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The Process-Structure-Property-Performance of AISI 1020

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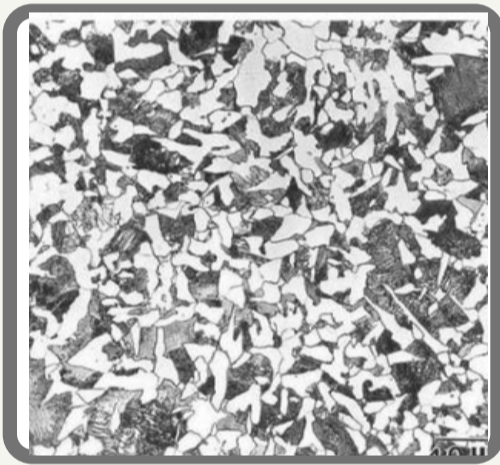
AISI 1020 APPLICATION: LAWNMOWER BLADES

AISI 1020 is widely used in many different industries due to its high strength, ductility, and machinability. Here are some reasons it is also perfect for lawnmower blades.



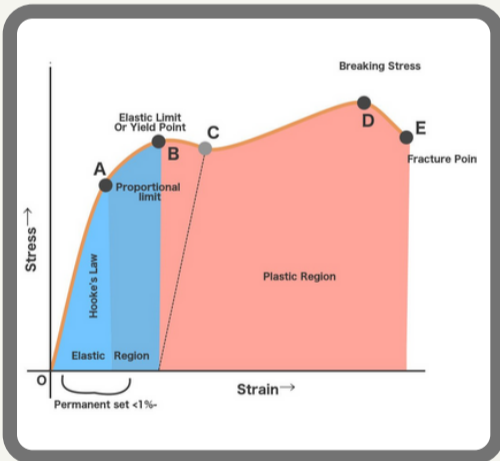
Process

To make AISI 1020, Iron is melted in a furnace and then combined with other metals like Mn and C to make the alloy. For this steel, it contains about 0.18-0.23% Carbon content. Once poured, it can undergo strengthening mechanisms such as Grain Boundary and Work Hardening.



Structure

The structure of AISI 1020 is made up of many microstructures such as ferrite, pearlite, austenite, and cementite, which make up the grains in the image. These give the steel its properties of hardness, magnetism, ductility, and ability to rust.



Properties

AISI 1020 has great strength, ductility, and hardness. As a result, it has a high machinability and formability factor. These properties make this low carbon steel ideal for manufacturing as well as resharpening.



Performance

A lawnmower blade's core performance parameter is its ductility. The blade must be strong and hard enough to prevent denting but ductile enough to not fracture on impact with a foreign object such as a rock. AISI 1020 has the perfect balance of these properties while also being cost effective.

Prepared by students from

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