



IS 4432 :1988

Specification for case hardening steels

This comprehensive standard specifies requirements of steels intended for forgings and fabrication of **case-hardened machine or automobile parts**. The specification covers **wrought low carbon unalloyed and alloyed steel bars, billets, rods, and finished forgings** intended for **carburizing or carbonitriding applications**. The standard details 17 steel grades with distinct mechanical properties and chemical compositions—including key alloying elements like **chromium, nickel, and molybdenum**. It also recommends temperatures for **hot-working and heat treatments** aimed at controlling the **hardness, machinability, shearability**.

Key features include:

- Chemical composition requirements and tolerances
- Recommended Temperatures for Hot-Working and Heat treatment
- Hardness specifications for as-rolled, annealed, and machined conditions
- **McQuaid Ehn grain size requirements**
- **Cleanliness ratings** for both air-melted and vacuum/EFR or secondary refined qualities
- Dimensional tolerances and straightness specifications
- Comprehensive testing protocols including hardenability tests