

Dig In!

Minerals are substances that form naturally on Earth. They are made up of one or more **elements**, which are the basic building blocks of everything in the universe.

Minerals are solid crystals. This means they are made of substances whose atoms are arranged in a repeating, orderly pattern.

Minerals are also inorganic: they are not made of living things. Some **minerals are gemstones** that can be cut and polished for jewelry.

PERIODIC TABLE

Hydrogen 1 H 1.008																	Helium 2 He 4.0026													
Lithium 3 Li 6.94	Beryllium 4 Be 9.0122																	Boron 5 B 10.81	Carbon 6 C 12.011	Nitrogen 7 N 14.007	Oxygen 8 O 15.999	Fluorine 9 F 18.998	Neon 10 Ne 20.180							
Sodium 11 Na 22.990	Magnesium 12 Mg 24.305																	Aluminum 13 Al 26.982	Silicon 14 Si 28.085	Phosphorus 15 P 30.974	Sulfur 16 S 32.06	Chlorine 17 Cl 35.45	Argon 18 Ar 39.88							
Potassium 19 K 39.098	Calcium 20 Ca 40.078	Scandium 21 Sc 44.956	Titanium 22 Ti 47.867	Vanadium 23 V 50.942	Chromium 24 Cr 51.996	Manganese 25 Mn 54.938	Iron 26 Fe 55.845	Cobalt 27 Co 58.933	Nickel 28 Ni 58.693	Copper 29 Cu 63.546	Zinc 30 Zn 65.38	Gallium 31 Ga 69.723	Germanium 32 Ge 72.630	Arsenic 33 As 74.922	Selenium 34 Se 78.971	Bromine 35 Br 79.904	Krypton 36 Kr 83.798													
Rubidium 37 Rb 85.468	Strontium 38 Sr 87.62	Yttrium 39 Y 88.906	Zirconium 40 Zr 91.224	Niobium 41 Nb 92.906	Molybdenum 42 Mo 95.95	Technetium 43 Tc [97]	Ruthenium 44 Ru 101.07	Rhodium 45 Rh 102.91	Palladium 46 Pd 106.42	Silver 47 Ag 107.87	Cadmium 48 Cd 112.41	Indium 49 In 114.82	Tin 50 Sn 118.71	Antimony 51 Sb 121.76	Tellurium 52 Te 127.60	Iodine 53 I 126.90	Xenon 54 Xe 131.29													
Caesium 55 Cs 132.91	Barium 56 Ba 137.33	Lanthanum 57 La 138.91	Hafnium 72 Hf 178.49	Tantalum 73 Ta 180.95	Tungsten 74 W 183.84	Rhenium 75 Re 186.21	Osmium 76 Os 190.23	Iridium 77 Ir 192.22	Platinum 78 Pt 195.08	Gold 79 Au 196.97	Mercury 80 Hg 200.59	Thallium 81 Tl 204.38	Lead 82 Pb 207.2	Bismuth 83 Bi 208.98	Polonium 84 Po [209]	Astatine 85 At [210]	Radon 86 Rn [222]													
Francium 87 Fr [223]	Radium 88 Ra [226]	Actinium 89 Ac [227]	Rutherfordium 104 Rf [261]	Dubnium 105 Db [268]	Seaborgium 106 Sg [269]	Bohrium 107 Bh [270]	Hassium 108 Hs [269]	Mitnerium 109 Mt [278]	Darmstadtium 110 Ds [281]	Roentgenium 111 Rg [282]	Copernicium 112 Cn [285]	Nihonium 113 Nh [286]	Flerovium 114 Fl [289]	Moscovium 115 Mc [290]	Livermorium 116 Lv [293]	Tennessee 117 Ts [294]	Oganesson 118 Og [294]													
Cerium 58 Ce 140.12																		Praseodymium 59 Pr 140.91	Neodymium 60 Nd 144.24	Promethium 61 Pm [145]	Samarium 62 Sm 150.36	Europium 63 Eu 151.96	Gadolinium 64 Gd 157.25	Terbium 65 Tb 158.93	Dysprosium 66 Dy 162.50	Holmium 67 Ho 164.93	Erbium 68 Er 167.26	Thulium 69 Tm 168.93	Ytterbium 70 Yb 173.05	Lutetium 71 Lu 174.97
Thorium 90 Th 232.04																		Protactinium 91 Pa 231.04	Uranium 92 U 238.03	Neptunium 93 Np [237]	Plutonium 94 Pu [244]	Americium 95 Am [243]	Curium 96 Cm [247]	Berkelium 97 Bk [247]	Californium 98 Cf [251]	Einsteinium 99 Es [252]	Fermium 100 Fm [257]	Mendelevium 101 Md [258]	Nobelium 102 No [259]	Lawrencium 103 Lr [266]

The periodic table is used to organize the 118 known elements. Elements make up minerals.

Minerals are also building blocks for rocks. They make up rocks that, in turn, make up our planet.



Some minerals have the ability to glow when exposed to **ultraviolet light**.

Some varieties of the mineral calcite can glow red, white, blue, green, pink, and even orange.

CHAPTER

2

Identifying Minerals

All minerals have unique features based on their chemical makeup. Scientists called **mineralogists** use these characteristics to tell minerals apart. Common properties mineralogists look for when studying a mineral are its color, luster, hardness, and streak. Let's find out how these features help them tell minerals apart.

The **BIG** Truth

Is It a Rock or a Mineral?

Minerals are basic building blocks of rocks. Rocks and minerals are similar, but they are not the same! Check out the diagram below to find out the similarities and differences between them.

Rocks versus Minerals

Rocks

- Made up of one or more minerals
- Can contain the remains of living things, like shells
- May not always contain crystals
- Form Earth's solid crust

Formed naturally by processes inside Earth and on its surface

Minerals

- Made up completely of just one substance, either a single element or a combination of elements
- Inorganic
- Form crystals
- Can be found in Earth's solid crust as well as in soil and sand

The Building Blocks of Granite

Granite is a rock that makes up much of Earth's rocky outer layer, the layer of rocks that form the land. Check out how four minerals come together to create granite!



Feldspar: The most abundant mineral in granite. It appears as white or pink crystals.

Quartz: The second most common mineral in granite. It appears as round, glassy grains. Quartz, along with feldspar, makes granite extremely hard.



GRANITE



Mica: This mineral has a pearly luster. Tiny grains of mica make granite sparkle.



Hornblende: The mineral that gives granite dark-colored spots.