



IS 2611 : 1964 Specification for carbon chromium molybdenum steel forgings for high temperature service

IS 2611:1964, "Specification for Carbon Chromium Molybdenum Steel Forgings for High Temperature Service," is an important Indian Standard to ensure the quality, reliability, and safety of steel forgings used in high-temperature applications. These forgings are commonly used in industries such as aerospace, power generation, and heavy engineering, where components are subjected to extreme heat and stress.

The standard defines the various requirements for carbon chromium molybdenum steel forgings, which are designed for high-temperature service. These steels are known for their excellent strength, wear resistance, and ability to withstand elevated temperatures without losing structural integrity. The product is specifically designed for components that operate in environments with high thermal and mechanical stresses, such as turbine blades, engine parts, and industrial equipment.

Consumers expect several key quality parameters from steel forgings used in high-temperature applications:

1. High Strength and Durability – The forgings must maintain their mechanical properties under high temperatures, ensuring long-term performance without failure.
2. Resistance to High temperature fatigue – The material should be resistant to oxidation, corrosion, and thermal fatigue, as well as able to withstand prolonged exposure to high temperatures without degradation.
3. Dimensional Accuracy – The forgings must conform to specified dimensions and tolerances to ensure proper fit and function in complex machinery.
4. Consistent Material Quality – The steel must be uniform in composition and free from defects like cracks, voids, or inclusions that could compromise its performance.

To ensure the steel forgings meet the necessary performance criteria, the standard mandates several tests, including:

- Tensile and Yield Strength Tests – to measure the steel's ability to withstand high-stress conditions.
- Chemical composition – to ensure the chemical composition within defined limits of steel forgings
- Impact Testing – to ensure the material can endure sudden shock or stress at elevated temperatures.
- Bend Testing – to verify that the material withstand without fracture being bent through 180 degrees either by pressure or by blow from hammer.
- Dimensional and Visual Inspections – to ensure the forgings are free from defects such as cracks, surface flaws and harmful segregations.

The standard also emphasizes the importance of manufacturing processes, such as controlled forging techniques, to achieve uniform material properties and high-quality outcomes. By following IS 2611:1964, manufacturers can ensure that their steel forgings meet these high-performance criteria, providing components that are safe, durable, and capable of withstanding the harsh conditions of high-temperature service.