

## **Summary on IS 3431:1982**

This standard specifies the requirements for **hot rolled steel bars and flats** used in the production of **volute, helical, and laminated springs for automotive suspension**. Steel must be of the **five grades** as specified in the standard. **IS 8910:1978** specifies the general requirements for material supply.

Steel must be produced using **open-hearth, electric, or a combination** of these processes. For any given size of finished steel product, the size of ingots, billets, or continuous cast billets shall be such that a **minimum reduction ratio of 16:1** from the minimum cross-sectional area of that ingot or continuous cast billets to the maximum cross-sectional area of the product is ensured. Steel in accordance with this standard must be supplied in one of the modes of delivery specified in this standard. Material must be **free from harmful defects such as pipe, heavy scale, rust, blisters, laminations, cracked edges and seams, and other rolling defects that can reduce spring durability**.

### TESTS

Tests shall be performed as per specified standard.

### **Chemical composition**

### **Hardenability**

### **Mechanical properties**

### **Freedom from defects**

### **Straightness**

### **Dimensions and Tolerance**

**Marking and packing** must be done in accordance with Indian standards. Each bar shall be marked with the manufacturer's name or trade mark, grade, and the cast number or any other identification mark that allows the steel to be traced back to the cast from which it was made. **Standard Mark (ISI Mark)** may also be applied to the material.