Summary of Indian Standard IS 12390: 1988

SPECIFICATION FOR IRON-NICKEL ALLOY 36 FOR CERAMIC SEALING

IS 12390: 1988 is an Indian Standard that specifies the requirements for iron-nickel alloy 36, famously known as Invar which is primarily used for sealing ceramics and various applications in electronics, aircraft controls, and optical instruments. Invar is a known for its uniform magnetic properties and low thermal expansion, making it suitable for precision applications.

The specification covers the alloy's forms, including wires, rounds, and strips, but excludes tubings. It outlines the chemical composition, emphasizing a nominal nickel content of 36% along with maximum limits for other elements like carbon, manganese, Silicon, Chromium, sulphur etc.

The standard details the required finishes for various sizes of different profiles along with dimensions, tolerances, and freedom from defects, ensuring that the alloy is free from surface imperfections which can adversely affect the usability of the alloy. It also specifies thermal expansion properties, with a linear coefficient of thermal expansion provided for various temperature ranges, affirming its controlled expansion characteristics which is crucial in high-tech precision applications for which the alloy is usually used.

Additionally, for ensuring the drawability of the alloy parameters like porosity, Grain Size and the alloy's hardness, are also mentioned in the standard. Information for weldability of the alloy and its applications in high-temperature environments are also provided. The standard serves as a useful guide for manufacturers and users of iron-nickel alloy 36.