

Name

Metals, Non-Metals, & Metalloids

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Kr	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Hf	Co	Pd	Ag	Cd	In	Sn	Sb	Te	Xe	
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	
Fr	Ra	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	

58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Metals Metalloids Non-Metals

Elemental Explorations: Discovering Metals, Nonmetals, and Metalloids

Have you ever wondered why some materials are shiny and conduct electricity, while others are dull and insulating? The answer lies in the properties that define the categories of metals, nonmetals, and metalloids on the periodic table. In this reading passage, we will explore these properties in detail to understand what sets these elements apart.

Metals: The Shiny Conductors

Metals are like the rock stars of the periodic table. They have some fantastic properties that make them stand out:

- **Shiny Appearance:** Metals are known for their lustrous, shiny appearance when freshly polished. Think of gold, silver, and copper – they all gleam in the light.
- **Conductivity:** One of the most distinctive features of metals is their ability to conduct electricity and heat with ease. This property makes them essential in electrical wiring, cooking utensils, and many other applications.
- **Malleability:** Metals are incredibly malleable, meaning they can be hammered or pressed into thin sheets without breaking. This property allows for the creation of thin foils and sheets, such as aluminum foil.
- **Ductility:** Metals can also be drawn into thin wires without snapping. This property is crucial for making electrical wires and cables.
- **High Melting and Boiling Points:** Metals generally have high melting and boiling points, which means they can withstand high temperatures without turning into a gas. This makes them suitable for use in engines and machinery.
- **Density:** Most metals are dense, meaning they have a lot of mass packed into a small volume. For example, lead is known for its high density.

Nonmetals: The Diverse Insulators

Nonmetals, on the other hand, are quite different from metals. They have their own unique set of properties:

- **Dull Appearance:** Unlike metals, nonmetals have a dull or non-shiny appearance. Carbon, found in graphite and charcoal, is a good example.



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- **Poor Conductivity:** Nonmetals are generally poor conductors of electricity and heat. This property makes them suitable as insulators in electrical wires, preventing the flow of electricity.
- **Brittleness:** Nonmetals tend to be brittle, meaning they break or shatter easily when subjected to force. A classic example is sulfur, which is brittle and has a yellowish appearance.
- **Low Melting and Boiling Points:** Nonmetals often have low melting and boiling points, which means they can easily change from a solid to a gas or liquid when heated. Oxygen and nitrogen are nonmetals that are gases at room temperature.
- **Diverse States:** Nonmetals exist in various states at room temperature. Some, like oxygen and nitrogen, are gases, while others, like sulfur and iodine, can be solids or liquids.

Metalloids: The Middle Ground

Now, what about metalloids? They're the bridge between metals and nonmetals, sharing properties of both:

- **Intermediate Conductivity:** Metalloids have electrical conductivity that falls between that of metals and nonmetals. This property makes them useful in semiconductors, which are the basis of electronic devices like computers and smartphones.
- **Varied Appearance:** Metalloids can have a shiny or dull appearance, depending on their specific form and conditions.
- **Varied Melting and Boiling Points:** The melting and boiling points of metalloids can vary, but they often fall between those of metals and nonmetals.
- **Diverse States:** Some metalloids, like silicon, are solid at room temperature, while others, like boron, are solids with high melting points.

