

## SUMMARY OF INDIAN STANDARD

### IS 4223:1975

#### SPECIFICATION FOR STEEL WIRE FOR UMBRELLA RIBS

##### (FIRST REVISION)

Historical records suggest that **umbrellas** have been in use by humans for thousands of years. Ancient Egyptian art from 2450 BC shows umbrellas being used to provide protection from the sun and rain, as do archaeological records from Mesopotamia, Persia and China. The Indian epic **Mahabharata** also carries a reference to umbrellas in the story of the archer **Jamdagni**, who, peeved at the Sun for burning his wife Renuka, shoots an arrow at it, forcing the Sun to repent and offer an umbrella to the aggrieved woman.

**Alphonse Dupont**, a Parisian craftsman, is often credited with the invention of the modern umbrella. Dupont's design included a waterproof fabric stretched over a collapsible frame, allowing the umbrella to be conveniently deployed and retracted. The umbrellas we use today generally consist of a folding canopy made of waterproof fabric, supported by metal ribs mounted on a pole of metal, plastic or even wood.

Steel wire is most commonly used to make **umbrella ribs**. If the ribs are not of good quality, it will result in a poor quality umbrella. Therefore, umbrella makers have the following expectations from good quality steel wire used for making umbrella ribs:

- They should have adequate mechanical **strength, and ductility** to withstand the different mechanical stresses and strains encountered during the rib manufacturing process and during use.
- They should have sufficient **corrosion resistance** i.e. should not **rust** easily
- They should have **uniform and consistent dimensions** and should be reasonably **straight and free from bowing**.
- They should be reasonably **free from defects**.

This Indian Standard **IS 4223:1975** covers the requirements for carbon steel round and flat steel wire used for umbrella ribs . However, it does not cover the requirements of hollow U-shaped ribs.

The standard helps ensure the quality of carbon steel round and flat steel wire used for umbrella ribs, by addressing the above expectations, as follows:

- It specifies the required chemical composition and mechanical properties for the wires, thereby ensuring **mechanical strength, and ductility** are according to expectations.
- It prescribes that when the wires are supplied without protective coating, they shall be coated with oil for **rust prevention** during storage.

- It specifies the dimensions of the wire (diameter and width in case of round and flat wires, respectively) as well as dimensional tolerances, to ensure the wires are of **uniform dimensions**.
- It prescribes the straightness and deflection tests which are intended to measure, and limit, the bowing and departure from **straightness** in the wires.
- It prescribes requirements for **freedom from defects** i.e. the wire shall be free from surface flaws, jagged edges etc.

In addition to the above, the standard also prescribes the requirements for packing and marking the product.

To control the quality of this product, the Ministry of Steel, Government of India has issued the **Steel and Steel Products (Quality Control) Order** mandating that only those steel round and flat steel wires used for umbrella ribs which meet the requirements of IS 4223:1975 and bear the **BIS Standard Mark (ISI Mark)**, are permitted to be produced, sold, distributed or imported into India.

Therefore, umbrella manufacturers who value **quality** should always choose **ISI Marked** steel wires which are produced by a **BIS certified manufacturer** to meet the requirements of the Indian Standard **IS 4223:1975**, for the manufacture of good quality umbrella ribs.