



Indian Standard IS 17111:2019/ ISO 683-17- 2014 Heat-Treated Steels, Alloy Steels and Free-Cutting Steels -Ball and Roller Bearing Steels

Bearing steel is a high-quality alloy or carbon steel designed specifically for manufacturing ball and roller bearings. It has **excellent hardness, wear resistance, and fatigue strength**, allowing it to withstand continuous rotational stress and heavy loads without deforming or wearing out prematurely.

Commonly used types include through-hardening and case-hardening steels, with compositions that may include **chromium** and other elements to **enhance corrosion resistance and durability**. Bearing steel is crucial for applications in **industrial machinery, automotive components, and high-precision equipment** where durability and performance under load are essential. These steels are supplied in various forms, including **bars, billets, and wire rods**.

This standard specifies the technical delivery requirements for five groups of ball and roller bearing steels. These include through-hardening, case-hardening, induction-hardening, stainless, and high-temperature bearing steels.

The standard covers the chemical composition, hardness, and hardenability, ensuring optimal performance under specific heat treatment conditions. It also addresses **surface quality, grain size, and carbide distribution** for each steel type. Requirements for non-metallic inclusions are included to improve fatigue life and bearing performance.

The standard further provides guidelines on information to be supplied by purchasers and manufacturers, testing procedures, and inspection certificates. Manufacturers are responsible for ensuring the traceability of steel products to their cast origin. The document aims to ensure **high-quality materials** for ball and roller bearing applications in industrial machinery.

This standard aligns with international norms and aims to facilitate uniformity in production and quality assurance in the steel industry, contributing to enhanced bearing performance and reliability across various applications