

## Isotopentabelle und Nuklidkarte

Die Tabelle enthält für jedes Element eine Auswahl der häufigsten stabilen und **radioaktiven** Nuklide, sowie eine Auswahl durch Kernspaltung künstlich erzeugter Nuklide. Es bedeuten:  $Z$ : Ordnungszahl = Protonenzahl;  $A$ : Massenzahl = Nukleonenzahl;  $M$ : Molare Masse;  $u$ : Atommassen-Einheit; rel.H. = relative Häufigkeit im natürlichen Gemisch;  $T_h$  = **Halbwertszeit** (bei den radioaktiven Nukliden).

Quellen: Formen und Tafeln (DMK/DPK), <http://atom.kaeri.re.kr>

$Z$	Symbol und Name	$A$	$M$ in g/mol, resp. $u$	rel. H. in %, resp. $T_h$
n	Neutron		1.0086649	<b>10.3 min</b>
p	Proton		1.0072764	$> 10^{33}$ a
1 H	Wasserstoff	1	1.007825	99.985
	Deuterium	2	2.014102	0.015
	Tritium	3	3.01605	<b>12.32 a</b>
2 He	Helium	4	4.002603	100
		3	3.016030	0.0001
3 Li	Lithium	7	7.016005	92.5
		6	6.015123	7.5
4 Be	Beryllium	9	9.012183	100
		10	10.01353	<b>1.6·10<sup>6</sup>a</b>
5 B	Bor	11	11.009305	80
		10	10.012938	20
6 C	Kohlenstoff	12	12.000000	98.89
		13	13.003355	1.11
		14	14.00324	<b>5730 a</b>
7 N	Stickstoff	14	14.003074	99.64
		15	15.000109	0.36
8 O	Sauerstoff	16	15.994915	99.76
		18	17.999160	0.205
		17	16.999133	0.039
9 F	Fluor	19	18.998405	100
10 Ne	Neon	20	19.992441	90.5
		22	21.991385	9.2
		21	20.993847	0.27
11 Na	Natrium	23	22.98977	100
		22	21.99444	<b>2.602 a</b>
		24	23.99096	<b>14.96 h</b>
12 Mg	Magnesium	24	23.985044	78.99
		26	25.982594	11.01
		25	24.98584	10.00
13 Al	Aluminium	27	26.981541	100
14 Si	Silicium	28	27.976929	92.2
		...		
15 P	Phosphor	31	30.973763	100
		32	31.97391	<b>14.3 d</b>
16 S	Schwefel	32	31.972073	95.0
		...		
17 Cl	Chlor	35	34.968854	75.77
		37	36.965903	24.23
18 Ar	Argon	40	39.962384	99.59
		...		
		41	40.96450	<b>1.83 h</b>
19 K	Kalium	39	38.963709	93.3
		...		
		40	39.96400	<b>1.3·10<sup>9</sup>a</b>
20 Ca	Calcium	40	39.962592	96.94
		...		
21 Sc	Scandium	45	44.95592	100
22 Ti	Titan	48	47.94795	73.7
		46	45.95263	8.0
		...		

$Z$	Symbol und Name	$A$	$M$ in g/mol, resp. $u$	rel. H. in %, resp. $T_h$
23 V	Vanadium	51	50.94396	99.75
		...		
24 Cr	Chrom	52	51.94051	83.79
		53	52.94065	9.5
		...		
25 Mn	Mangan	55	54.93805	100
26 Fe	Eisen	56	55.93493	91.7
		54	53.93961	5.8
		...		
		55	54.93830	<b>2.7 a</b>
27 Co	Kobalt	59	58.93319	100
		60	59.93381	<b>5.272 a</b>
28 Ni	Nickel	58	57.93534	67.76
		60	59.93078	26.42
		...		
29 Cu	Kupfer	63	62.92959	69.1
		65	64.92779	30.9
30 Zn	Zink	64	63.92914	48.9
		66	65.92604	27.8
		...		
31 Ga	Gallium	69	68.92558	60
		71	70.92470	40
32 Ge	Germanium	74	73.92118	36.4
		72	71.92208	27.5
		...		
33 As	Arsen	75	74.92160	100
34 Se	Selen	80	79.91653	50
		78	77.91731	23.5
		...		
35 Br	Brom	79	78.91833	50.69
		81	80.91629	49.31
		87	86.92071	<b>55.6 s</b>
36 Kr	Krypton	84	83.91151	57.0
		86	85.91062	17.3
		...		
		85	84.91252	<b>10.72 a</b>
		89	88.91763	<b>3.15 min</b>
		92	91.92616	<b>1.84 s</b>
37 Rb	Rubidium	85	84.91180	72.17
		87	86.90919	27.83
		...		<b>4.8·10<sup>10</sup>a</b>
		90	89.91481	<b>158 s</b>
38 Sr	Strontium	88	87.90563	82.6
		86	85.90928	9.9
		...		
		89	88.90744	<b>50.5 d</b>
		90	89.90775	<b>28.5 a</b>
39 Y	Yttrium	89	88.90587	100
40 Zr	Zirkon	90	89.90471	51.4
		94	93.90632	17.4
		...		
41 Nb	Niob	93	92.90638	100

$Z$	Symbol und Name	$A$	$M$ in g/mol, resp. $u$	rel. H. in %, resp. $T_h$
40	Zr Zirkon	90	89.90471	51.4
		94	93.90632	17.4
		...		
41	Nb Niob	93	92.90638	100
42	Mo Molybdän	98	97.90541	24.4
		...		
43	Tc Technetium	<b>99</b>	98.90625	<b>6.0 h</b>
44	Ru Ruthenium	102	101.90435	31.6
		104	103.90543	18.7
		101	100.90558	17.0
		100	99.90422	12.6
45	Rh Rhodium	103	102.90551	100
46	Pd Palladium	106	105.90349	27.3
		...		
47	Ag Silber	107	106.90509	51.83
		109	108.90475	48.17
		<b>108</b>	107.90595	<b>2.41 min</b>
		<b>110</b>	109.90610	<b>24.6 s</b>
48	Cd Cadmium	114	113.90337	28.8
		112	111.90276	24.0
		...		
49	In Indium	115	114.90388	95.7
		113	112.90409	4.3
50	Sn Zinn	120	119.90221	32.8
		118	117.90161	24.1
		...		
51	Sb Antimon	121	120.90382	57.3
		123	122.90422	42.7
52	Te Tellur	130	129.90623	34.5
		128	127.90447	31.8
		...		
53	I Iod	127	126.90448	100
		<b>128</b>	127.90584	<b>25.0 min</b>
		<b>131</b>	130.90613	<b>8.02 d</b>
54	Xe Xenon	132	131.90416	27.0
		129	128.90478	26.4
		...		
		<b>144</b>	143.93823	<b>1.15 s</b>
55	Cs Cäsium	133	132.90544	100
		...		
		<b>137</b>	136.90677	<b>30.17 a</b>
		<b>144</b>	143.93202	<b>1.01 s</b>
56	Ba Barium	138	137.90524	71.9
		137	136.90582	11.2
		...		
		<b>141</b>	140.91441	<b>18.3 min</b>
		<b>144</b>	143.92294	<b>11.5 s</b>
57	La Lanthan	139	138.90640	99.91
		...		
		<b>146</b>	145.92570	<b>6.27 s</b>
58	Ce Cer	140	139.90548	88.5
		142	141.90930	11.1
		...		
59	Pr Praseodym	141	140.9077	100
60	Nd Neodym	142	141.90777	27.1
		144	143.91013	23.9
		...		
61	Pm Promethium			
62	Sm Samarium	152	151.91976	26.7
		154	153.92222	22.8
		...		

$Z$	Symbol und Name	$A$	$M$ in g/mol, resp. $u$	rel. H. in %, resp. $T_h$
63	Eu Europium	153	152.92126	52.2
		151	150.91988	47.8
64	Gd Gadolinium	158	157.92412	24.7
		160	159.92707	21.7
		...		
65	Tb Terbium	159	158.92539	100
66	Dy Dysprosium	164	163.92922	28.2
		162	161.92684	25.5
		...		
67	Ho Holmium	165	164.93036	100
68	Er Erbium	166	165.93032	33.4
		168	167.93240	27.0
		...		
69	Tm Thulium	169	168.93425	100
70	Yb Ytterbium	174	173.93888	31.8
		172	171.93640	21.9
		...		
71	Lu Lutetium	175	174.94080	97.4
		...		
72	Hf Hafnium	180	179.94650	35.1
		178	177.94325	27.2
		...		
73	Ta Tantal	181	180.94803	99.99
		...		
74	W Wolfram	184	183.95098	30.7
		186	185.95440	28.6
		...		
75	Re Rhenium	187	186.95579	62.60
		185	184.95301	37.40
76	Os Osmium	192	191.96151	41.0
		190	189.95848	26.4
		...		
77	Ir Iridium	193	192.9630	62.6
		191	190.96063	37.4
78	Pt Platin	195	194.96480	33.8
		194	193.9627	32.9
		...		
79	Au Gold	197	196.96655	100
		<b>198</b>	197.96823	<b>2.693 d</b>
80	Hg Quecksilber	202	201.97064	29.7
		200	199.96832	23.1
		...		
81	Tl Thallium	205	204.97444	70.5
		203	202.97235	29.5
		<b>204</b>	203.97385	<b>3.78 a</b>
82	Pb Blei	208	207.97666	52.4
		206	205.97448	24.1
		207	206.97590	22.1
		204	203.97305	1.4
		<b>210</b>	209.98419	<b>22.3 a</b>
83	Bi Bismut	209	208.98040	100
		<b>208</b>	207.97973	<b>3.7·10<sup>5</sup> a</b>
		<b>210</b>	209.98412	<b>5.013 d</b>
84	Po Polonium	<b>210</b>	209.98288	<b>138.4 d</b>
85	At Astat	<b>210</b>	209.98713	<b>8.1 h</b>
86	Rn Radon	<b>220</b>	220.01139	<b>55.6 s</b>
		<b>222</b>	222.01761	<b>3.825 d</b>
87	Fr Francium	<b>225</b>	225.02561	<b>4 min</b>
88	Ra Radium	<b>226</b>	226.02544	<b>1600 a</b>
89	Ac Actinium	<b>227</b>	227.02777	<b>21.77 a</b>

$Z$	Symbol und Name	$A$	$M$ in g/mol, resp. $u$	rel. H. in %, resp. $T_h$
90	Th Thorium	232	232.03807	100
				<b><math>1.4 \cdot 10^{10} \text{a}</math></b>
		230	230.03316	<b><math>7.5 \cdot 10^4 \text{a}</math></b>
91	Pa Protacti- nium	231	231.03590	<b><math>3.3 \cdot 10^4 \text{a}</math></b>
92	U Uran	238	238.05082	99.28
				<b><math>4.5 \cdot 10^9 \text{a}</math></b>
		235	235.04394	0.72
				<b><math>7.0 \cdot 10^8 \text{a}</math></b>
		233	233.03965	<b><math>1.6 \cdot 10^5 \text{a}</math></b>
		234	234.04098	<b><math>2.5 \cdot 10^5 \text{a}</math></b>
		239	239.05433	<b>23.5 min</b>
93	Np Neptunium	239	239.05295	<b>2.355 d</b>
94	Pu Plutonium	238	238.04955	<b>87.7 a</b>
		239	239.05216	<b><math>2.4 \cdot 10^4 \text{a}</math></b>
95	Am Americum	241	241.05682	<b>432.2 a</b>
		243	241.05685	<b>432.6 a</b>
96	Cm Curium	247	247.07035	<b><math>1.6 \cdot 10^7 \text{a}</math></b>
97	Bk Berkelium	247	247.07030	<b>1380 a</b>
98	Cf Californium	251	251.07958	<b>898 a</b>
99	Es Einsteinium	252	252.08297	<b>462 d</b>
100	Fm Fermium	257	257.09510	<b>101 d</b>
...				

Nuklidkarte der Zerfallsarten (Ausschnitt)

