

Properties of metals

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Metals have numerous substantial properties. These properties are due to their specific crystal structure arrangements, where many atoms as possible surround each atom in a close-packed arrangement, which acquires a very stable and strong structure characterized by an electron cloud of delocalized electrons, caused by the electrostatic attraction of conduction electrons to positively charged metal ions. It is defined as the sharing of free electrons among charged cations.

Many physical and mechanical characteristics of metals are explained by metallic bonding, which provide engineers with how to choose the right metal for a given application as well as understand how metals behave under different working physical, mechanical or thermal conditions.

Among the main metals properties, we can cite the following ones: the hardness, strength, ductility, malleability, plasticity, elasticity, toughness, fatigue resistance, luster, density, conductivity, corrosion resistance, insolubility, high boiling and melting points.