



Indian Standard IS 12882:1990 - Specification for 48-Nickel Iron Soft Magnetic Strips

The **48-Nickel-Iron alloy**, containing approximately **48% Nickel** and the remainder iron, is a type of **Nickel-Iron (Ni-Fe) alloy** known for its **soft magnetic properties**. Nickel-Iron alloys, generally composed of **15-60% Iron** and **25-60% Nickel**, have a **FCC austenite structure**, enhanced by **solid solution** and **grain boundary strengthening**.

These alloys are prized for their **strong magnetic properties, stability, high permeability, dimensional stability, and environmental resistance**, making them essential in **electromagnetic components, electronics, precision instruments, aerospace, and medical equipment**.

The **Indian Standard IS 12882:1990**, developed by the **Bureau of Indian Standards (BIS)**, specifies the **requirements for cold-rolled nickel iron alloy strips** used primarily for **electromagnetic applications** like pole pieces in electrical machinery and apparatus.

Indian Standard IS 12882:1990 specifies that the material shall contain **47-50% Nickel**, with specific limits on **Carbon, Manganese, Sulphur, and Iron**. It requires **bright-rolled, soft strips** with a **hardness** between **130-180 HV**, **good magnetic flux density**, and **low coercive force** for optimal performance. The material shall also have **precise thickness and width control** for **industrial reliability** and be **uniform, homogeneous, and free of physical defects**.

The **standard** specifies **chemical and mechanical properties** to ensure **magnetic effectiveness and durability**, allows **manufacturing flexibility** with mandatory **annealing** for magnetic consistency, sets **dimensional tolerances** and **hardness requirements** for machinery compatibility, and ensures **quality assurance** through **sampling, testing, marking, and packaging guidelines** to protect material quality during handling and transport.

In summary, **Indian Standard IS 12882 : 1990**, ensures that **48-Nickel-Iron alloy strips** meet the stringent quality requirements for **electromagnetic applications**, providing **reliable, durable, and high-performance materials** suited for industrial use.