

# Periodic Table for the *Table of Isotopes* (1995)

1 (IA)					Group										18 (VIIIA)				
Hydrogen			2 (IIA)												Helium				
<sup>1</sup> <sub>1</sub> H <sub>1</sub>			<sup>4</sup> <sub>2</sub> He <sub>2</sub>																
20.1797			4.002602																
8.9%			8.9%																
Lithium		Beryllium																	
<sup>6</sup> <sub>3</sub> Li	<sup>7</sup> <sub>3</sub> Li	<sup>9</sup> <sub>4</sub> Be	<sup>10</sup> <sub>4</sub> Be																
+1	+1	+2	+2																
6.941		9.012182																	
1.86×10 <sup>-8</sup> %		2.38×10 <sup>-9</sup> %																	
Sodium		Magnesium																	
<sup>23</sup> <sub>11</sub> Na	<sup>24</sup> <sub>11</sub> Na	<sup>24</sup> <sub>12</sub> Mg	<sup>25</sup> <sub>12</sub> Mg																
+1	+1	+2	+2																
22.989768		24.3050																	
0.000187%		0.00350%																	
3 (IIIB)		4 (IVB)		5 (VB)		6 (VIB)		7 (VIIB)		8 (VIII)		9 (VIII)		10 (VIII)		11 (IB)		12 (IIB)	
Potassium		Calcium		Scandium		Titanium		Vanadium		Chromium		Manganese		Iron		Cobalt		Nickel	
<sup>39</sup> <sub>19</sub> K	<sup>40</sup> <sub>19</sub> K	<sup>40</sup> <sub>20</sub> Ca	<sup>41</sup> <sub>20</sub> Ca	<sup>45</sup> <sub>21</sub> Sc	<sup>46</sup> <sub>21</sub> Sc	<sup>48</sup> <sub>22</sub> Ti	<sup>47</sup> <sub>22</sub> Ti	<sup>51</sup> <sub>23</sub> V	<sup>50</sup> <sub>23</sub> V	<sup>52</sup> <sub>24</sub> Cr	<sup>51</sup> <sub>24</sub> Cr	<sup>55</sup> <sub>25</sub> Mn	<sup>54</sup> <sub>25</sub> Mn	<sup>56</sup> <sub>26</sub> Fe	<sup>57</sup> <sub>26</sub> Fe	<sup>59</sup> <sub>27</sub> Co	<sup>58</sup> <sub>27</sub> Co	<sup>58</sup> <sub>28</sub> Ni	<sup>59</sup> <sub>28</sub> Ni
+1	+1	+2	+2	+3	+3	+2+3+4	+2+3+4	+2+3+4+5	+2+3+4+5	+2+3	+2+3	+2+3+4+7	+2+3	+2+3	+2+3	+1+2	+1+2	+2	+2
39.0983		40.078		44.955910		47.867		50.9415		51.9961		54.93805		55.845		58.93320		58.6934	
0.0000123%		0.000199%		1.12×10 <sup>-8</sup> %		7.8×10 <sup>-6</sup> %		9.6×10 <sup>-9</sup> %		0.000044%		0.000031%		0.00294%		7.3×10 <sup>-6</sup> %		0.000161%	
Rubidium		Strontium		Yttrium		Zirconium		Niobium		Molybdenum		Technetium		Ruthenium		Rhodium		Palladium	
<sup>85</sup> <sub>37</sub> Rb	<sup>86</sup> <sub>37</sub> Rb	<sup>88</sup> <sub>38</sub> Sr	<sup>87</sup> <sub>38</sub> Sr	<sup>89</sup> <sub>39</sub> Y	<sup>90</sup> <sub>39</sub> Y	<sup>90</sup> <sub>40</sub> Zr	<sup>91</sup> <sub>40</sub> Zr	<sup>93</sup> <sub>41</sub> Nb	<sup>92</sup> <sub>41</sub> Nb	<sup>96</sup> <sub>42</sub> Mo	<sup>95</sup> <sub>42</sub> Mo	<sup>98</sup> <sub>43</sub> Tc	<sup>97</sup> <sub>43</sub> Tc	<sup>101</sup> <sub>44</sub> Ru	<sup>101</sup> <sub>44</sub> Ru	<sup>103</sup> <sub>45</sub> Rh	<sup>102</sup> <sub>45</sub> Rh	<sup>106</sup> <sub>46</sub> Pd	<sup>105</sup> <sub>46</sub> Pd
+1	+1	+2	+2	+3	+3	+2+3+4	+2+3+4	+2+3+4+5	+2+3+4+5	+2+3	+2+3	+2+3+4+7	+2+3	+2+3	+2+3	+1+2	+1+2	+2	+2
85.4678		87.62		88.90585		91.224		92.90638		95.94		[98]		101.07		102.90550		106.42	
2.31×10 <sup>-8</sup> %		7.7×10 <sup>-8</sup> %		1.51×10 <sup>-8</sup> %		3.72×10 <sup>-8</sup> %		2.28×10 <sup>-9</sup> %		8.3×10 <sup>-9</sup> %		6.1×10 <sup>-9</sup> %		1.12×10 <sup>-9</sup> %		4.5×10 <sup>-9</sup> %		1.58×10 <sup>-9</sup> %	
Cesium		Barium		Lanthanum		Hafnium		Tantalum		Tungsten		Rhenium		Osmium		Iridium		Platinum	
<sup>132</sup> <sub>55</sub> Cs	<sup>133</sup> <sub>55</sub> Cs	<sup>135</sup> <sub>56</sub> Ba	<sup>136</sup> <sub>56</sub> Ba	<sup>139</sup> <sub>57</sub> La	<sup>138</sup> <sub>57</sub> La	<sup>178</sup> <sub>72</sub> Hf	<sup>179</sup> <sub>72</sub> Hf	<sup>181</sup> <sub>73</sub> Ta	<sup>180</sup> <sub>73</sub> Ta	<sup>184</sup> <sub>74</sub> W	<sup>183</sup> <sub>74</sub> W	<sup>187</sup> <sub>75</sub> Re	<sup>186</sup> <sub>75</sub> Re	<sup>192</sup> <sub>76</sub> Os	<sup>191</sup> <sub>76</sub> Os	<sup>193</sup> <sub>77</sub> Ir	<sup>192</sup> <sub>77</sub> Ir	<sup>195</sup> <sub>78</sub> Pt	<sup>195</sup> <sub>78</sub> Pt
+1	+1	+2	+2	+3	+3	+2+3+4	+2+3+4	+2+3+4+5	+2+3+4+5	+2+3+4+5+6	+2+3+4+5+6	+2+3+4+5+6	+2+3+4+5+6	+2+3+4	+2+3+4	+2+3+4	+2+3+4	+1+2	+1+2
132.90543		137.327		138.9055		178.49		180.9479		183.84		186.207		190.23		192.217		195.08	
1.21×10 <sup>-9</sup> %		1.46×10 <sup>-8</sup> %		1.45×10 <sup>-9</sup> %		5.02×10 <sup>-10</sup> %		6.75×10 <sup>-9</sup> %		4.34×10 <sup>-10</sup> %		1.69×10 <sup>-10</sup> %		2.20×10 <sup>-9</sup> %		2.16×10 <sup>-9</sup> %		4.4×10 <sup>-9</sup> %	
Francium		Radium		Actinium		Rutherfordium		Hahnium		Seaborgium		Nielsbohrium		Hassium		Meitnerium		Element-110	
<sup>223</sup> <sub>87</sub> Fr	<sup>226</sup> <sub>88</sub> Ra	<sup>210</sup> <sub>89</sub> Ac	<sup>227</sup> <sub>88</sub> Ra	<sup>104</sup> <sub>104</sub> Rf	<sup>105</sup> <sub>105</sub> Rf	<sup>106</sup> <sub>106</sub> Sg	<sup>107</sup> <sub>107</sub> Ns	<sup>108</sup> <sub>108</sub> Ha	<sup>109</sup> <sub>109</sub> Sg	<sup>110</sup> <sub>110</sub> Mt	<sup>111</sup> <sub>111</sub> Uue	<sup>112</sup> <sub>112</sub> Cn	<sup>113</sup> <sub>113</sub> Uut	<sup>114</sup> <sub>114</sub> Fl	<sup>115</sup> <sub>115</sub> Mcdc	<sup>116</sup> <sub>116</sub> Lr	<sup>117</sup> <sub>117</sub> Ten	<sup>118</sup> <sub>118</sub> Og	<sup>119</sup> <sub>119</sub> Uue
+1	+2	+3	+2	+4	+4	+6	+7	+8	+8	+10	+11	+12	+13	+14	+14	+16	+16	+18	+18
[223]		[226]		[227]		[261]		[262]		[263]		[264]		[267]		[268]		[271]	
1		8		9		10		11		12		13		14		15		16	

† Lanthanides

Cerium	Praseodymium	Neodymium	Promethium	Samarium	Europium	Gadolinium	Terbium	Dysprosium	Holmium	Erbium	Thulium	Ytterbium	Lutetium
<sup>138</sup> <sub>58</sub> Ce	<sup>141</sup> <sub>59</sub> Pr	<sup>142</sup> <sub>60</sub> Nd	<sup>147</sup> <sub>61</sub> Pm	<sup>150</sup> <sub>62</sub> Sm	<sup>152</sup> <sub>63</sub> Eu	<sup>157</sup> <sub>64</sub> Gd	<sup>159</sup> <sub>65</sub> Tb	<sup>163</sup> <sub>66</sub> Dy	<sup>165</sup> <sub>67</sub> Ho	<sup>167</sup> <sub>68</sub> Er	<sup>169</sup> <sub>69</sub> Tm	<sup>173</sup> <sub>70</sub> Yb	<sup>175</sup> <sub>71</sub> Lu
+3	+3	+3	+3	+2+3	+2+3	+2+3	+3	+2+3	+2+3	+3	+3	+2+3	+3
140.115		144.24		150.36		157.25		162.50		168.93421		174.967	
3.70×10 <sup>-10</sup> %		2.70×10 <sup>-9</sup> %		8.42×10 <sup>-10</sup> %		1.076×10 <sup>-9</sup> %		1.286×10 <sup>-9</sup> %		1.23×10 <sup>-10</sup> %		1.197×10 <sup>-10</sup> %	

† Actinides

Thorium	Protactinium	Uranium	Neptunium	Plutonium	Americium	Curium	Berkelium	Californium	Einsteinium	Fermium	Mendelevium	Nobelium	Lawrencium
<sup>232</sup> <sub>90</sub> Th	<sup>231</sup> <sub>91</sub> Pa	<sup>238</sup> <sub>92</sub> U	<sup>237</sup> <sub>93</sub> Np	<sup>244</sup> <sub>94</sub> Pu	<sup>243</sup> <sub>95</sub> Am	<sup>247</sup> <sub>96</sub> Cm	<sup>247</sup> <sub>97</sub> Bk	<sup>251</sup> <sub>98</sub> Cf	<sup>252</sup> <sub>99</sub> Ee	<sup>257</sup> <sub>100</sub> Fm	<sup>258</sup> <sub>101</sub> Md	<sup>259</sup> <sub>102</sub> No	<sup>260</sup> <sub>103</sub> Lr
+3	+3	+2+3+4+5+6	+2+3+4+5+6	+2+3+4+5+6	+2+3+4+5+6	+2+3+4+5+6	+3+4	+3+4	+3+4	+2+3	+2+3	+2+3	+3
232.0381		238.0289		[243]		[247]		[251]		[257]		[260]	
2.109×10 <sup>-10</sup> %		2.94×10 <sup>-11</sup> %		[244]		[247]		[251]		[257]		[260]	

The new IUPAC Group format numbers the groups from 1 to 18. The numbering system used by the Chemical Abstracts Service (CAS) is given in parentheses. For elements that are not naturally abundant, the mass number of the longest-lived isotope is given in brackets. The abundances are based on meteorite and solar wind data. The melting point (M.P.), boiling point (B.P.), and critical point temperatures are given in °Celsius. Sublimation and critical temperatures are indicated by s and t.

## REFERENCES

1. D.R. Lide, Editor, *Handbook of Chemistry and Physics*, 75th edition, CRC Press, (1995).
2. G.J. Leigh, *Nomenclature of Inorganic Chemistry*, Blackwells Scientific Publications, Oxford, (1990).
3. *Chemical and Engineering News*, **63**(5), 27(1985).
4. E. Anders and N. Grevesse, *Abundances of the Elements: Meteoritic and Solar*, Geochimica et Cosmochimica Acta **53**, 197 (1989).