830	293Pa	362.740	268U	174.400	243Np	60.150	218Pu	36.040		
244Th	74.870	219Pa	18.210	294Pa	371.180	269U	180.550	244Np	63.670	219Pu	35.460		
245Th	80.030	220Pa	20.700	295Pa	377.290	270U	185.520	245Np	66.010	220Pu	33.720		
246Th	83.530	221Pa	21.470	296Pa	385.800	271U	192.160	246Np	70.020	221Pu	35.050		
247Th	88.540	222Pa	21.250	297Pa	393.710	272U	197.270	247Np	73.190	222Pu	34.450		
248Th	92.230	223Pa	21.760	298Pa	402.650	273U	203.820	248Np	77.490	223Pu	35.150		
249Th	97.270	224Pa	23.670	299Pa	410.660	274U	209.320	249Np	80.820	224Pu	34.480		
250Th	100.930	225Pa	24.380	300Pa	420.190	275U	216.170	250Np	85.160	225Pu	35.580		
251Th	106.120	226Pa	26.640	301Pa	426.830	276U	222.130	251Np	88.440	226Pu	35.220		
252Th	109.990	227Pa	27.190	302Pa	435.920	277U	230.370	252Np	92.820	227Pu	36.490		
253Th	115.550	228Pa	29.250			278U	236.670	253Np	96.150	228Pu	35.900		
254Th	119.900	229Pa	30.330	203U	48.070	279U	244.890	254Np	100.660	229Pu	37.110		
255Th	125.910	230Pa	32.600	204U	44.580	280U	250.180	255Np	104.190	230Pu	36.810		
256Th	131.180	231Pa	33.900	205U	43.060	281U	257.600	256Np	109.110	231Pu	38.310		
257Th	136.720	232Pa	36.490	206U	39.870	282U	263.790	257Np	113.150	232Pu	38.380		
258Th	140.860	233Pa	38.010	207U	38.370	283U	271.390	258Np	118.300	233Pu	40.120		
259Th	146.440	234Pa	40.860	208U	35.330	284U	277.800	259Np	122.710	234Pu	40.450		
260Th	150.960	235Pa	42.730	209U	34.260	285U	285.480	260Np	127.850	235Pu	42.480		
261Th	156.880	236Pa	45.850	210U	31.080	286U	291.970	261Np	132.090	236Pu	43.100		
262Th	160.600	237Pa	48.060	211U	30.110	287U	299.800	262Np	137.420	237Pu	45.510		
263Th	167.720	238Pa	51.260	212U	27.350	288U	306.580	263Np	141.790	238Pu	46.530		
264Th	172.610	239Pa	53.690	213U	26.820	289U	314.630	264Np	147.070	239Pu	49.080		
265Th	178.780	240Pa	57.310	214U	24.750	290U	321.380	265Np	150.660	240Pu	50.440		
266Th	183.390	241Pa	59.990	215U	24.390	291U	329.570	266Np	156.990	241Pu	53.370		
267Th	189.840	242Pa	63.880	216U	22.380	292U	337.510	267Np	161.620	242Pu	54.990		
268Th	195.160	243Pa	66.620	217U	22.170	293U	345.730	268Np	167.190	243Pu	58.110		
269Th	202.060	244Pa	71.010	218U	20.870	294U	352.640	269Np	171.550	244Pu	59.980		
270Th	207.460	245Pa	74.560	219U	22.640	295U	361.000	270Np	177.380	245Pu	63.190		
271Th	214.330	246Pa	79.440	220U	22.500	296U	368.280	271Np	182.370	246Pu	65.390		
272Th	220.090	247Pa	82.890	221U	23.980	297U	377.080	272Np	188.770	247Pu	69.330		
273Th	227.260	248Pa	87.570	222U	24.120	298U	383.520	273Np	193.950	248Pu	72.190		
274Th	233.530	249Pa	91.200	223U	25.120	299U	392.310	274Np	200.220	249Pu	76.460		
275Th	242.070	250Pa	95.950	224U	25.220	300U	400.180	275Np	205.760	250Pu	79.390		
276Th	248.710	251Pa	99.620	225U	27.140	301U	408.100	276Np	212.230	251Pu	83.680		
277Th	257.410	252Pa	104.480	226U	27.450	302U	415.600	277Np	218.200	252Pu	86.590		
278Th	264.230	253Pa	108.380	227U	29.080	303U	424.670	278Np	226.080	253Pu	90.970		
279Th	271.660	254Pa	113.580	228U	29.290	304U	434.440	279Np	232.350	254Pu	93.940		
280Th	278.180	255Pa	117.950	229U	31.210	305U	441.780	280Np	238.880	255Pu	98.440		
281Th	286.180	256Pa	123.750	230U	31.850			281Np	244.930	256Pu	101.630		
282Th	292.880	257Pa	128.020	231U	34.080	206Np	52.260	282Np	251.970	257Pu	106.540		
283Th	300.840	258Pa	134.180	232U	34.900	207Np	49.040	283Np	258.120	258Pu	110.270		
284Th	307.650	259Pa	138.340	233U	37.400	208Np	47.410	284Np	265.490	259Pu	115.460		
285Th	315.870	260Pa	143.820	234U	38.520	209Np	44.310	285Np	271.770	260Pu	119.590		
286Th	322.960	261Pa	148.190	235U	41.340	210Np	42.850	286Np	279.160	261Pu	124.750		
287Th	331.550	262Pa	153.870	236U	42.840	211Np	39.930	287Np	285.700	262Pu	128.480		
288Th	338.230	263Pa	157.570	237U	45.930	212Np	38.550	288Np	293.270	263Pu	134.080		
289Th	346.650	264Pa	164.410	238U	47.770	213Np	35.820	289Np	300.100	264Pu	138.130		
290Th	355.490	265Pa	169.290	239U	50.950	214Np	34.880	290Np	308.210	265Pu	143.380		
291Th	364.010	266Pa	175.220	240U	53.010	215Np	32.850	291Np	315.010	266Pu	146.740		
292Th	371.400	267Pa	179.750	241U	56.590	216Np	32.150	292Np	323.520	267Pu	152.980		
293Th	378.380	268Pa	185.890	242U	58.900	217Np	30.210	293Np	330.190	268Pu	157.220		
294Th	385.930	269Pa	191.210	243U	62.750	218Np	29.730	294Np	337.950	269Pu	162.840		
295Th	394.770	270Pa	197.800	244U	65.160	219Np	28.290	295Np	344.940	270Pu	166.830		
296Th	402.520	271Pa	203.220	245U	69.480	220Np	29.700	296Np	352.880	271Pu	172.760		
297Th	411.690	272Pa	209.770	246U	72.720	221Np	29.470	297Np	360.130	272Pu	177.410		
298Th	419.970	273Pa	215.560	247U	77.540	222Np	31.480	298Np	368.350	273Pu	183.800		
299Th	428.760	274Pa	222.430	248U	80.630	223Np	29.800	299Np	375.830	274Pu	188.660		
		275Pa	228.710	249U	85.320	224Np	31.090	300Np	383.510	275Pu	194.900		
200Pa	44.940	276Pa	236.920	250U	88.600	225Np	31.220	301Np	390.800	276Pu	200.100		
201Pa	41.610	277Pa	243.540	251U	93.310	226Np	32.450	302Np	399.150	277Pu	206.670		
202Pa	40.400	278Pa	251.860	252U	96.630	227Np	32.320	303Np	406.650	278Pu	212.320		
203Pa	37.180	279Pa	257.730	253U	101.480	228Np	33.550	304Np	415.450	279Pu	220.130		
204Pa	35.650	280Pa	265.190	254U	105.040	229Np	33.690	305Np	425.180	280Pu	226.120		
205Pa	32.780	281Pa	271.800	255U	110.280	230Np	35.220	306Np	432.290	281Pu	233.740		
206Pa	31.340	282Pa	279.430	256U	114.350	231Np	35.760	307Np	440.340	282Pu	238.440		
207Pa	28.680	283Pa	286.060	257U	119.790	232Np	37.540	308Np	449.620	283Pu	245.400		
208Pa	27.410	284Pa	293.680	258U	124.130	233Np	38.280			284Pu	251.340		
209Pa	24.670	285Pa	300.500	259U	129.570	234Np	40.380			285Pu	258.460		
210Pa	23.730	286Pa	308.340	260U	133.890	235Np	41.420			286Pu	264.530		
211Pa	21.370			261U	139.490	236Np	43.900						

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
²⁸⁷ Pu	271.930	²⁶¹ Am	118.920	²³⁵ Cm	48.120	³¹⁰ Cm	410.670	²⁸⁴ Bk	220.760	²⁵⁸ Cf	93.420
²⁸⁸ Pu	278.280	²⁶² Am	123.710	²³⁶ Cm	47.920	³¹¹ Cm	419.300	²⁸⁵ Bk	226.050	²⁵⁹ Cf	97.190
²⁸⁹ Pu	286.190	²⁶³ Am	127.510	²³⁷ Cm	49.550	³¹² Cm	426.830	²⁸⁶ Bk	232.400	²⁶⁰ Cf	99.610
²⁹⁰ Pu	292.540	²⁶⁴ Am	132.640	²³⁸ Cm	49.690	³¹³ Cm	435.490	²⁸⁷ Bk	237.690	²⁶¹ Cf	103.760
²⁹¹ Pu	300.270	²⁶⁵ Am	136.950	²³⁹ Cm	51.630	³¹⁴ Cm	442.940	²⁸⁸ Bk	244.190	²⁶² Cf	106.840
²⁹² Pu	307.150	²⁶⁶ Am	141.880	²⁴⁰ Cm	52.040	³¹⁵ Cm	451.830	²⁸⁹ Bk	249.700	²⁶³ Cf	111.440
²⁹³ Pu	314.900	²⁶⁷ Am	145.300	²⁴¹ Cm	54.240	³¹⁶ Cm	459.440	²⁹⁰ Bk	256.400	²⁶⁴ Cf	114.690
²⁹⁴ Pu	321.430	²⁶⁸ Am	151.100	²⁴² Cm	55.120	³¹⁷ Cm	468.460	²⁹¹ Bk	262.090	²⁶⁵ Cf	119.660
²⁹⁵ Pu	329.120	²⁶⁹ Am	155.430	²⁴³ Cm	57.390	³¹⁸ Cm	476.480	²⁹² Bk	268.960	²⁶⁶ Cf	122.720
²⁹⁶ Pu	335.700	²⁷⁰ Am	160.720	²⁴⁴ Cm	58.520			²⁹³ Bk	274.810	²⁶⁷ Cf	127.370
²⁹⁷ Pu	343.780	²⁷¹ Am	164.740	²⁴⁵ Cm	61.210	²¹⁸ Bk	67.330	²⁹⁴ Bk	281.740	²⁶⁸ Cf	131.250
²⁹⁸ Pu	350.550	²⁷² Am	170.260	²⁴⁶ Cm	62.590	²¹⁹ Bk	64.390	²⁹⁵ Bk	287.790	²⁶⁹ Cf	136.030
²⁹⁹ Pu	358.930	²⁷³ Am	175.020	²⁴⁷ Cm	65.610	²²⁰ Bk	62.900	²⁹⁶ Bk	294.790	²⁷⁰ Cf	139.160
³⁰⁰ Pu	365.570	²⁷⁴ Am	181.150	²⁴⁸ Cm	67.320	²²¹ Bk	60.210	²⁹⁷ Bk	300.890	²⁷¹ Cf	144.200
³⁰¹ Pu	373.730	²⁷⁵ Am	186.030	²⁴⁹ Cm	70.890	²²² Bk	59.000	²⁹⁸ Bk	308.110	²⁷² Cf	147.820
³⁰² Pu	380.720	²⁷⁶ Am	192.010	²⁵⁰ Cm	73.350	²²³ Bk	56.630	²⁹⁹ Bk	314.450	²⁷³ Cf	152.840
³⁰³ Pu	389.070	²⁷⁷ Am	197.220	²⁵¹ Cm	77.240	²²⁴ Bk	57.270	³⁰⁰ Bk	321.690	²⁷⁴ Cf	156.510
³⁰⁴ Pu	396.250	²⁷⁸ Am	203.510	²⁵² Cm	79.650	²²⁵ Bk	55.550	³⁰¹ Bk	328.220	²⁷⁵ Cf	161.680
³⁰⁵ Pu	405.070	²⁷⁹ Am	209.180	²⁵³ Cm	83.750	²²⁶ Bk	57.010	³⁰² Bk	335.750	²⁷⁶ Cf	165.790
³⁰⁶ Pu	412.700	²⁸⁰ Am	216.470	²⁵⁴ Cm	86.250	²²⁷ Bk	54.970	³⁰³ Bk	342.670	²⁷⁷ Cf	171.530
³⁰⁷ Pu	421.540	²⁸¹ Am	222.430	²⁵⁵ Cm	90.250	²²⁸ Bk	54.920	³⁰⁴ Bk	350.360	²⁷⁸ Cf	175.780
³⁰⁸ Pu	429.410	²⁸² Am	228.500	²⁵⁶ Cm	92.850	²²⁹ Bk	53.540	³⁰⁵ Bk	357.020	²⁷⁹ Cf	181.460
³⁰⁹ Pu	438.440	²⁸³ Am	234.180	²⁵⁷ Cm	96.990	²³⁰ Bk	53.820	³⁰⁶ Bk	364.750	²⁸⁰ Cf	186.070
³¹⁰ Pu	446.280	²⁸⁴ Am	240.910	²⁵⁸ Cm	99.820	²³¹ Bk	52.700	³⁰⁷ Bk	371.650	²⁸¹ Cf	192.090
³¹¹ Pu	455.370	²⁸⁵ Am	246.720	²⁵⁹ Cm	104.370	²³² Bk	53.130	³⁰⁸ Bk	379.690	²⁸² Cf	197.130
³¹² Pu	463.110	²⁸⁶ Am	253.580	²⁶⁰ Cm	107.780	²³³ Bk	52.360	³⁰⁹ Bk	386.970	²⁸³ Cf	204.000
		²⁸⁷ Am	260.770	²⁶¹ Cm	112.650	²³⁴ Bk	53.040	³¹⁰ Bk	395.380	²⁸⁴ Cf	209.200
²¹² Am	59.430	²⁸⁸ Am	266.770	²⁶² Cm	116.260	²³⁵ Bk	52.530	³¹¹ Bk	402.820	²⁸⁵ Cf	215.920
²¹³ Am	56.160	²⁸⁹ Am	273.270	²⁶³ Cm	121.410	²³⁶ Bk	53.450	³¹² Bk	411.210	²⁸⁶ Cf	221.020
²¹⁴ Am	54.830	²⁹⁰ Am	280.520	²⁶⁴ Cm	124.850	²³⁷ Bk	53.190	³¹³ Bk	418.720	²⁸⁷ Cf	227.350
²¹⁵ Am	51.720	²⁹¹ Am	287.160	²⁶⁵ Cm	129.740	²³⁸ Bk	54.450	³¹⁴ Bk	427.020	²⁸⁸ Cf	232.320
²¹⁶ Am	50.440	²⁹² Am	294.500	²⁶⁶ Cm	134.020	²³⁹ Bk	54.490	³¹⁵ Bk	434.470	²⁸⁹ Cf	238.810
²¹⁷ Am	47.940	²⁹³ Am	300.810	²⁶⁷ Cm	138.960	²⁴⁰ Bk	55.890	³¹⁶ Bk	443.110	²⁹⁰ Cf	244.010
²¹⁸ Am	46.860	²⁹⁴ Am	308.240	²⁶⁸ Cm	142.190	²⁴¹ Bk	56.390	³¹⁷ Bk	450.730	²⁹¹ Cf	250.670
²¹⁹ Am	44.560	²⁹⁵ Am	314.750	²⁶⁹ Cm	147.820	²⁴² Bk	58.190	³¹⁸ Bk	459.460	²⁹² Cf	256.040
²²⁰ Am	43.720	²⁹⁶ Am	322.210	²⁷⁰ Cm	151.820	²⁴³ Bk	58.800	³¹⁹ Bk	467.460	²⁹³ Cf	262.880
²²¹ Am	41.810	²⁹⁷ Am	328.710	²⁷¹ Cm	157.100	²⁴⁴ Bk	60.830	³²⁰ Bk	476.410	²⁹⁴ Cf	268.420
²²² Am	42.890	²⁹⁸ Am	336.520	²⁷² Cm	160.930	²⁴⁵ Bk	61.910	³²¹ Bk	484.610	²⁹⁵ Cf	275.400
²²³ Am	42.080	²⁹⁹ Am	343.250	²⁷³ Cm	166.430	²⁴⁶ Bk	64.210			²⁹⁶ Cf	281.010
²²⁴ Am	43.620	³⁰⁰ Am	351.100	²⁷⁴ Cm	170.870	²⁴⁷ Bk	65.540	²²¹ Cf	70.470	²⁹⁷ Cf	288.050
²²⁵ Am	41.700	³⁰¹ Am	358.070	²⁷⁵ Cm	176.930	²⁴⁸ Bk	68.150	²²² Cf	67.360	²⁹⁸ Cf	293.800
²²⁶ Am	42.450	³⁰² Am	365.990	²⁷⁶ Cm	181.490	²⁴⁹ Bk	69.820	²²³ Cf	66.110	²⁹⁹ Cf	300.960
²²⁷ Am	41.770	³⁰³ Am	372.990	²⁷⁷ Cm	187.470	²⁵⁰ Bk	73.020	²²⁴ Cf	63.380	³⁰⁰ Cf	306.980
²²⁸ Am	42.340	³⁰⁴ Am	381.040	²⁷⁸ Cm	192.360	²⁵¹ Bk	75.190	²²⁵ Cf	63.870	³⁰¹ Cf	314.310
²²⁹ Am	41.670	³⁰⁵ Am	388.230	²⁷⁹ Cm	198.650	²⁵² Bk	79.000	²²⁶ Cf	61.920	³⁰² Cf	320.570
²³⁰ Am	42.490	³⁰⁶ Am	396.750	²⁸⁰ Cm	203.990	²⁵³ Bk	81.380	²²⁷ Cf	63.260	³⁰³ Cf	328.030
²³¹ Am	42.150	³⁰⁷ Am	404.390	²⁸¹ Cm	211.330	²⁵⁴ Bk	85.150	²²⁸ Cf	60.910	³⁰⁴ Cf	334.510
²³² Am	43.260	³⁰⁸ Am	412.960	²⁸² Cm	216.910	²⁵⁵ Bk	87.640	²²⁹ Cf	60.870	³⁰⁵ Cf	342.260
²³³ Am	43.230	³⁰⁹ Am	420.770	²⁸³ Cm	224.150	²⁵⁶ Bk	91.290	²³⁰ Cf	59.170	³⁰⁶ Cf	348.900
²³⁴ Am	44.570	³¹⁰ Am	429.410	²⁸⁴ Cm	229.880	²⁵⁷ Bk	93.880	²³¹ Cf	59.380	³⁰⁷ Cf	356.530
²³⁵ Am	44.790	³¹¹ Am	437.380	²⁸⁵ Cm	236.410	²⁵⁸ Bk	97.680	²³² Cf	57.920	³⁰⁸ Cf	363.220
²³⁶ Am	46.440	³¹² Am	445.970	²⁸⁶ Cm	241.710	²⁵⁹ Bk	100.490	²³³ Cf	58.390	³⁰⁹ Cf	371.240
²³⁷ Am	46.990	³¹³ Am	453.730	²⁸⁷ Cm	248.530	²⁶⁰ Bk	104.700	²³⁴ Cf	57.210	³¹⁰ Cf	378.230
²³⁸ Am	48.990	³¹⁴ Am	462.590	²⁸⁸ Cm	254.050	²⁶¹ Bk	108.080	²³⁵ Cf	57.850	³¹¹ Cf	386.600
²³⁹ Am	49.980	³¹⁵ Am	470.480	²⁸⁹ Cm	261.060	²⁶² Bk	112.670	²³⁶ Cf	56.970	³¹² Cf	393.730
²⁴⁰ Am	52.120			²⁹⁰ Cm	266.770	²⁶³ Bk	116.210	²³⁷ Cf	57.840	³¹³ Cf	402.070
²⁴¹ Am	53.400	²¹⁵ Cm	62.340	²⁹¹ Cm	273.980	²⁶⁴ Bk	121.170	²³⁸ Cf	57.200	³¹⁴ Cf	409.300
²⁴² Am	55.940	²¹⁶ Cm	59.130	²⁹² Cm	279.850	²⁶⁵ Bk	124.630	²³⁹ Cf	58.420	³¹⁵ Cf	417.510
²⁴³ Am	57.520	²¹⁷ Cm	57.800	²⁹³ Cm	287.150	²⁶⁶ Bk	129.200	²⁴⁰ Cf	58.050	³¹⁶ Cf	424.930
²⁴⁴ Am	60.270	²¹⁸ Cm	54.870	²⁹⁴ Cm	293.150	²⁶⁷ Bk	133.410	²⁴¹ Cf	59.390	³¹⁷ Cf	433.280
²⁴⁵ Am	62.110	²¹⁹ Cm	53.770	²⁹⁵ Cm	300.550	²⁶⁸ Bk	138.230	²⁴² Cf	59.440	³¹⁸ Cf	440.550
²⁴⁶ Am	64.960	²²⁰ Cm	51.050	²⁹⁶ Cm	306.720	²⁶⁹ Bk	141.510	²⁴³ Cf	61.010	³¹⁹ Cf	449.260
²⁴⁷ Am	67.140	²²¹ Cm	50.100	²⁹⁷ Cm	314.250	²⁷⁰ Bk	146.740	²⁴⁴ Cf	61.370	³²⁰ Cf	457.040
²⁴⁸ Am	70.720	²²² Cm	47.880	²⁹⁸ Cm	320.560	²⁷¹ Bk	150.700	²⁴⁵ Cf	63.370	³²¹ Cf	465.910
²⁴⁹ Am	73.550	²²³ Cm	48.810	²⁹⁹ Cm	328.130	²⁷² Bk	155.710	²⁴⁶ Cf	64.040	³²² Cf	473.830
²⁵⁰ Am	77.500	²²⁴ Cm	47.420	³⁰⁰ Cm	334.680	²⁷³ Bk	159.600	²⁴⁷ Cf	66.260	³²³ Cf	482.940
²⁵¹ Am	80.400	²²⁵ Cm	49.220	³⁰¹ Cm	342.540	²⁷⁴ Bk	164.780	²⁴⁸ Cf	67.210	³²⁴ Cf	494.220
²⁵² Am	84.340	²²⁶ Cm	46.910	³⁰² Cm	349.220	²⁷⁵ Bk	169.230	²⁴⁹ Cf	69.740	³²⁵ Cf	502.690
²⁵³ Am	87.230	²²⁷ Cm	47.760	³⁰³ Cm	357.150	²⁷⁶ Bk	175.040	²⁵⁰ Cf	70.890		
²⁵⁴ Am	91.240	²²⁸ Cm	46.630	³⁰⁴ Cm	363.840	²⁷⁷ Bk	179.590	²⁵¹ Cf	74.180	²²⁴ Es	75.580
²⁵⁵ Am	94.210	²²⁹ Cm	47.200	³⁰⁵ Cm	371.880	²⁷⁸ Bk	185.270	²⁵² Cf	76.000	²²⁵ Es	72.850
²⁵⁶ Am	98.400	²³⁰ Cm	46.130	³⁰⁶ Cm	378.780	²⁷⁹ Bk	190.200	²⁵³ Cf	79.760	²²⁶ Es	72.930
²⁵⁷ Am	101.580	²³¹ Cm	46.930	³⁰⁷ Cm	387.300	²⁸⁰ Bk	196.210	²⁵⁴ Cf	81.770	²²⁷ Es	70.750
²⁵⁸ Am	106.160	²³² Cm	46.180	³⁰⁸ Cm	394.610	²⁸¹ Bk	201.560	²⁵⁵ Cf	85.300	²²⁸ Es	71.800
²⁵⁹ Am	109.880	²³³ Cm	47.250	³⁰⁹ Cm	403.170	²⁸² Bk	208.400	²⁵⁶ Cf	87.590	²²⁹ Es	69.020
²⁶⁰ Am	114.760	²³⁴ Cm	46.820			²⁸³ Bk	213.930	²⁵⁷ Cf	91.210	²³⁰ Es	68.600

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
231Es	66.880	306Es	336.310	278Fm	162.190	250Md	78.240	325Md	447.750	297No	246.220		
232Es	66.720	307Es	342.880	279Fm	167.520	251Md	78.580	326Md	456.290	298No	251.080		
233Es	65.290	308Es	350.300	280Fm	171.520	252Md	80.120	327Md	464.030	299No	257.290		
234Es	65.340	309Es	357.020	281Fm	176.880	253Md	80.910	328Md	475.540	300No	262.260		
235Es	64.130	310Es	364.700	282Fm	181.290	254Md	83.400	329Md	482.300	301No	268.560		
236Es	64.420	311Es	371.680	283Fm	186.940	255Md	84.720	330Md	490.730	302No	273.640		
237Es	63.440	312Es	379.620	284Fm	191.630	256Md	87.360	331Md	498.430	303No	280.110		
238Es	63.960	313Es	386.590	285Fm	198.010	257Md	89.200	332Md	507.280	304No	285.500		
239Es	63.220	314Es	394.770	286Fm	203.510	258Md	91.870	333Md	515.090	305No	292.280		
240Es	64.050	315Es	401.950	287Fm	209.320	259Md	93.540	334Md	523.880	306No	297.950		
241Es	63.580	316Es	409.890	288Fm	214.130	260Md	96.340		93.030	307No	305.180		
242Es	64.670	317Es	417.330	289Fm	220.140	261Md	98.230	232No	91.630	308No	311.220		
243Es	64.690	318Es	425.410	290Fm	224.760	262Md	101.230	233No	89.120	309No	318.430		
244Es	65.820	319Es	432.670	291Fm	230.910	263Md	103.210	234No	88.470	310No	324.490		
245Es	66.130	320Es	441.070	292Fm	235.780	264Md	106.650	235No	86.220	311No	331.830		
246Es	67.730	321Es	448.810	293Fm	242.100	265Md	109.300	236No	85.890	312No	337.970		
247Es	68.340	322Es	457.440	294Fm	247.140	266Md	113.300	237No	83.980	313No	345.360		
248Es	70.180	323Es	465.340	295Fm	253.630	267Md	116.150	238No	84.030	314No	351.550		
249Es	71.030	324Es	474.140	296Fm	258.840	268Md	120.350	239No	82.290	315No	358.990		
250Es	73.010	325Es	482.190	297Fm	265.380	269Md	123.510	240No	82.430	316No	365.250		
251Es	74.280	326Es	493.920	298Fm	270.740	270Md	127.510	241No	80.980	317No	372.930		
252Es	77.230	327Es	500.950	299Fm	277.360	271Md	130.570	242No	81.370	318No	379.380		
253Es	79.000	328Es	509.650	300Fm	282.740	272Md	135.120	243No	80.130	319No	386.990		
254Es	82.390	226Fm	80.200	301Fm	289.570	273Md	138.150	244No	80.760	320No	393.470		
255Es	84.390	227Fm	80.220	302Fm	295.290	274Md	142.440	245No	80.860	321No	401.440		
256Es	87.540	228Fm	77.890	303Fm	302.230	275Md	145.710	246No	80.080	322No	407.850		
257Es	89.680	229Fm	78.710	304Fm	308.190	276Md	150.070	247No	81.210	323No	416.100		
258Es	93.090	230Fm	75.750	305Fm	315.760	277Md	153.740	248No	80.930	324No	423.040		
259Es	95.280	231Fm	75.280	306Fm	321.720	278Md	158.260	249No	82.300	325No	431.380		
260Es	98.660	232Fm	73.200	307Fm	329.400	279Md	162.010	250No	82.200	326No	438.700		
261Es	101.060	233Fm	72.970	308Fm	335.710	280Md	167.060	251No	83.840	327No	447.150		
262Es	104.910	234Fm	71.180	309Fm	343.130	281Md	171.050	252No	83.840	328No	454.590		
263Es	107.910	235Fm	71.310	310Fm	349.570	282Md	176.130	253No	84.050	329No	465.940		
264Es	112.210	236Fm	69.720	311Fm	357.230	283Md	180.530	254No	86.550	330No	472.460		
265Es	115.420	237Fm	70.010	312Fm	363.860	284Md	185.860	255No	87.420	331No	480.940		
266Es	120.200	238Fm	68.640	313Fm	371.980	285Md	190.500	256No	90.030	332No	488.310		
267Es	123.250	239Fm	69.140	314Fm	378.430	286Md	197.200	257No	91.440	333No	497.200		
268Es	127.590	240Fm	68.100	315Fm	386.570	287Md	201.380	258No	94.050	334No	504.800		
269Es	131.330	241Fm	68.880	316Fm	393.380	288Md	207.420	259No	95.320	335No	513.560		
270Es	135.810	242Fm	68.050	317Fm	401.600	289Md	212.220	260No	98.170	336No	521.310		
271Es	139.390	243Fm	69.080	318Fm	408.410	290Md	217.920	261No	99.520	337No	530.110		
272Es	143.860	244Fm	68.690	319Fm	416.440	291Md	222.510	262No	102.450	338No	537.990		
273Es	147.480	245Fm	69.770	320Fm	423.400	292Md	228.350	263No	104.040	235Lr	98.570		
274Es	152.150	246Fm	69.690	321Fm	431.780	293Md	233.190	264No	107.450	236Lr	97.540		
275Es	156.150	247Fm	71.230	322Fm	439.240	294Md	239.210	265No	109.740	237Lr	95.240		
276Es	160.790	248Fm	71.430	323Fm	447.820	295Md	244.230	266No	113.740	238Lr	94.540		
277Es	164.890	249Fm	73.220	324Fm	455.430	296Md	250.410	267No	116.210	239Lr	92.550		
278Es	170.290	250Fm	73.660	325Fm	464.220	297Md	255.610	268No	120.350	240Lr	92.130		
279Es	174.610	251Fm	75.560	326Fm	471.960	298Md	261.850	269No	123.200	241Lr	90.480		
280Es	179.980	252Fm	76.430	327Fm	483.600	299Md	267.120	270No	127.180	242Lr	90.330		
281Es	184.650	253Fm	79.340	328Fm	490.350	300Md	273.450	271No	129.920	243Lr	88.870		
282Es	190.310	254Fm	80.710	329Fm	499.070	301Md	278.830	272No	134.410	244Lr	88.860		
283Es	195.330	255Fm	83.790	330Fm	506.730	302Md	285.330	273No	137.140	245Lr	87.620		
284Es	201.660	256Fm	85.660	331Fm	515.870	303Md	291.000	274No	141.390	246Lr	87.890		
285Es	206.900	257Fm	88.770	229Md	87.430	304Md	297.750	275No	144.330	247Lr	87.010		
286Es	213.500	258Fm	90.510	230Md	87.920	305Md	303.720	276No	148.660	248Lr	87.550		
287Es	218.220	259Fm	93.690	231Md	84.910	306Md	310.980	277No	152.010	249Lr	86.740		
288Es	224.240	260Fm	95.610	232Md	84.010	307Md	317.030	278No	156.660	250Lr	87.460		
289Es	229.200	261Fm	98.980	233Md	81.870	308Md	324.220	279No	160.090	251Lr	87.090		
290Es	235.380	262Fm	101.000	234Md	81.260	309Md	330.560	280No	165.020	252Lr	88.090		
291Es	240.540	263Fm	104.790	235Md	79.380	310Md	337.890	281No	168.690	253Lr	87.890		
292Es	246.880	264Fm	107.450	236Md	79.160	311Md	344.310	282No	173.810	254Lr	89.150		
293Es	252.240	265Fm	111.780	237Md	77.600	312Md	351.660	283No	177.830	255Lr	89.300		
294Es	258.760	266Fm	114.640	238Md	77.550	313Md	358.430	284No	183.220	256Lr	91.420		
295Es	264.270	267Fm	119.420	239Md	76.260	314Md	365.890	285No	187.620	257Lr	92.200		
296Es	270.850	268Fm	122.180	240Md	76.380	315Md	372.470	286No	193.550	258Lr	94.420		
297Es	276.510	269Fm	126.490	241Md	75.220	316Md	380.200	287No	198.160	259Lr	95.710		
298Es	283.170	270Fm	129.890	242Md	75.620	317Md	387.000	288No	204.220	260Lr	97.960		
299Es	288.950	271Fm	134.380	243Md	74.770	318Md	394.600	289No	210.660	261Lr	99.160		
300Es	295.760	272Fm	137.620	244Md	75.430	319Md	401.710	290No	214.690	262Lr	101.640		
301Es	301.760	273Fm	142.040	245Md	75.000	320Md	409.420	291No	218.980	263Lr	102.910		
302Es	308.790	274Fm	145.330	246Md	75.960	321Md	416.430	292No	224.810	264Lr	105.510		
303Es	315.040	275Fm	150.000	247Md	75.560	322Md	424.470	293No	229.320	265Lr	107.040		
304Es	322.340	276Fm	153.690	248Md	76.710	323Md	431.850	294No	235.320	266Lr	110.050		
305Es	328.800	277Fm	158.420	249Md	76.830	324Md	440.170	295No	240.050	267Lr	112.320		

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
³²⁸ Ns	384.990	³¹³ Hs	283.350	³⁰¹ Mt	221.100	²⁹² 110	177.990	²⁸⁶ 111	162.050	²⁸³ 112	157.910
³²⁹ Ns	391.530	³¹⁴ Hs	288.300	³⁰² Mt	225.840	²⁹³ 110	182.110	²⁸⁷ 111	163.940	²⁸⁴ 112	158.770
³³⁰ Ns	398.870	³¹⁵ Hs	294.540	³⁰³ Mt	229.520	²⁹⁴ 110	185.260	²⁸⁸ 111	167.060	²⁸⁵ 112	161.110
³³¹ Ns	405.460	³¹⁶ Hs	299.560	³⁰⁴ Mt	234.360	²⁹⁵ 110	190.540	²⁸⁹ 111	168.780	²⁸⁶ 112	162.230
³³² Ns	412.990	³¹⁷ Hs	305.830	³⁰⁵ Mt	238.200	²⁹⁶ 110	193.850	²⁹⁰ 111	171.870	²⁸⁷ 112	164.820
³³³ Ns	422.260	³¹⁸ Hs	310.900	³⁰⁶ Mt	243.170	²⁹⁷ 110	199.170	²⁹¹ 111	174.300	²⁸⁸ 112	166.230
³³⁴ Ns	429.140	³¹⁹ Hs	317.260	³⁰⁷ Mt	247.080	²⁹⁸ 110	203.070	²⁹² 111	177.730	²⁸⁹ 112	169.030
³³⁵ Ns	435.050	³²⁰ Hs	322.510	³⁰⁸ Mt	252.150	²⁹⁹ 110	208.040	²⁹³ 111	180.490	²⁹⁰ 112	170.440
³³⁶ Ns	442.800	³²¹ Hs	329.090	³⁰⁹ Mt	256.280	³⁰⁰ 110	212.490	²⁹⁴ 111	184.340	²⁹¹ 112	173.530
³³⁷ Ns	449.710	³²² Hs	334.680	³¹⁰ Mt	261.450	³⁰¹ 110	216.970	²⁹⁵ 111	187.460	²⁹² 112	175.610
³³⁸ Ns	457.710	³²³ Hs	341.610	³¹¹ Mt	265.950	³⁰² 110	220.780	²⁹⁶ 111	192.390	²⁹³ 112	178.990
³³⁹ Ns	465.090	³²⁴ Hs	347.460	³¹² Mt	271.610	³⁰³ 110	225.280	²⁹⁷ 111	195.710	²⁹⁴ 112	181.440
²⁵⁰ HS	125.820	³²⁵ Hs	354.320	³¹³ Mt	276.300	³⁰⁴ 110	228.730	²⁹⁸ 111	201.000	²⁹⁵ 112	185.290
²⁵¹ HS	125.310	³²⁶ Hs	360.050	³¹⁴ Mt	282.130	³⁰⁵ 110	233.580	²⁹⁹ 111	204.520	²⁹⁶ 112	188.110
²⁵² HS	123.160	³²⁷ Hs	366.550	³¹⁵ Mt	287.050	³⁰⁶ 110	237.130	³⁰⁰ 111	209.950	²⁹⁷ 112	192.960
²⁵³ HS	122.850	³²⁸ Hs	375.460	³¹⁶ Mt	292.970	³⁰⁷ 110	242.070	³⁰¹ 111	213.300	²⁹⁸ 112	196.030
²⁵⁴ HS	120.830	³²⁹ Hs	382.710	³¹⁷ Mt	297.970	³⁰⁸ 110	245.720	³⁰² 111	218.240	²⁹⁹ 112	201.260
²⁵⁵ HS	120.710	³³⁰ Hs	388.520	³¹⁸ Mt	303.910	³⁰⁹ 110	250.750	³⁰³ 111	222.080	³⁰⁰ 112	204.600
²⁵⁶ HS	119.030	³³¹ Hs	395.620	³¹⁹ Mt	308.970	³¹⁰ 110	254.550	³⁰⁴ 111	227.070	³⁰¹ 112	209.840
²⁵⁷ HS	119.170	³³² Hs	399.430	³²⁰ Mt	315.030	³¹¹ 110	259.810	³⁰⁵ 111	229.970	³⁰² 112	213.370
²⁵⁸ HS	117.670	³³³ Hs	409.430	³²¹ Mt	320.270	³¹² 110	264.000	³⁰⁶ 111	234.550	³⁰³ 112	218.490
²⁵⁹ HS	118.050	³³⁴ Hs	414.970	³²² Mt	326.590	³¹³ 110	269.650	³⁰⁷ 111	238.090	³⁰⁴ 112	222.070
²⁶⁰ HS	117.070	³³⁵ Hs	421.830	³²³ Mt	332.190	³¹⁴ 110	274.050	³⁰⁸ 111	242.720	³⁰⁵ 112	227.190
²⁶¹ HS	118.050	³³⁶ Hs	427.460	³²⁴ Mt	338.820	³¹⁵ 110	279.890	³⁰⁹ 111	246.370	³⁰⁶ 112	231.380
²⁶² HS	117.570	³³⁷ Hs	435.210	³²⁵ Mt	344.470	³¹⁶ 110	284.520	³¹⁰ 111	251.160	³⁰⁷ 112	234.530
²⁶³ HS	118.800	³³⁸ Hs	441.880	³²⁶ Mt	351.040	³¹⁷ 110	290.460	³¹¹ 111	254.950	³⁰⁸ 112	237.730
²⁶⁴ HS	118.730	³³⁹ Hs	449.890	³²⁷ Mt	356.800	³¹⁸ 110	295.140	³¹² 111	259.950	³⁰⁹ 112	242.400
²⁶⁵ HS	120.020	²⁵³ Mt	132.660	³²⁸ Mt	365.920	³¹⁹ 110	301.110	³¹³ 111	264.150	³¹⁰ 112	245.790
²⁶⁶ HS	119.940	²⁵⁴ Mt	131.990	³²⁹ Mt	371.830	³²⁰ 110	305.890	³¹⁴ 111	269.520	³¹¹ 112	250.520
²⁶⁷ HS	121.340	²⁵⁵ Mt	130.050	³³⁰ Mt	378.820	³²¹ 110	311.950	³¹⁵ 111	273.910	³¹² 112	254.020
²⁶⁸ HS	121.360	²⁵⁶ Mt	129.610	³³¹ Mt	384.620	³²² 110	316.930	³¹⁶ 111	279.460	³¹³ 112	258.980
²⁶⁹ HS	123.050	²⁵⁷ Mt	127.750	³³² Mt	391.480	³²³ 110	323.240	³¹⁷ 111	284.120	³¹⁴ 112	262.830
²⁷⁰ HS	123.360	²⁵⁸ Mt	127.550	³³³ Mt	397.420	³²⁴ 110	328.550	³¹⁸ 111	289.770	³¹⁵ 112	268.230
²⁷¹ HS	125.600	²⁵⁹ Mt	126.010	³³⁴ Mt	404.440	³²⁵ 110	335.180	³¹⁹ 111	294.500	³¹⁶ 112	272.500
²⁷² HS	126.720	²⁶⁰ Mt	126.040	³³⁵ Mt	409.920	³²⁶ 110	340.470	³²⁰ 111	300.230	³¹⁷ 112	278.050
²⁷³ HS	129.590	²⁶¹ Mt	125.020	³³⁶ Mt	416.500	³²⁷ 110	347.140	³²¹ 111	305.010	³¹⁸ 112	282.410
²⁷⁴ HS	131.150	²⁶² Mt	125.820	³³⁷ Mt	422.110	³²⁸ 110	354.300	³²² 111	310.830	³¹⁹ 112	288.050
²⁷⁵ HS	134.360	²⁶³ Mt	125.230	³³⁸ Mt	429.600	³²⁹ 110	361.180	³²³ 111	315.770	³²⁰ 112	292.490
²⁷⁶ HS	136.180	²⁶⁴ Mt	126.030	³³⁹ Mt	436.290	³³⁰ 110	366.730	³²⁴ 111	321.850	³²¹ 112	298.190
²⁷⁷ HS	139.120	²⁶⁵ Mt	125.720	²⁵⁶ 110	137.920	³³¹ 110	373.400	³²⁵ 111	327.300	³²² 112	302.710
²⁷⁸ HS	141.140	²⁶⁶ Mt	126.650	²⁵⁷ 110	137.460	³³² 110	378.910	³²⁶ 111	333.510	³²³ 112	308.450
²⁷⁹ HS	143.950	²⁶⁷ Mt	126.590	²⁵⁸ 110	135.360	³³³ 110	385.790	³²⁷ 111	338.760	³²⁴ 112	313.740
²⁸⁰ HS	145.470	²⁶⁸ Mt	127.600	²⁵⁹ 110	135.080	³³⁴ 110	391.610	³²⁸ 111	345.420	³²⁵ 112	319.700
²⁸¹ HS	148.470	²⁶⁹ Mt	127.480	²⁶⁰ 110	133.300	³³⁵ 110	398.290	³²⁹ 111	351.190	³²⁶ 112	324.390
²⁸² HS	150.340	²⁷⁰ Mt	128.850	²⁶¹ 110	133.340	³³⁶ 110	403.390	³³⁰ 111	357.800	³²⁷ 112	330.530
²⁸³ HS	153.610	²⁷¹ Mt	129.030	²⁶² 110	131.990	³³⁷ 110	409.960	³³¹ 111	363.330	³²⁸ 112	335.520
²⁸⁴ HS	155.900	²⁷² Mt	130.890	²⁶³ 110	132.570	³³⁸ 110	415.280	³³² 111	369.900	³²⁹ 112	341.870
²⁸⁵ HS	159.680	²⁷³ Mt	131.960	²⁶⁴ 110	131.590	³³⁹ 110	422.790	³³³ 111	375.390	³³⁰ 112	347.100
²⁸⁶ HS	162.270	²⁷⁴ Mt	134.510	²⁶⁵ 110	132.370	²⁵⁹ 111	144.950	³³⁴ 111	382.110	³³¹ 112	353.800
²⁸⁷ HS	165.990	²⁷⁵ Mt	135.990	²⁶⁶ 110	131.780	²⁶⁰ 111	144.390	³³⁵ 111	387.610	³³² 112	358.970
²⁸⁸ HS	168.740	²⁷⁶ Mt	138.780	²⁶⁷ 110	132.640	²⁶¹ 111	142.550	³³⁶ 111	394.090	³³³ 112	365.510
²⁸⁹ HS	172.790	²⁷⁷ Mt	140.570	²⁶⁸ 110	132.100	²⁶² 111	142.230	³³⁷ 111	399.020	³³⁴ 112	370.700
²⁹⁰ HS	175.890	²⁷⁸ Mt	143.250	²⁶⁹ 110	133.080	²⁶³ 111	140.870	³³⁸ 111	405.300	³³⁵ 112	377.340
²⁹¹ HS	180.320	²⁷⁹ Mt	145.120	²⁷⁰ 110	132.680	²⁶⁴ 111	141.110	³³⁹ 111	410.600	³³⁶ 112	382.320
²⁹² HS	183.790	²⁸⁰ Mt	147.550	²⁷¹ 110	133.940	²⁶⁵ 111	140.110	²⁶² 112	150.530	³³⁷ 112	388.680
²⁹³ HS	189.200	²⁸¹ Mt	149.140	²⁷² 110	133.820	²⁶⁶ 111	140.510	²⁶³ 112	150.230	³³⁸ 112	393.270
²⁹⁴ HS	192.910	²⁸² Mt	151.850	²⁷³ 110	135.570	²⁶⁷ 111	139.800	²⁶⁴ 112	148.550	³³⁹ 112	399.540
²⁹⁵ HS	198.180	²⁸³ Mt	153.630	²⁷⁴ 110	136.290	²⁶⁸ 111	140.340	²⁶⁵ 112	148.720	²⁶⁶ 113	158.260
²⁹⁶ HS	202.130	²⁸⁴ Mt	156.600	²⁷⁵ 110	138.760	²⁶⁹ 111	139.770	²⁶⁶ 112	147.390	²⁶⁷ 113	156.830
²⁹⁷ HS	207.410	²⁸⁵ Mt	158.940	²⁷⁶ 110	139.870	²⁷⁰ 111	140.420	²⁶⁷ 112	147.760	²⁶⁸ 113	156.800
²⁹⁸ HS	212.970	²⁸⁶ Mt	162.420	²⁷⁷ 110	142.710	²⁷¹ 111	140.020	²⁶⁸ 112	146.700	²⁶⁹ 113	155.670
²⁹⁹ HS	216.760	²⁸⁷ Mt	164.850	²⁷⁸ 110	143.980	²⁷² 111	140.930	²⁶⁹ 112	147.220	²⁷⁰ 113	155.830
³⁰⁰ HS	220.320	²⁸⁸ Mt	168.180	²⁷⁹ 110	146.470	²⁷³ 111	140.790	²⁷⁰ 112	146.300	²⁷¹ 113	154.840
³⁰¹ HS	225.360	²⁸⁹ Mt	170.950	²⁸⁰ 110	147.650	²⁷⁴ 111	142.140	²⁷¹ 112	146.900	²⁷² 113	155.110
³⁰² HS	229.040	²⁹⁰ Mt	174.680	²⁸¹ 110	150.090	²⁷⁵ 111	142.770	²⁷² 112	146.130	²⁷³ 113	154.300
³⁰³ HS	234.180	²⁹¹ Mt	177.760	²⁸² 110	151.320	²⁷⁶ 111	144.840	²⁷³ 112	147.010	²⁷⁴ 113	154.820
³⁰⁴ HS	238.010	²⁹² Mt	181.880	²⁸³ 110	153.990	²⁷⁷ 111	145.890	²⁷⁴ 112	146.500	²⁷⁵ 113	154.340
³⁰⁵ HS	243.250	²⁹³ Mt	185.340	²⁸⁴ 110	155.460	²⁷⁸ 111	148.320	²⁷⁵ 112	147.860	²⁷⁶ 113	155.250
³⁰⁶ HS	247.170	²⁹⁴ Mt	190.490	²⁸⁵ 110	158.400	²⁷⁹ 111	149.340	²⁷⁶ 112	148.090	²⁷⁷ 113	155.370
³⁰⁷ HS	252.530	²⁹⁵ Mt	194.190	²⁸⁶ 110	160.370	²⁸⁰ 111	151.340	²⁷⁷ 112	150.080	²⁷⁸ 113	157.120
³⁰⁸ HS	256.610	²⁹⁶ Mt	199.240	²⁸⁷ 110	163.870	²⁸¹ 111	152.360	²⁷⁸ 112	151.010	²⁷⁹ 113	157.820
³⁰⁹ HS	262.170	²⁹⁷ Mt	203.210	²⁸⁸ 110	165.680	²⁸² 111	154.640	²⁷⁹ 112	153.000	²⁸⁰ 113	158.730
³¹⁰ HS	266.550	²⁹⁸ Mt	209.470	²⁸⁹ 110	169.050	²⁸³ 111	155.640	²⁸⁰ 112	153.420	²⁸¹ 113	159.010
³¹¹ HS	272.510	²⁹⁹ Mt	212.270	²⁹⁰ 1							

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
284 ¹¹³	162.910	288 ¹¹⁴	170.360	295 ¹¹⁵	186.340	305 ¹¹⁶	219.060	318 ¹¹⁷	263.830	334 ¹¹⁸	328.920
285 ¹¹³	163.760	289 ¹¹⁴	172.400	296 ¹¹⁵	189.180	306 ¹¹⁶	221.840	319 ¹¹⁷	266.950	335 ¹¹⁸	334.200
286 ¹¹³	165.790	290 ¹¹⁴	173.150	297 ¹¹⁵	191.360	307 ¹¹⁶	226.540	320 ¹¹⁷	271.550	336 ¹¹⁸	338.170
287 ¹¹³	166.890	291 ¹¹⁴	175.690	298 ¹¹⁵	194.610	308 ¹¹⁶	229.540	321 ¹¹⁷	275.220	337 ¹¹⁸	343.600
288 ¹¹³	169.180	292 ¹¹⁴	176.910	299 ¹¹⁵	197.100	309 ¹¹⁶	234.110	322 ¹¹⁷	280.070	338 ¹¹⁸	347.690
289 ¹¹³	170.320	293 ¹¹⁴	179.700	300 ¹¹⁵	201.500	310 ¹¹⁶	237.230	323 ¹¹⁷	283.960	339 ¹¹⁸	353.150
290 ¹¹³	172.920	294 ¹¹⁴	181.480	301 ¹¹⁵	204.030	311 ¹¹⁶	240.270	324 ¹¹⁷	288.920		
291 ¹¹³	174.270	295 ¹¹⁴	184.590	302 ¹¹⁵	208.670	312 ¹¹⁶	243.070	325 ¹¹⁷	292.890	284 ¹¹⁹	201.620
292 ¹¹³	177.070	296 ¹¹⁴	186.720	303 ¹¹⁵	211.600	313 ¹¹⁶	247.460	326 ¹¹⁷	297.740	285 ¹¹⁹	200.640
293 ¹¹³	179.200	297 ¹¹⁴	190.280	304 ¹¹⁵	216.310	314 ¹¹⁶	249.950	327 ¹¹⁷	301.800	286 ¹¹⁹	200.810
294 ¹¹³	182.330	298 ¹¹⁴	192.780	305 ¹¹⁵	219.400	315 ¹¹⁶	254.190	328 ¹¹⁷	306.800	287 ¹¹⁹	199.830
295 ¹¹³	184.810	299 ¹¹⁴	197.500	306 ¹¹⁵	224.190	316 ¹¹⁶	257.190	329 ¹¹⁷	310.940	288 ¹¹⁹	200.320
296 ¹¹³	188.350	300 ¹¹⁴	200.050	307 ¹¹⁵	227.370	317 ¹¹⁶	261.610	330 ¹¹⁷	316.090	289 ¹¹⁹	200.050
297 ¹¹³	191.160	301 ¹¹⁴	205.020	308 ¹¹⁵	232.120	318 ¹¹⁶	264.800	331 ¹¹⁷	320.230	290 ¹¹⁹	200.730
298 ¹¹³	195.880	302 ¹¹⁴	207.960	309 ¹¹⁵	235.430	319 ¹¹⁶	269.620	332 ¹¹⁷	325.460	291 ¹¹⁹	200.460
299 ¹¹³	198.750	303 ¹¹⁴	213.000	310 ¹¹⁵	238.650	320 ¹¹⁶	273.280	333 ¹¹⁷	329.770	292 ¹¹⁹	201.520
300 ¹¹³	203.720	304 ¹¹⁴	216.100	311 ¹¹⁵	241.950	321 ¹¹⁶	278.420	334 ¹¹⁷	335.090	293 ¹¹⁹	201.460
301 ¹¹³	206.990	305 ¹¹⁴	221.210	312 ¹¹⁵	246.130	322 ¹¹⁶	282.300	335 ¹¹⁷	339.350	294 ¹¹⁹	202.740
302 ¹¹³	211.920	306 ¹¹⁴	224.400	313 ¹¹⁵	249.270	323 ¹¹⁶	287.540	336 ¹¹⁷	344.800	295 ¹¹⁹	203.250
303 ¹¹³	215.440	307 ¹¹⁴	229.580	314 ¹¹⁵	253.550	324 ¹¹⁶	291.480	337 ¹¹⁷	349.210	296 ¹¹⁹	205.090
304 ¹¹³	220.330	308 ¹¹⁴	232.840	315 ¹¹⁵	256.790	325 ¹¹⁶	296.560	338 ¹¹⁷	354.690	297 ¹¹⁹	205.480
305 ¹¹³	223.920	309 ¹¹⁴	238.090	316 ¹¹⁵	261.190	326 ¹¹⁶	300.580	339 ¹¹⁷	359.120	298 ¹¹⁹	207.160
306 ¹¹³	229.200	310 ¹¹⁴	241.420	317 ¹¹⁵	264.690	327 ¹¹⁶	305.840			299 ¹¹⁹	208.200
307 ¹¹³	232.450	311 ¹¹⁴	244.120	318 ¹¹⁵	269.520	328 ¹¹⁶	310.100	281 ¹¹⁸	194.150	300 ¹¹⁹	210.500
308 ¹¹³	236.010	312 ¹¹⁴	247.230	319 ¹¹⁵	273.470	329 ¹¹⁶	315.500	282 ¹¹⁸	192.010	301 ¹¹⁹	212.080
309 ¹¹³	239.480	313 ¹¹⁴	251.750	320 ¹¹⁵	278.540	330 ¹¹⁶	319.610	283 ¹¹⁸	192.330	302 ¹¹⁹	214.740
310 ¹¹³	243.870	314 ¹¹⁴	254.940	321 ¹¹⁵	282.790	331 ¹¹⁶	325.140	284 ¹¹⁸	191.260	303 ¹¹⁹	216.590
311 ¹¹³	247.220	315 ¹¹⁴	259.650	322 ¹¹⁵	287.910	332 ¹¹⁶	329.510	285 ¹¹⁸	191.840	304 ¹¹⁹	220.310
312 ¹¹³	251.680	316 ¹¹⁴	263.150	323 ¹¹⁵	292.280	333 ¹¹⁶	335.300	286 ¹¹⁸	191.120	305 ¹¹⁹	222.180
313 ¹¹³	255.200	317 ¹¹⁴	268.250	324 ¹¹⁵	297.330	334 ¹¹⁶	339.560	287 ¹¹⁸	191.860	306 ¹¹⁹	226.160
314 ¹¹³	259.910	318 ¹¹⁴	272.230	325 ¹¹⁵	301.610	335 ¹¹⁶	345.300	288 ¹¹⁸	191.450	307 ¹¹⁹	228.410
315 ¹¹³	263.660	319 ¹¹⁴	277.550	326 ¹¹⁵	306.920	336 ¹¹⁶	349.710	289 ¹¹⁸	192.500	308 ¹¹⁹	232.310
316 ¹¹³	268.850	320 ¹¹⁴	281.800	327 ¹¹⁵	311.190	337 ¹¹⁶	355.510	290 ¹¹⁸	192.510	309 ¹¹⁹	234.820
317 ¹¹³	273.010	321 ¹¹⁴	287.180	328 ¹¹⁵	316.700	338 ¹¹⁶	359.950	291 ¹¹⁸	193.700	310 ¹¹⁹	238.650
318 ¹¹³	278.440	322 ¹¹⁴	291.370	329 ¹¹⁵	321.030	339 ¹¹⁶	365.400	292 ¹¹⁸	193.810	311 ¹¹⁹	241.120
319 ¹¹³	282.810	323 ¹¹⁴	296.830	330 ¹¹⁵	326.640			293 ¹¹⁸	195.430	312 ¹¹⁹	245.060
320 ¹¹³	288.170	324 ¹¹⁴	301.080	331 ¹¹⁵	331.110	278 ¹¹⁷	187.180	294 ¹¹⁸	195.880	313 ¹¹⁹	247.560
321 ¹¹³	292.610	325 ¹¹⁴	306.470	332 ¹¹⁵	336.880	279 ¹¹⁷	185.550	295 ¹¹⁸	197.790	314 ¹¹⁹	245.070
322 ¹¹³	298.060	326 ¹¹⁴	311.260	333 ¹¹⁵	341.620	280 ¹¹⁷	186.170	296 ¹¹⁸	198.320	315 ¹¹⁹	247.430
323 ¹¹³	302.590	327 ¹¹⁴	316.940	334 ¹¹⁵	347.420	281 ¹¹⁷	184.420	297 ¹¹⁸	200.290	316 ¹¹⁹	251.020
324 ¹¹³	308.020	328 ¹¹⁴	321.210	335 ¹¹⁵	352.110	282 ¹¹⁷	184.650	298 ¹¹⁸	201.480	317 ¹¹⁹	257.080
325 ¹¹³	313.260	329 ¹¹⁴	326.980	336 ¹¹⁵	357.950	283 ¹¹⁷	183.960	299 ¹¹⁸	204.020	318 ¹¹⁹	261.120
326 ¹¹³	318.960	330 ¹¹⁴	331.710	337 ¹¹⁵	362.530	284 ¹¹⁷	184.510	300 ¹¹⁸	205.580	319 ¹¹⁹	263.810
327 ¹¹³	323.520	331 ¹¹⁴	337.790	338 ¹¹⁵	368.150	285 ¹¹⁷	184.080	301 ¹¹⁸	208.540	320 ¹¹⁹	267.770
328 ¹¹³	329.290	332 ¹¹⁴	342.540	339 ¹¹⁵	372.790	286 ¹¹⁷	184.940	302 ¹¹⁸	210.400	321 ¹¹⁹	270.770
329 ¹¹³	334.180	333 ¹¹⁴	348.760			287 ¹¹⁷	184.830	303 ¹¹⁸	214.430	322 ¹¹⁹	274.970
330 ¹¹³	340.340	334 ¹¹⁴	353.480	275 ¹¹⁶	179.260	288 ¹¹⁷	185.930	304 ¹¹⁸	216.310	323 ¹¹⁹	278.360
331 ¹¹³	345.440	335 ¹¹⁴	359.620	276 ¹¹⁶	177.770	289 ¹¹⁷	186.150	305 ¹¹⁸	220.590	324 ¹¹⁹	282.970
332 ¹¹³	351.690	336 ¹¹⁴	364.230	277 ¹¹⁶	177.930	290 ¹¹⁷	187.510	306 ¹¹⁸	222.880	325 ¹¹⁹	286.580
333 ¹¹³	356.820	337 ¹¹⁴	370.210	278 ¹¹⁶	176.670	291 ¹¹⁷	187.940	307 ¹¹⁸	227.140	326 ¹¹⁹	291.220
334 ¹¹³	362.930	338 ¹¹⁴	374.660	279 ¹¹⁶	177.200	292 ¹¹⁷	189.590	308 ¹¹⁸	229.660	327 ¹¹⁹	294.940
335 ¹¹³	368.060	339 ¹¹⁴	380.640	280 ¹¹⁶	175.740	293 ¹¹⁷	190.310	309 ¹¹⁸	233.860	328 ¹¹⁹	299.610
336 ¹¹³	374.190			281 ¹¹⁶	176.350	294 ¹¹⁷	192.230	310 ¹¹⁸	236.660	329 ¹¹⁹	303.390
337 ¹¹³	379.170	272 ¹¹⁵	172.650	282 ¹¹⁶	175.650	295 ¹¹⁷	192.980	311 ¹¹⁸	240.600	330 ¹¹⁹	306.400
338 ¹¹³	385.190	273 ¹¹⁵	171.290	283 ¹¹⁶	176.560	296 ¹¹⁷	194.930	312 ¹¹⁸	243.150	331 ¹¹⁹	310.250
339 ¹¹³	389.800	274 ¹¹⁵	171.280	284 ¹¹⁶	176.150	297 ¹¹⁷	196.390	313 ¹¹⁸	241.270	332 ¹¹⁹	315.210
		275 ¹¹⁵	170.110	285 ¹¹⁶	177.320	298 ¹¹⁷	198.940	314 ¹¹⁸	243.770	333 ¹¹⁹	321.180
269 ¹¹⁴	164.740	276 ¹¹⁵	170.290	286 ¹¹⁶	177.280	299 ¹¹⁷	200.790	315 ¹¹⁸	247.650	334 ¹¹⁹	326.090
270 ¹¹⁴	163.230	277 ¹¹⁵	169.370	287 ¹¹⁶	178.720	300 ¹¹⁷	203.740	316 ¹¹⁸	253.910	335 ¹¹⁹	330.080
271 ¹¹⁴	163.380	278 ¹¹⁵	169.910	288 ¹¹⁶	179.020	301 ¹¹⁷	205.910	317 ¹¹⁸	258.050	336 ¹¹⁹	335.040
272 ¹¹⁴	162.060	279 ¹¹⁵	169.040	289 ¹¹⁶	180.730	302 ¹¹⁷	209.770	318 ¹¹⁸	260.740	337 ¹¹⁹	338.960
273 ¹¹⁴	162.340	280 ¹¹⁵	169.680	290 ¹¹⁶	181.180	303 ¹¹⁷	212.170	319 ¹¹⁸	264.900	338 ¹¹⁹	344.060
274 ¹¹⁴	161.210	281 ¹¹⁵	169.370	291 ¹¹⁶	183.180	304 ¹¹⁷	216.450	320 ¹¹⁸	267.870	339 ¹¹⁹	348.140
275 ¹¹⁴	161.780	282 ¹¹⁵	170.340	292 ¹¹⁶	183.610	305 ¹¹⁷	219.080	321 ¹¹⁸	272.330		
276 ¹¹⁴	160.890	283 ¹¹⁵	170.320	293 ¹¹⁶	185.760	306 ¹¹⁷	223.470	322 ¹¹⁸	275.710	287 ¹²⁰	208.740
277 ¹¹⁴	161.760	284 ¹¹⁵	171.490	294 ¹¹⁶	186.550	307 ¹¹⁷	226.210	323 ¹¹⁸	280.560	288 ¹²⁰	207.610
278 ¹¹⁴	161.570	285 ¹¹⁵	171.750	295 ¹¹⁶	188.960	308 ¹¹⁷	230.520	324 ¹¹⁸	284.180	289 ¹²⁰	208.150
279 ¹¹⁴	162.330	286 ¹¹⁵	173.190	296 ¹¹⁶	190.440	309 ¹¹⁷	231.880	325 ¹¹⁸	289.120	290 ¹²⁰	207.320
280 ¹¹⁴	162.120	287 ¹¹⁵	173.790	297 ¹¹⁶	193.290	310 ¹¹⁷	237.980	326 ¹¹⁸	292.810	291 ¹²⁰	208.200
281 ¹¹⁴	163.440	288 ¹¹⁵	175.460	298 ¹¹⁶	195.130	311 ¹¹⁷	240.880	327 ¹¹⁸	297.790	292 ¹²⁰	207.760
282 ¹¹⁴	163.440	289 ¹¹⁵	176.210	299 ¹¹⁶	198.370	312 ¹¹⁷	243.450	328 ¹¹⁸	301.590	293 ¹²⁰	208.610
283 ¹¹⁴	165.000	290 ¹¹⁵	178.130	300 ¹¹⁶	200.550						

Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess	Isotope	Mass Excess
²⁹⁹ 120	213.320	³²⁴ 121	279.800	³⁰⁹ 123	247.310	³⁰⁶ 125	255.510	³¹⁶ 127	282.320	³³⁹ 129	330.860
³⁰⁰ 120	214.140	³²⁵ 121	282.890	³¹⁰ 123	250.040	³⁰⁷ 125	256.120	³¹⁷ 127	283.170	³¹⁹ 130	305.950
³⁰¹ 120	216.380	³²⁶ 121	287.250	³¹¹ 123	251.600	³⁰⁸ 125	257.950	³¹⁸ 127	276.140	³²⁰ 130	306.120
³⁰² 120	217.620	³²⁷ 121	290.500	³¹² 123	254.250	³⁰⁹ 125	258.950	³¹⁹ 127	277.250	³²¹ 130	297.600
³⁰³ 120	220.290	³²⁸ 121	294.890	³¹³ 123	255.900	³¹⁰ 125	261.210	³²⁰ 127	279.700	³²² 130	298.050
³⁰⁴ 120	221.830	³²⁹ 121	298.520	³¹⁴ 123	258.770	³¹¹ 125	262.370	³²¹ 127	281.120	³²³ 130	300.120
³⁰⁵ 120	225.440	³³⁰ 121	302.730	³¹⁵ 123	260.380	³¹² 125	264.230	³²² 127	281.460	³²⁴ 130	300.840
³⁰⁶ 120	227.090	³³¹ 121	306.210	³¹⁶ 123	263.360	³¹³ 125	265.280	³²³ 127	282.500	³²⁵ 130	299.980
³⁰⁷ 120	231.000	³³² 121	310.790	³¹⁷ 123	265.080	³¹⁴ 125	267.490	³²⁴ 127	284.810	³²⁶ 130	300.520
³⁰⁸ 120	233.040	³³³ 121	314.420	³¹⁸ 123	260.460	³¹⁵ 125	268.730	³²⁵ 127	286.240	³²⁷ 130	302.470
³⁰⁹ 120	236.740	³³⁴ 121	317.180	³¹⁹ 123	262.330	³¹⁶ 125	271.110	³²⁶ 127	288.800	³²⁸ 130	303.270
³¹⁰ 120	238.940	³³⁵ 121	323.360	³²⁰ 123	265.180	³¹⁷ 125	272.400	³²⁷ 127	290.460	³²⁹ 130	305.460
³¹¹ 120	242.670	³³⁶ 121	328.120	³²¹ 123	267.260	³¹⁸ 125	267.900	³²⁸ 127	293.350	³³⁰ 130	306.520
³¹² 120	244.760	³³⁷ 121	332.070	³²² 123	270.440	³¹⁹ 125	267.790	³²⁹ 127	295.360	³³¹ 130	314.460
³¹³ 120	248.540	³³⁸ 121	336.780	³²³ 123	276.470	³²⁰ 125	270.260	³³⁰ 127	302.600	³³² 130	310.490
³¹⁴ 120	250.670	³³⁹ 121	340.590	³²⁴ 123	279.960	³²¹ 125	271.780	³³¹ 127	304.770	³³³ 130	318.260
³¹⁵ 120	247.690			³²⁵ 123	282.230	³²² 125	274.300	³³² 127	308.170	³³⁴ 130	319.800
³¹⁶ 120	249.740	²⁹⁴ 122	224.380	³²⁶ 123	285.930	³²³ 125	276.060	³³³ 127	310.520	³³⁵ 130	322.840
³¹⁷ 120	253.310	²⁹⁵ 122	225.130	³²⁷ 123	288.730	³²⁴ 125	278.920	³³⁴ 127	314.020	³³⁶ 130	324.610
³¹⁸ 120	255.710	²⁹⁶ 122	224.690	³²⁸ 123	292.770	³²⁵ 125	280.900	³³⁵ 127	316.460	³³⁷ 130	327.630
³¹⁹ 120	263.230	²⁹⁷ 122	225.840	³²⁹ 123	295.750	³²⁶ 125	288.190	³³⁶ 127	320.050	³³⁸ 130	329.540
³²⁰ 120	265.720	²⁹⁸ 122	225.570	³³⁰ 123	299.850	³²⁷ 125	286.410	³³⁷ 127	322.650	³³⁹ 130	333.080
³²¹ 120	269.580	²⁹⁹ 122	226.900	³³¹ 123	302.970	³²⁸ 125	293.540	³³⁸ 127	326.430		
³²² 120	272.280	³⁰⁰ 122	226.330	³³² 123	307.190	³²⁹ 125	296.050	³³⁹ 127	329.150	³²³ 131	306.670
³²³ 120	276.470	³⁰¹ 122	227.710	³³³ 123	310.380	³³⁰ 125	299.760			³²⁴ 131	308.500
³²⁴ 120	279.610	³⁰² 122	228.130	³³⁴ 123	314.670	³³¹ 125	302.360	³¹³ 128	285.380	³²⁵ 131	309.250
³²⁵ 120	284.170	³⁰³ 122	230.450	³³⁵ 123	318.000	³³² 125	306.200	³¹⁴ 128	285.560	³²⁶ 131	307.780
³²⁶ 120	287.480	³⁰⁴ 122	231.380	³³⁶ 123	322.620	³³³ 125	308.940	³¹⁵ 128	287.190	³²⁷ 131	308.310
³²⁷ 120	292.120	³⁰⁵ 122	233.740	³³⁷ 123	326.670	³³⁴ 125	312.950	³¹⁶ 128	287.610	³²⁸ 131	309.960
³²⁸ 120	295.530	³⁰⁶ 122	234.970	³³⁸ 123	331.280	³³⁵ 125	315.870	³¹⁷ 128	289.350	³²⁹ 131	310.720
³²⁹ 120	300.230	³⁰⁷ 122	238.290	³³⁹ 123	334.760	³³⁶ 125	319.890	³¹⁸ 128	289.890	³³⁰ 131	312.630
³³⁰ 120	303.830	³⁰⁸ 122	239.700			³³⁷ 125	322.900	³¹⁹ 128	282.370	³³¹ 131	313.650
³³¹ 120	308.600	³⁰⁹ 122	242.920	³⁰⁰ 124	242.740	³³⁸ 125	327.210	³²⁰ 128	283.240	³³² 131	315.930
³³² 120	312.250	³¹⁰ 122	244.620	³⁰¹ 124	243.530	³³⁹ 125	330.260	³²¹ 128	285.610	³³³ 131	317.310
³³³ 120	315.220	³¹¹ 122	247.680	³⁰² 124	241.880			³²² 128	286.750	³³⁴ 131	325.030
³³⁴ 120	321.240	³¹² 122	249.400	³⁰³ 124	242.780	³⁰⁶ 126	257.990	³²³ 128	289.490	³³⁵ 131	326.640
³³⁵ 120	326.470	³¹³ 122	252.640	³⁰⁴ 124	242.390	³⁰⁷ 126	258.830	³²⁴ 128	287.600	³³⁶ 131	329.300
³³⁶ 120	330.020	³¹⁴ 122	254.300	³⁰⁵ 124	243.570	³⁰⁸ 126	264.130	³²⁵ 128	289.890	³³⁷ 131	330.620
³³⁷ 120	335.090	³¹⁵ 122	257.610	³⁰⁶ 124	246.880	³⁰⁹ 126	265.900	³²⁶ 128	290.990	³³⁸ 131	333.570
³³⁸ 120	338.730	³¹⁶ 122	259.370	³⁰⁷ 124	248.930	³¹⁰ 126	266.310	³²⁷ 128	293.480	³³⁹ 131	335.520
³³⁹ 120	343.820	³¹⁷ 122	255.400	³⁰⁸ 124	249.940	³¹¹ 126	268.430	³²⁸ 128	294.860		
		³¹⁸ 122	257.140	³⁰⁹ 124	252.650	³¹² 126	268.890	³²⁹ 128	297.730	³²⁶ 132	316.480
²⁹⁰ 121	217.460	³¹⁹ 122	260.410	³¹⁰ 124	253.720	³¹³ 126	271.040	³³⁰ 128	299.450	³²⁷ 132	314.590
²⁹¹ 121	216.590	³²⁰ 122	262.520	³¹¹ 124	256.220	³¹⁴ 126	271.830	³³¹ 128	307.100	³²⁸ 132	314.830
²⁹² 121	217.070	³²¹ 122	265.980	³¹² 124	257.420	³¹⁵ 126	273.970	³³² 128	308.940	³²⁹ 132	316.450
²⁹³ 121	216.610	³²² 122	272.030	³¹³ 124	259.990	³¹⁶ 126	274.880	³³³ 128	312.250	³³⁰ 132	316.930
²⁹⁴ 121	217.310	³²³ 122	275.680	³¹⁴ 124	261.290	³¹⁷ 126	277.170	³³⁴ 128	314.350	³³¹ 132	318.810
²⁹⁵ 121	217.090	³²⁴ 122	277.980	³¹⁵ 124	264.090	³¹⁸ 126	278.170	³³⁵ 128	317.760	³³² 132	319.540
²⁹⁶ 121	218.040	³²⁵ 122	281.980	³¹⁶ 124	265.340	³¹⁹ 126	272.960	³³⁶ 128	319.980	³³³ 132	327.640
²⁹⁷ 121	218.240	³²⁶ 122	284.780	³¹⁷ 124	261.910	³²⁰ 126	274.400	³³⁷ 128	323.590	³³⁴ 132	328.480
²⁹⁸ 121	219.510	³²⁷ 122	289.110	³¹⁸ 124	261.740	³²¹ 126	274.990	³³⁸ 128	325.920	³³⁵ 132	330.770
²⁹⁹ 121	219.690	³²⁸ 122	292.110	³¹⁹ 124	264.490	³²² 126	276.080	³³⁹ 128	329.490	³³⁶ 132	332.120
³⁰⁰ 121	221.010	³²⁹ 122	296.460	³²⁰ 124	265.930	³²³ 126	278.670			³³⁷ 132	334.810
³⁰¹ 121	221.760	³³⁰ 122	299.590	³²¹ 124	268.870	³²⁴ 126	280.110	³¹⁶ 129	296.530	³³⁸ 132	336.270
³⁰² 121	223.760	³³¹ 122	304.030	³²² 124	270.650	³²⁵ 126	282.940	³¹⁷ 129	296.780	³³⁹ 132	338.590
³⁰³ 121	225.000	³³² 122	307.220	³²³ 124	273.800	³²⁶ 126	284.630	³¹⁸ 129	288.140		
³⁰⁴ 121	227.370	³³³ 122	311.780	³²⁴ 124	275.800	³²⁷ 126	292.150	³¹⁹ 129	288.560	³²⁹ 133	323.270
³⁰⁵ 121	228.900	³³⁴ 122	315.150	³²⁵ 124	283.210	³²⁸ 126	293.920	³²⁰ 129	290.390	³³⁰ 133	324.610
³⁰⁶ 121	232.470	³³⁵ 122	320.040	³²⁶ 124	285.280	³²⁹ 126	297.230	³²¹ 129	291.230	³³¹ 133	325.060
³⁰⁷ 121	233.900	³³⁶ 122	324.050	³²⁷ 124	288.880	³³⁰ 126	299.420	³²² 129	293.260	³³² 133	326.650
³⁰⁸ 121	237.400	³³⁷ 122	328.830	³²⁸ 124	291.400	³³¹ 126	303.110	³²³ 129	294.350	³³³ 133	332.800
³⁰⁹ 121	239.360	³³⁸ 122	332.330	³²⁹ 124	295.400	³³² 126	305.470	³²⁴ 129	296.770	³³⁴ 133	335.400
³¹⁰ 121	242.610	³³⁹ 122	337.360	³³⁰ 124	298.090	³³³ 126	309.230	³²⁵ 129	294.700	³³⁵ 133	336.340
³¹¹ 121	244.730			³³¹ 124	302.130	³³⁴ 126	311.830	³²⁶ 129	296.680	³³⁶ 133	338.200
³¹² 121	248.040	²⁹⁷ 123	234.010	³³² 124	304.980	³³⁵ 126	315.640	³²⁷ 129	297.770	³³⁷ 133	339.410
³¹³ 121	250.070	²⁹⁸ 123	235.010	³³³ 124	309.170	³³⁶ 126	318.260	³²⁸ 129	299.970	³³⁸ 133	341.930
³¹⁴ 121	253.480	²⁹⁹ 123	234.650	³³⁴ 124	312.070	³³⁷ 126	322.260	³²⁹ 129	301.320	³³⁹ 133	342.570
³¹⁵ 121	255.580	³⁰⁰ 123	235.620	³³⁵ 124	316.350	³³⁸ 126	325.000	³³⁰ 129	303.900	³³² 134	337.210
³¹⁶ 121	252.060	³⁰¹ 123	234.930	³³⁶ 124	319.380	³³⁹ 126	329.340	³³¹ 129	305.610	³³³ 134	339.080
³¹⁷ 121	254.250	³⁰² 123	235.870	³³⁷ 124	324.000			³³² 129	313.170	³³⁴ 134	339.570
³¹⁸ 121	257.400	³⁰³ 123	235.790	³³⁸ 124	326.860	³¹⁰ 127	275.640	³³³ 129	315.000	³³⁵ 134	342.190
³¹⁹ 121	259.800	³⁰⁴ 123	238.760	³³⁹ 124	332.590	³¹¹ 127	275.960	³³⁴ 129	318.020	³³⁶ 134	342.650

Isotope Mass Excess

³³⁶135 350.580

³³⁷135 351.040

³³⁸135 352.670

³³⁹135 353.550

³³⁹136 359.660