



IS 9282 : 2024 - WIRE ROPES AND STRANDS FOR GENERAL STRUCTURAL APPLICATIONS

Wire ropes and strands are used in structural applications to provide support, tension, and stability to various structures. They are made of high-strength steel wires twisted together to form strands, which are then twisted together to form the rope. They are available in various configurations such as round strands, spiral strands, and locked coil ropes.

Safety, longevity, and reliability is the most essential in structural applications. High-quality wire ropes must demonstrate attributes such as sufficient tensile strength, minimal elongation under load, robust resistance to corrosion, and stable performance under varying environmental conditions.

Indian Standards IS 9282 specifies requirements for wire ropes and strands used in **structural applications**, particularly in **cable-supported bridges, pedestrian crossings, vehicular traffic bridges**, and other tensile structures.

Standards specifies stringent quality parameters for material composition as well as final product. All wires used in the ropes must meet the requirements of **IS 1835** for **galvanized steel wire**, ensuring corrosion resistance and longevity.

Major tests include tensile testing as per **IS 1608** for determining **tensile strength**, which varies with rope grades. **The elongation test** ensures a minimum elongation of **4%** over a specified length, while **proof stress** tests require wires to withstand **70% of their breaking force**.

Additionally, spiral strands and locked coil ropes undergo **pre-stretching** to minimize constructional stretch. Full locked coil ropes have specific limits on minimum breaking force and elongation properties, detailed in tables within the standard. The standard mandates comprehensive marking and packaging to ensure traceability and protection during transport.

In summary, IS 9282 ensures the safety, durability, and quality of wire ropes used in suspension bridges, guaranteeing their reliability under heavy loads and adverse conditions.