Summary of Indian Standards

IS 15103: 2002 Fire resistant steel – Specification

Fire resistant steels are used for applications in those structural parts which are prone to both fire and fluctuation of stresses. Fire resistant properties are obtained by the incorporation of low proportions of alloying elements such as chromium and molybdenum.

Fire resistant steel plates, strips, sections and bars, covered in this standard are for use in structural work up to a maximum temperature of 600°C for maximum duration of 3 h, classified into two grades A (FR-Fe 410) and B (FR-Fe 490) marked with Blue and Red on the ends of the product. These plates, strips, sections and bars are rolled from cast material.

The chemical composition is critical parameter in any steel. IS 15103 specifies chemical composition shall be tested during ladle analysis and product analysis with limits of C, Si, Mn, S, P, Cr, Mo for achieving the fire resistant properties along with necessary weldability. The steel's temperature stability and strength properties are tested with sampling of test pieces from specified locations of cross section after rolling from cast. These tests include Tensile Test at ambient temperature and at elevated temperature (600°C) for requirements like tensile strength, yield strength and percentage elongation as per IS 1608, Bend Test where sample shall be doubled over with 2-3 times the thickness as internal diameter and sample shall not crack as per IS 1599, Impact Test with requirement of energy absorbed to be not less than 27 joules at 0°C, Freedom form Defects like cracks, surface flaws, laminations etc., along with other requirements like Mass, Dimensions and Tolerances. The Indian Standard IS 15103 also details procedure for testing of Tensile specimens at elevated temperatures in its annexure.