

alternating current

it gets its name from the way that the direction of electron flow changes or alternates; in this process the positive and negative charges at either end of the conductor switch positions which results in reversals of electron direction.

aluminium

a metal and element, this substance is lightweight, corrosion resistant, ductile, malleable, machinable and has excellent castability

annealing

the purpose of this process may be to remove stresses, soften, obtain a desired structure or improve machinability and cold working properties; it involves heating steel to and holding at a suitable temperature, followed by a relatively slow cooling

austenite

a face centred cubic (FCC) phase in the iron-carbon equilibrium diagram, designated by the symbol gamma ( $\gamma$ ), this is a non-magnetic solid solution of carbon in iron

brass

an alloy of copper and up to 43% zinc

bronze	an alloy of copper and up to 10% tin, known as tin bronze; alloys of copper and up to 10% aluminium are known as aluminium bronzes, while alloys of copper and up to 5% silicon are known as silicon bronzes
case hardening	a process of surface hardening involving a change in the composition of the outer layer of a ferrous alloy; typical hardening processes are carburising, cyaniding, carbonating and nitriding
cast iron	an alloy of iron and carbon in which carbon is an excess of the amount that can be retained in solid solution in austenite at the eutectic temperature; carbon is usually present in the range of approximately 2% to 4.5%; in addition, silicon, manganese, sulphur and phosphorus are contained in varying amounts
cementite	a hard brittle iron carbide compound with formula $Fe_3C$ , found in carbon
cold working	involves changing the shape or size of metal by plastic deformation; carried out below the recrystallisation point, usually at room temperature; hardness and tensile strength are increased while ductility and impact values are lowered

couple	a system of forces that exerts a resultant moment but no resultant force
current	the rate of electrically charged particles measured in amperes
direct current (DC)	provides a constant flow of electrons in a single direction from negative to positive
dislocations	discontinuities in the crystal lattice of a metal; the movement of these under stress may be used to explain slip, creep, etc.
ductility	the ease with which a material deforms plastically while undergoing tensile forces

ferrite	body centred cubic (BCC) phase in the iron-carbon phase diagram; may exist in either a low temperature alpha or a high temperature delta form
ferrous	those metals in which primary constituent is iron (Fe)
heat treatment	applies to any one of several processes involving heating metals to controlled temperatures for specific period of time, and afterwards cooling them at controlled rates; these may be applied to soften work-hardened material but more generally they are used to strengthen alloys
magnet	a piece of iron or other material exhibiting the properties of magnetism, i.e. it generates a force or magnetic field that attracts other ferromagnetic materials such as iron and attracts or repels other magnets