Summary of IS 613:2000
(Copper rods and bars for electrical purposes)

Copper rods and Bars are widely used in different industrial application like electrical application ranging from switchgear, panel boards, and busway enclosures for local high current power distribution system, telecommunication, cutting tools used for machining parts, automotive and construction, etc. Due to its excellent electrical conductivity, malleability, corrosion resistance, lightweight, copper Bars and Rods are used extensively in electrical applications.

Copper Rods and Bars can be manufactured through different process like casting or rolling in different cross section depending upon their intended use in shapes like round bars, hexagon bars, rectangular, square rod shapes

The standard defines alloy compositions in ETP and FRHC grade as per IS 191:2007 as these materials are particularly valued for their superior electrical conductivity and available in different shapes, which are used in special application such as industrial applications. Additionally, the Rods and Bars are supplied in condition like Annealed (0), Half Hard (HB), and Hard (HD) with desired mechanical properties and ensure performance under load.

Copper Rods and Bars for electrical purpose are required to meet strict dimensional tolerances, including wall thickness, outside diameter, length, and cross-sectional shape. Furthermore, mechanical property requirements—such as tensile strength, yield strength, and elongation, Bend properties, Radius on edges are crucial for applications where structural integrity and load-bearing capacity are paramount.

The Copper Rods and Bars for electrical purpose must exhibit good electrical electrical resistivity, the specified requirement along with the constants are given in annealed and Half annealed condition in table 5 and annexures of IS the product shall also be defect-free surface, surface finish, workmanship, and accurate to the dimensional with the tolerances.

In addition, the standard stipulates that purchasers must provide detailed specifications when placing an order, including alloy designation, temper condition, quantity, dimensions, packing requirements, and product drawings. It also includes provisions for the rejection and retesting of materials that do not meet the specified criteria,.

The overarching goal of the standard is to ensure uniformity and high-quality standards in Copper Rods and Bars for electrical purpose. It provides comprehensive guidelines for both manufacturers and purchasers, addressing material specifications, testing protocols, and marking requirements. This document is an indispensable reference for manufacturers, engineers, and quality control professionals working with Copper Rods and Bars for electrical purpose in India, ensuring that products meet the rigorous demands of modern engineering.