

# Difference Between Metals and Non-Metals

The difference between metals and non-metals is that metals are hard, shiny, malleable, ductile, sonorous, and good conductors of heat and electricity, whereas non-metals are not. We have provided the difference between metals and non-metals in the table below.

Metals VS Non-Metals	
Metals	Non-Metals
Metals are solids at room temperature.	Non-Metals can be solids, liquids, or gases at room temperature.
Metals are good conductors of heat and electricity.	Non-Metals are poor conductors of heat and electricity.
They have lustre.	They are not lustrous.
Metals are sonorous.	Non-metals are non-sonorous.
Metals are shiny.	Non-metals are dull.
They can be bent and stretched.	They are usually brittle.
They are malleable.	They are non-malleable.
They form positive ions.	They form negative ions.

## What is a Metal?

Metals are hard substances having heat and electrical conductivity qualities (except tungsten). Polishing these materials generates a reflective surface since they are naturally glossy. Metals are often found in solid form, with the exception of mercury, which is found in liquid form. Alkali metals, alkaline earth metals, transition metals, lanthanides, and actinides are all metals. Metals and nonmetals are separated on the periodic table by a zig-zag line that passes through carbon, phosphorus, selenium, iodine, and radon.

Metals are malleable because they may easily be turned into thin sheets. Metals can also be made into thin, long wires, displaying their ductility. Copper, Iron, Silver, Gold, Aluminium, Lead, Magnesium, Sodium, and other metals are examples of metals.

## Properties of Metals

The chemical and physical properties of metals are provided below.

- Metals are shiny, and polishing them creates a mirror-like finish.
- Good heat and electricity conductors.
- They can very quickly lose electrons when forming bonds.
- Metal oxides are fundamental in nature, and metals have lower electronegativities.
- Metals are often effective reducers.
- Metals may be hammered into thin sheets and are malleable.
- Metals are also ductile and can be pulled into wires.
- Nothing can see through metals since they might be as opaque as a thin sheet.
- When struck, metals produce a sonorous or bell-like sound.

### **What is a Non-Metal?**

Non-metals are elements on the right side of the periodic table. Gases, liquids, and solids are all examples of non-metals. Metals are shiny, whereas non-metals are drab. A non-metal cannot be hammered or shaped; if struck, it would shatter. Non-metals have a tendency to receive electrons since their outermost shell has four, five, six, or seven electrons.

The melting and boiling points of these elements are extremely high. Nonmetals, such as silicon and carbon, on the other hand, have high melting and boiling points. Nonmetals do not react with the acid in general, but they do react swiftly with air and are considered excellent oxidising agents. Oxygen, Nitrogen, Carbon, Sulphur, Chlorine, Iodine, Hydrogen, Phosphorus, etc. are non-metals.

### **Properties of Non-Metals**

The chemical and physical properties of non-metals are provided below.

- They are poor heat and electricity conductors.
- At room temperature, they could be solids, liquids, or gases.
- Non-Metals are good oxidizing agents.
- They are transparent as a thin sheet
- Nonmetals are non-sonorous.
- In their outer shell, they usually have 4-8 electrons.
- They can gain or share valence electrons with ease.
- Non-Metals have high electronegativities.

### **Chemical Difference Between Metals and Non-Metals**

Metallic components are lustrous, conduct electricity, and can be hammered into thin foils or fashioned into wires, among other things. They contribute

electrons in ionic compounds. Non-metallic elements, on the other hand, are dull, do not conduct electricity, are fragile, just crumbling (unless it's a gas), and absorb electrons provided by metallic atoms in ionic compounds. The difference between metals and non-metals based on their chemical properties is given below.

- Metals typically have a high density.
- Metals are ductile and malleable.
- Metals combine with other metals or nonmetals to form alloys.
- Some metals corrode when they react with air. Consider iron.
- Metals are excellent heat and electrical conductors. The exception is lead.
- Non-metals are poor heat and electrical conductors.
- Metals react more with nonmetals than nonmetals with metals.
- Nonmetals typically react with other nonmetals at high temperatures.
- At room temperature, most nonmetals do not react with air.
- Non-metals do not usually react with water. Except for chlorine, which dissolves in water to generate an acidic solution, all other elements dissolve in water to form an acidic solution.

