





























































<div>1</div> <div>Hydrogen</div> <div>1.008</div> <div>Fuel</div> <div>Hydrogen is the lightest element and makes up 73.9% of the atmosphere and is used in hydrogen cars and fuel cells</div>	<div>2</div> <div>Helium</div> <div>4.003</div> <div>Balloons</div> <div>Helium has the lowest boiling point (-269°C) and becomes liquid at -272°C</div>	<div>3</div> <div>Lithium</div> <div>6.94</div> <div>Batteries</div> <div>Lithium is the lightest metal that can float on water while being stable in air</div>	<div>4</div> <div>Beryllium</div> <div>9.012</div> <div>Alloys</div> <div>Beryllium is 6 times stronger than steel but weighs only 25% as much</div>
<div>5</div> <div>Boron</div> <div>10.81</div> <div>Ceramics</div> <div>Boron is the 5th element but essential for plants and harder than diamond</div>	<div>6</div> <div>Carbon</div> <div>12.011</div> <div>Steel</div> <div>Carbon is highest for 2 hundred million compounds, used in steel production and as graphite</div>	<div>7</div> <div>Nitrogen</div> <div>14.007</div> <div>Fertilizers</div> <div>Nitrogen makes up 78% of Earth's atmosphere but is inert and used in fertilizers and as liquid nitrogen coolant</div>	<div>8</div> <div>Oxygen</div> <div>15.999</div> <div>Breathing</div> <div>Oxygen is Earth's most abundant element at 46% of atmosphere and used in steel production</div>
<div>9</div> <div>Fluorine</div> <div>18.998</div> <div>Toothpaste</div> <div>Fluorine is the most reactive element that can corrode glass and is used in toothpaste and water fluoridation</div>	<div>10</div> <div>Neon</div> <div>20.18</div> <div>Signs</div> <div>Neon produces the most intense light discharge creating bright orange-red light</div>	<div>11</div> <div>Sodium</div> <div>22.99</div> <div>Salt</div> <div>Sodium lamps are so efficient that one can outshine 100 incandescent bulbs</div>	<div>12</div> <div>Magnesium</div> <div>24.305</div> <div>Flares</div> <div>Magnesium burns with 3000K white light so bright it can be used in flares, alloys, and as dietary supplement</div>
<div>13</div> <div>Aluminum</div> <div>26.982</div> <div>Cans</div> <div>Aluminum was worth more than gold until 1890s before being used in beverage cans, foil, and aircraft parts</div>	<div>14</div> <div>Silicon</div> <div>28.086</div> <div>Glass</div> <div>Silicon makes up 27% of Earth's crust and enabled the computer chip revolution</div>	<div>15</div> <div>Phosphorus</div> <div>30.974</div> <div>Matches</div> <div>White phosphorus glows green in darkness but is essential for life and used in matches, fertilizers, and DNA structure</div>	<div>16</div> <div>Sulfur</div> <div>32.06</div> <div>Rubber</div> <div>Sulfur is second for forming 30+ allotropes and creates strong covalent bonds</div>
<div>17</div> <div>Chlorine</div> <div>35.45</div> <div>Pools</div> <div>Chlorine has the highest electron affinity (349 kJ/mol) and is used in pool disinfection and PVC production</div>	<div>18</div> <div>Argon</div> <div>39.948</div> <div>Welding</div> <div>Argon was Earth's first isolated noble gas and makes up 1% of atmosphere</div>	<div>19</div> <div>Potassium</div> <div>39.098</div> <div>Fertilizer</div> <div>Potassium is so violently reactive it ignites in air and is used in fertilizers and soap production</div>	<div>20</div> <div>Calcium</div> <div>40.078</div> <div>Bones</div> <div>Calcium phosphate comprises 70% of bone mass giving strength to bones, teeth, and concrete production</div>



<div>21</div> <div>Aerospace</div> <div>Scandium</div> <div>Sc</div> <div>44.956</div> <div>  </div> <div>Scandium is paradoxically rarer than many 'rare earth'</div>	<div>22</div> <div>Implants</div> <div>Titanium</div> <div>Ti</div> <div>47.867</div> <div>  </div> <div>Titanium has the highest strength-to-weight ratio of all</div>	<div>23</div> <div>Steel</div> <div>Vanadium</div> <div>V</div> <div>50.942</div> <div>  </div> <div>Vanadium can exist in 5 different oxidation states</div>	<div>24</div> <div>Stainless</div> <div>Chromium</div> <div>Cr</div> <div>51.996</div> <div>  </div> <div>Chromium gives rubies red and emeralds green color</div>
<div>25</div> <div>Batteries</div> <div>Manganese</div> <div>Mn</div> <div>54.938</div> <div>  </div> <div>Manganese nodules carpet vast ocean floors containing</div>	<div>26</div> <div>Magnets</div> <div>Iron</div> <div>Fe</div> <div>55.845</div> <div>  </div> <div>Iron comprises 32.1% of Earth's total mass with most</div>	<div>27</div> <div>Motors</div> <div>Cobalt</div> <div>Co</div> <div>58.933</div> <div>  </div> <div>Cobalt blue glass has been prized for 4000 years and</div>	<div>28</div> <div>Coins</div> <div>Nickel</div> <div>Ni</div> <div>58.693</div> <div>  </div> <div>Nickel-iron meteorites delivered much of Earth's</div>
<div>29</div> <div>Wire</div> <div>Copper</div> <div>Cu</div> <div>63.546</div> <div>  </div> <div>Copper naturally kills bacteria and viruses within hours</div>	<div>30</div> <div>Galvanizing</div> <div>Zinc</div> <div>Zn</div> <div>65.38</div> <div>  </div> <div>Zinc deficiency causes loss of taste/smell and affects 2 billion</div>	<div>31</div> <div>Electronics</div> <div>Gallium</div> <div>Ga</div> <div>69.723</div> <div>  </div> <div>Gallium melts at 29.8°C in hand temperature but boils at</div>	<div>32</div> <div>Semiconductors</div> <div>Germanium</div> <div>Ge</div> <div>72.63</div> <div>  </div> <div>Germanium was predicted by Mendeleev 15 years before</div>
<div>33</div> <div>Pesticides</div> <div>Arsenic</div> <div>As</div> <div>74.921</div> <div>  </div> <div>Arsenic has been humanity's poison of choice for over 2000</div>	<div>34</div> <div>Glass</div> <div>Selenium</div> <div>Se</div> <div>78.974</div> <div>  </div> <div>Selenium deficiency causes fatal white muscle disease and</div>	<div>35</div> <div>Antiseptic</div> <div>Bromine</div> <div>Br</div> <div>79.904</div> <div>  </div> <div>Bromine is the only liquid non-metal but it evaporates</div>	<div>36</div> <div>Lasers</div> <div>Krypton</div> <div>Kr</div> <div>83.798</div> <div>  </div> <div>Krypton was used in ultra-bright airport runway</div>
<div>37</div> <div>Atomic</div> <div>Rubidium</div> <div>Rb</div> <div>85.468</div> <div>  </div> <div>Rubidium ignites spontaneously in air and was</div>	<div>38</div> <div>Fireworks</div> <div>Strontium</div> <div>Sr</div> <div>87.62</div> <div>  </div> <div>Strontium-90 fallout creates the brilliant red in fireworks but</div>	<div>39</div> <div>Catalysts</div> <div>Yttrium</div> <div>Y</div> <div>88.906</div> <div>  </div> <div>Yttrium with barium carbon oxide named YBCO makes the</div>	<div>40</div> <div>Jet</div> <div>Zirconium</div> <div>Zr</div> <div>91.224</div> <div>  </div> <div>Zirconium is virtually immune to corrosion up to 1270K and</div>

<div>41</div> <div>Steel</div> <div>Nb</div> <div>92.906</div> <div>Niobium</div> <div>  </div> <div> <p>Niobium is superconducting below 9K and was originally</p> </div> <div>Used in jet engines and MRI scanners</div>	<div>42</div> <div>Lubricants</div> <div>Mo</div> <div>95.94</div> <div>Molybdenum</div> <div>  </div> <div> <p>Molybdenum has the 6th highest melting point at 2896K</p> </div> <div>Used in steel alloys and high-temp lubricants</div>	<div>43</div> <div>Medicine</div> <div>Tc</div> <div>98</div> <div>Technetium</div> <div>  </div> <div> <p>Technetium was the first artificially created element</p> </div> <div>Used in medical imaging and as tracer</div>	<div>44</div> <div>Electronics</div> <div>Ru</div> <div>101.07</div> <div>Ruthenium</div> <div>  </div> <div> <p>Ruthenium is the scarcest platinum group metal and</p> </div> <div>Used in electrical contacts and hard disks</div>
<div>45</div> <div>Catalysts</div> <div>Rh</div> <div>102.905</div> <div>Rhodium</div> <div>  </div> <div> <p>Rhodium is the most expensive precious metal at</p> </div> <div>Used in catalytic converters and jewelry</div>	<div>46</div> <div>Jewelry</div> <div>Pd</div> <div>106.36</div> <div>Palladium</div> <div>  </div> <div> <p>Palladium can absorb 900 times its volume in hydrogen</p> </div> <div>Used in catalytic converters and dentistry</div>	<div>47</div> <div>Mirrors</div> <div>Ag</div> <div>107.868</div> <div>Silver</div> <div>  </div> <div> <p>Silver has the highest electrical conductivity of all elements at</p> </div> <div>Used in jewelry, mirrors, and photography</div>	<div>48</div> <div>Batteries</div> <div>Cd</div> <div>112.411</div> <div>Cadmium</div> <div>  </div> <div> <p>Cadmium red paint was banned after causing severe</p> </div> <div>Used in batteries, pigments, and solar panels</div>
<div>49</div> <div>Semiconductors</div> <div>In</div> <div>114.818</div> <div>Indium</div> <div>  </div> <div> <p>Indium is softer than lead and can be scratched with a</p> </div> <div>Used in semiconductors and LCD screens</div>	<div>50</div> <div>Solder</div> <div>Sn</div> <div>118.71</div> <div>Tin</div> <div>  </div> <div> <p>Tin produces a distinctive 'tin cry' scream when bent due to</p> </div> <div>Used in solder, cans, and bronze alloys</div>	<div>51</div> <div>Flame</div> <div>Sb</div> <div>121.757</div> <div>Antimony</div> <div>  </div> <div> <p>Fluoroantimonic acid is 10 quintillion times stronger than</p> </div> <div>Used in flame retardants and semiconductors</div>	<div>52</div> <div>Solar</div> <div>Te</div> <div>127.6</div> <div>Tellurium</div> <div>  </div> <div> <p>Tellurium-128 has the longest known half-life at 2.2 septillion</p> </div> <div>Used in solar panels and rubber vulcanization</div>
<div>53</div> <div>Antiseptic</div> <div>I</div> <div>126.905</div> <div>Iodine</div> <div>  </div> <div> <p>Iodine deficiency affects 2 billion people causing goiter</p> </div> <div>Used as antiseptic and in photography</div>	<div>54</div> <div>Anesthesia</div> <div>Xe</div> <div>131.29</div> <div>Xenon</div> <div>  </div> <div> <p>Xenon is the rarest gas with 90 grams per million kilograms of</p> </div> <div>Used in ion drives and medical anesthesia</div>	<div>55</div> <div>Atomic</div> <div>Cs</div> <div>132.905</div> <div>Cesium</div> <div>  </div> <div> <p>Caesium is the softest metal and its hydroxide is the</p> </div> <div>Used in atomic clocks and oil drilling</div>	<div>56</div> <div>X-rays</div> <div>Ba</div> <div>137.327</div> <div>Barium</div> <div>  </div> <div> <p>Barium compounds create brilliant green fireworks but are</p> </div> <div>Used in X-ray imaging and drilling fluids</div>
<div>57</div> <div>Lighter</div> <div>La</div> <div>138.905</div> <div>Lanthanum</div> <div>  </div> <div> <p>Lanthanum remained undiscovered in 'pure' cerium</p> </div> <div>Used in lighter flints and camera lenses</div>	<div>58</div> <div>Catalysts</div> <div>Ce</div> <div>140.12</div> <div>Cerium</div> <div>  </div> <div> <p>Cerium is the most abundant rare earth comprising 0.006%</p> </div> <div>Used in catalysts and glass polishing</div>	<div>59</div> <div>Magnets</div> <div>Pr</div> <div>140.907</div> <div>Praseodymium</div> <div>  </div> <div> <p>Praseodymium means 'green twin' creating emerald-green</p> </div> <div>Used in aircraft engines and magnets</div>	<div>60</div> <div>Magnets</div> <div>Nd</div> <div>144.24</div> <div>Neodymium</div> <div>  </div> <div> <p>Neodymium creates the strongest permanent magnets</p> </div> <div>Used in powerful permanent magnets</div>

<div>61</div> <div>Pm</div> <div>Promethium</div> <div>  </div> <div> <p>Batteries</p> <p>Promethium is the only radioactive rare earth and</p> </div> <div>Used in nuclear batteries and research</div>	<div>62</div> <div>Sm</div> <div>Samarium</div> <div>  </div> <div> <p>Magnets</p> <p>Samarium magnets work at 350°C and have the highest</p> </div> <div>Used in magnets and cancer treatment</div>	<div>63</div> <div>Eu</div> <div>Europium</div> <div>  </div> <div> <p>Phosphors</p> <p>Europium is the softest rare earth and the most reactive,</p> </div> <div>Used in red phosphors for TV screens</div>	<div>64</div> <div>Gd</div> <div>Gadolinium</div> <div>  </div> <div> <p>MRI</p> <p>Gadolinium has the highest magnetic moment and is used</p> </div> <div>Used as MRI contrast agents and neutron capture</div>
<div>65</div> <div>Tb</div> <div>Terbium</div> <div>  </div> <div> <p>Magnets</p> <p>Terbium glows intense green under UV and is essential for</p> </div> <div>Used in green phosphors and magnets</div>	<div>66</div> <div>Dy</div> <div>Dysprosium</div> <div>  </div> <div> <p>Lasers</p> <p>Dysprosium becomes strongly magnetic only below -180°C</p> </div> <div>Used in lasers and hard disk drives</div>	<div>67</div> <div>Ho</div> <div>Holmium</div> <div>  </div> <div> <p>Magnets</p> <p>Holmium possesses the strongest magnetic field of any</p> </div> <div>Used in magnets and medical devices</div>	<div>68</div> <div>Er</div> <div>Erbium</div> <div>  </div> <div> <p>Fiber</p> <p>Erbium amplifies light in fiber optic cables enabling global</p> </div> <div>Used in fiber optic amplifiers and lasers</div>
<div>69</div> <div>Tm</div> <div>Thulium</div> <div>  </div> <div> <p>X-rays</p> <p>Thulium is the least abundant rare earth metal and possibly</p> </div> <div>Used in X-ray sources and portable equipment</div>	<div>70</div> <div>Yb</div> <div>Ytterbium</div> <div>  </div> <div> <p>Lasers</p> <p>Ytterbium expands 26% during phase transition and is used in</p> </div> <div>Used in lasers and stress gauges</div>	<div>71</div> <div>Lu</div> <div>Lutetium</div> <div>  </div> <div> <p>Catalysts</p> <p>Lutetium is the hardest, densest rare earth and was the</p> </div> <div>Used in catalysts and medical imaging</div>	<div>72</div> <div>Hf</div> <div>Hafnium</div> <div>  </div> <div> <p>Carbide</p> <p>Hafnium has nearly identical properties to zirconium due to</p> </div> <div>Used in tungsten carbide and nuclear reactor</div>
<div>73</div> <div>Ta</div> <div>Tantalum</div> <div>  </div> <div> <p>Electronics</p> <p>Tantalum is virtually immune to all acids except hydrofluoric at</p> </div> <div>Used in electronics and surgical instruments</div>	<div>74</div> <div>W</div> <div>Tungsten</div> <div>  </div> <div> <p>Bulbs</p> <p>Tungsten has the highest melting point at 3695K and</p> </div> <div>Used in light bulb filaments and X-ray tubes</div>	<div>75</div> <div>Re</div> <div>Rhenium</div> <div>  </div> <div> <p>Catalysts</p> <p>Rhenium has the highest boiling point at 5869K and is</p> </div> <div>Used in catalysts and jet engine parts</div>	<div>76</div> <div>Os</div> <div>Osmium</div> <div>  </div> <div> <p>Fountain</p> <p>Osmium is the densest element at 22.6 g/cm³ and</p> </div> <div>Used in fountain pen tips and electrical contacts</div>
<div>77</div> <div>Ir</div> <div>Iridium</div> <div>  </div> <div> <p>Catalysts</p> <p>Iridium is the most corrosion-resistant element</p> </div> <div>Used in spark plugs and cancer treatment</div>	<div>78</div> <div>Pt</div> <div>Platinum</div> <div>  </div> <div> <p>Jewelry</p> <p>Platinum is 30 times rarer than gold and catalyzes 20% of all</p> </div> <div>Used in jewelry, catalysts, and electronics</div>	<div>79</div> <div>Au</div> <div>Gold</div> <div>  </div> <div> <p>Electronics</p> <p>Gold is so chemically inert it never tarnishes and has been</p> </div> <div>Used in jewelry, electronics, and dentistry</div>	<div>80</div> <div>Hg</div> <div>Mercury</div> <div>  </div> <div> <p>Thermometers</p> <p>Mercury is the only metal liquid at room temperature and</p> </div> <div>Used in thermometers, dental fillings, and switches</div>

<div>81</div> <div>Electronics</div> <div>Thallium</div> <div>204.38</div> <div>Thallium is 10 times more toxic than lead and was once sold</div> <div>Used in electronics and medical imaging</div>	<div>82</div> <div>Batteries</div> <div>Lead</div> <div>207.2</div> <div>Lead's toxicity may have contributed to the fall of Rome</div> <div>batteries, bullets, and radiation shielding</div>	<div>83</div> <div>Medicine</div> <div>Bismuth</div> <div>208.98</div> <div>Bismuth forms spectacular rainbow-colored oxide crystals</div> <div>Used in medicine and cosmetics</div>	<div>84</div> <div>Detectors</div> <div>Polonium</div> <div>209</div> <div>Polonium is 250 billion times more toxic than cyanide and</div> <div>Used in anticancer devices and neutron sources</div>
<div>85</div> <div>Medicine</div> <div>Astatine</div> <div>210</div> <div>Astatine is Earth's rarest element with less than 1 gram</div> <div>Used in medicine and scientific research</div>	<div>86</div> <div>Gas</div> <div>Radon</div> <div>222</div> <div>Radon gas seepage causes 21,000 lung cancer deaths</div> <div>Used as tracer gas and in dating</div>	<div>87</div> <div>Research</div> <div>Francium</div> <div>223</div> <div>Francium is the most reactive metal with largest atomic</div> <div>Used in research and atomic clocks</div>	<div>88</div> <div>Medicine</div> <div>Radium</div> <div>226</div> <div>Radium was worth more than gold and glowed green due to</div> <div>Used in cancer treatment and luminous paints</div>
<div>89</div> <div>Medicine</div> <div>Actinium</div> <div>227</div> <div>Actinium glows blue-white in darkness and is 150 times</div> <div>Used in cancer treatment and neutron sources</div>	<div>90</div> <div>Gas</div> <div>Thorium</div> <div>232.04</div> <div>Thorium is 3 times more abundant than uranium and</div> <div>Used in gas mantles and nuclear fuel</div>	<div>91</div> <div>Nuclear</div> <div>Protactinium</div> <div>231.04</div> <div>Protactinium costs \$280/gram making it one of the most</div> <div>Used in nuclear research and dating</div>	<div>92</div> <div>Fuel</div> <div>Uranium</div> <div>238.03</div> <div>Uranium-235's 1 gram releases energy equal to</div> <div>Used in nuclear fuel and weapons</div>
<div>93</div> <div>Detectors</div> <div>Neptunium</div> <div>237</div> <div>Neptunium was the first transuranium element created</div> <div>Used in smoke detectors and research</div>	<div>94</div> <div>Weapons</div> <div>Plutonium</div> <div>244</div> <div>Plutonium feels warm due to radioactive decay and is illegal</div> <div>Used in nuclear weapons and power</div>	<div>95</div> <div>Detectors</div> <div>Americium</div> <div>243</div> <div>Americium is the only man-made element available</div> <div>Used in smoke detectors and neutron sources</div>	<div>96</div> <div>Research</div> <div>Curium</div> <div>247</div> <div>Curium glows purple-blue in darkness due to intense</div> <div>Used in research and space missions</div>
<div>97</div> <div>Research</div> <div>Berkelium</div> <div>247</div> <div>Berkelium was first synthesized at UC Berkeley</div> <div>Used in research and as electron source</div>	<div>98</div> <div>Research</div> <div>Californium</div> <div>251</div> <div>Californium costs \$27 million per gram and is used to start</div> <div>Used in research and neutron sources</div>	<div>99</div> <div>Research</div> <div>Einsteinium</div> <div>252</div> <div>Einsteinium was discovered in hydrogen bomb debris from</div> <div>Used in research and medical applications</div>	<div>100</div> <div>Research</div> <div>Fermium</div> <div>253</div> <div>Fermium was found in H-bomb fallout like einsteinium and</div> <div>Used in research only</div>


10th
Md
Mendelevium
Used in research only

Mendelevium was the first element created one atom at a time.

102

obelium



Research

No

258

Used in research only

Nobelium discovery was disputed for decades with


103

Lawrencium

Research

Lr

262



Used in research only

Lawrencium completes the actinide series and was

10th Periodic Table

Research

Rf₂₇

Used in research only




Rutherfordium was claimed by both Soviet and American

105

Dubnium

Research

Db



Used in research only

Dubnium was named after Dubna, Russia where Soviet

106
Sg
Seaborgium
Research
Sg
Used in research only

Seaborgium honors Glenn Seaborg, the only living person

107


Bohrium

Research

Bh

270

Used in research only




Bohrium was named after Niels Bohr who developed

108 Research

Hs

Used in research only

Hassium



Hassium was named after Hesse, Germany where GSI

109
Meitnerium

Research

Mt₂₆

Used in research only



Meitnerium honors Lise Meitner who discovered

110

Darmstadtium

Research

Ds

Used in research only

Darmstadtium was named after Darmstadt, the latest city

The infographic features a large green vertical bar on the left with the number 110 in a white circle at the top and the word 'Darmstadtium' written vertically in white. To the right of the bar, the word 'Research' is written in black, followed by a large black 'Ds' with a small virus-like icon inside the 's'. Below 'Ds' is a blue and black molecular model. On the far right, the text 'Used in research only' is written vertically in black. At the bottom, a black horizontal bar contains the text 'Darmstadtium was named after Darmstadt, the latest city' in white.

114

Ro

Rgenium

Research

Rg

292

Used in research only

Roentgenium honors X-ray discoverer Wilhelm Röntgen

112

Cn


Copernicium

Research

Cn

285

Used in research only




Copernicium was named after Copernicus who placed the

113 Research **Nh** 286

Used in research only

Nihonium



Nihonium was named after Japan (Nihon) where RIKEN

114 Research
Flerovium
Used in research only




Flerovium honors Soviet physicist Flerov who founded

115

Scovium

Research

Mc



Used in research only

Moscovium was named after Moscow where Russian

116
 Lv
 293
 Used in research only

Research
 Lv
 293

Livermorium honors Lawrence
 Livermore Laboratory's

117

Tennessine

Research

Ts

Used in research only

Tennessine was named after Tennessee, discovered most

118 Research Og Used in research only

Oganesson



Oganesson is the heaviest and most radioactive element with

Date	Description	Amount	Balance
	Jan 1		
	Jan 2		
	Jan 3		
	Jan 4		
	Jan 5		
	Jan 6		
	Jan 7		
	Jan 8		
	Jan 9		
	Jan 10		
	Jan 11		
	Jan 12		
	Jan 13		
	Jan 14		
	Jan 15		
	Jan 16		
	Jan 17		
	Jan 18		