

Classification:

Elements are classified as metals, nonmetals, and metalloids. Metals are located on the left, nonmetals are on the right, and metalloids are in between.

Metals:

- Shiny 'metallic' appearance (luster)
- Solids at room temperature (except mercury)
- High melting points
- High densities
- Large atomic radii
- Low ionization energies
- Low electronegativities
- Usually, high deformation
- Malleable
- Ductile
- Thermal conductors
- Electrical conductors
- Monatomic (one atom)

Metals are elements that are good conductors of electric current and heat. Except for mercury, metals are solid at room temperature. Most metals are malleable. Many metals are ductile—they can be drawn into thin wires. The metals in groups 3 through 12 are called transition metals. Transition metals form a bridge between the elements on the left and right sides of the table. One property of many transition metals is their ability to form compounds with distinctive colors.

	Metals	Nonmetals
chemical properties	easily lose valence electrons	easily share or gain valence electrons
	1-3 electrons (usually) in the outer shell	4-8 electrons in the outer shell (7 for halogens and 8 for noble gases)
	form basic oxides	form acidic oxides
	good reducing agents	good oxidizing agents
	have low electronegativity	have higher electronegativity
physical properties	solid at room temperature (except mercury)	may be liquid, solid, or gas (noble gases are gases)
	have metallic luster	do not have metallic luster
	good conductor of heat and electricity	poor conductor of heat and electricity
	typically malleable and ductile	usually brittle
	opaque in a thin sheet	transparent in a thin sheet

Nonmetals

- High ionization energies
- High electronegativities
- Poor thermal conductors
- Poor electrical conductors
- Brittle solids - not malleable or ductile
- Little or no metallic luster
- Gain electrons easily
- Dull, not metallic-shiny, although they may be colorful
- Lower melting points and boiling point than the metals
- 7 elements are diatomic (two atoms)
 - Hydrogen (H₂)
 - Nitrogen (N₂)
 - Oxygen (O₂)
 - Fluorine (F₂)
 - Chlorine (Cl₂)
 - Iodine (I₂)
 - Bromine (Br₂)

Nonmetals are elements that are poor conductors of heat and electric current. Many nonmetals are gases at room temperature. All the gases on the periodic table are nonmetals.

Metalloids

Metalloids are elements with properties that fall between those of metals and nonmetals. For example, a metalloid's ability to conduct electric current varies with temperature.

Across a period from left to right, elements become less metallic and more nonmetallic in their properties.