IS 8565:1977 Specification for Heald Wires

IS 8565:1977 outlines the specifications for **steel wire** for producing **heald wires** for various weaving applications, including jacquard, dobby, and jute weaving. The wire, typically ranging from 0.25 mm to 1.32 mm, undergoes strict **quality control** regarding **chemical composition**, **mechanical properties**, and **dimensional tolerances** to ensure suitability for weaving applications.

The **final heald wire** features **loops at both ends** and a **central eye** to hold warp threads and connect to the loom harness. Heald wire is a component of a loom that is used to separate warp threads so that weft threads can pass through and create woven fabric. Healds are typically made of cord or wire and are suspended on the loom's shaft .This design facilitates the efficient raising and lowering of warp threads, which is vital for the smooth travel of the shuttle in looms

Manufacturers and users expect the wire to exhibit **high tensile strength**, **flexibility**, **resilience**, and **wear resistance**, ensuring long service life and preventing thread damage. The wire should also have a **smooth surface** and meet dimensional accuracy to avoid disruptions in the weaving process. Additionally, dimensional accuracy is a key expectation, as any deviations could disrupt the weaving operation and affect fabric quality.

To enhance the wire's **mechanical properties**, the standard prescribes two primary heat treatments:

1. **Hardened and Tempered**: This treatment ensures a minimum **tensile strength of 1100 N/mm²**, offering **toughness** and **wear resistance** for more basic applications.
2. **Patented and Drawn**: These wires achieve a higher **tensile strength** ranging from **1300 to 2000 N/mm²**, making them suitable for more demanding applications in higher-performance weaving

One of the critical performance tests defined in the standard is the Dead Wire Test. This test ensures that the wire maintains straightness during use without distortion. For hardened and tempered wires, the test verifies that the wire unwinds straight, while for patented and drawn wires, the test confirms that the wire remains as straight as possible, without any corkscrew effects. This ensures the wire performs consistently, preventing malfunctions, thread damage, and weaving disruptions during loom operations.

The standard also places strict requirements on the **chemical composition** of the wire, particularly its **carbon content**, which must range between **0.35% to 0.70%**, and specifies maximum limits on **sulfur** and **phosphorus** content. These factors play a significant role in the wire's **strength** and **flexibility**, ensuring it can withstand the mechanical stresses encountered during weaving.

In conclusion, IS 8565:1977 ensures that the **raw steel wire** used in heald wire production meets high-quality standards before it is processed further. By adhering to these specifications, manufacturers can produce heald wires that meet user expectations for **durability**, **mechanical performance**, and **reliability** in the demanding environment of weaving looms.