HEAT TREATMENT OF METALS

Key Revision Facts: GCSE Technology

Heat treatment is a group of industrial metalworking processes that use heating and cooling metals to alter the metal's properties and characteristics.

Annealing

Annealing is a heat treatment process that changes the physical and sometimes also the chemical properties of a material. Is heat is applied and allows it to cool slowly to remove internal stresses and toughen it.

Case Hardening

Case Hardening or Surface Hardening is the process of hardening a metal object's surface while allowing the metal deeper underneath to remain soft, forming a thin layer of harder metal at the surface.

Tempering

Tempering is a process of heat treating, which is used to increase the toughness of iron-based alloys. Tempering is usually performed after hardening to reduce some of the excess hardness. It is done by heating the metal to some temperature below the melting point, allowing it to cool in still air.

Normalizing

Normalizing is a heat treatment process used to make a metal more ductile and tough after being subjected to thermal or mechanical hardening processes. Normalizing involves heating a material to an elevated temperature and then cooling back to room temperature by exposing it to room temperature air after it is heated. This heating and slow cooling alter the metal's microstructure, reducing its hardness and increasing its ductility.

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VERSION INFORMATION

Date	Arthur	Comment
13-Mar-2021	Andrew Seaford	Initial release.