

## **Summary of Indian Standards**

### **IS 6419:1996 Welding rods and bare electrodes for gas shielded arc welding of structural steel**

Gas shielded arc welding uses a shielding gas to protect the molten weld pool from oxygen, nitrogen, and water vapor in atmosphere which lead to defects like porosity, spatter, and contaminated weld joints. Metal Inert Gas (MIG) Welding and Tungsten Inert Gas (TIG) Welding are some examples.

The chemical composition of filler rods and wire reels is a one of the important characteristics of the welding material and choice depends on the base metal being welded. Dimensions of the filler rods and wires are also important considering welding current and thickness of base metal.

This Indian Standard IS 6429 specifies the dimensions of filler rods in fixed straight lengths and wire reels in spools and rims with particulars of diameter and size with tolerances in each case for best fit at the end user's application. Diameters of Spools ranging from 100 to 435mm and Rims and Formers ranging from 300 to 435mm are part of this Indian Standard. Tensile Strength for Filler Metal Wire wound on spools is specified for uninterrupted feeding on automatic welding equipment. Chemical composition is given with limits of C, Mn, Si, P, S, Ni, Cr, Mo, V, Cu, Ti, Zr, Al with classifications named S1, S2, S3, S4, S5, and S6 types of filler rods and wires. The Classification also includes indication of mechanical properties like S5-M504, which indicates, M for mixed gas, 50 indicates tensile strength of minimum 500 MPa, 4 indicates impact values at 27 joules at -30°C.

Indian Standard IS 6419 also specifies various dimensional tests like Cast and Helix, Radiograph of weld test assembly (Soundness Test). All-weld-metal Mechanical Tests like ultimate tensile strength, yield strength, percentage elongation and charpy v-notch impact test are also specified with detailed test methods in annexures.