

E650BR – Technical Datasheet

1. Chemical & Mechanical Properties

A. Chemical Composition

Element	% Composition
Carbon (C)	≤ 0.22%
Manganese (Mn)	≤ 1.85%
Phosphorus (P)	≤ 0.045%
Sulphur (S)	≤ 0.040%
Silicon (Si)	≤ 0.55%
Copper (Cu)	≤ 0.35%

B. Mechanical Properties

Property	Value
Yield Strength (YS)	≥ 650 MPa
Tensile Strength (TS)	720 – 870 MPa
Elongation	≥ 15%
Hardness	230 – 260 HB
Impact Test	27J min at 20°C (Charpy V-Notch)

2. Equivalent / Alternative Grades

A. Chemical Composition Comparison

Standard	Grade	C (%)	Mn (%)	P (%)	S (%)	Si (%)	Cu (%)
IS 2062	E650BR	≤ 0.22	≤ 1.85	≤ 0.045	≤ 0.040	≤ 0.55	≤ 0.35
EN 10025-2	S550JR	≤ 0.22	≤ 1.60	≤ 0.035	≤ 0.035	≤ 0.55	-
ASTM A572	Gr 80	≤ 0.26	≤ 1.35	≤ 0.040	≤ 0.050	≤ 0.40	-

B. Mechanical Properties Comparison

Standard	Grade	Yield Strength (MPa)	Tensile Strength (MPa)	Elongation / Impact
IS 2062	E650BR	≥ 650	720 – 870	≥ 15% / 27J @ 20°C
EN 10025-2	S550JR	≥ 550	590 – 720	≥ 19% / 27J @ 20°C
ASTM A572	Gr 80	≥ 570	720 – 870	≥ 14% / 20J @ RT

3. Common Applications

- Heavy machinery
- Automotive chassis
- Shipbuilding
- Bridges
- Construction equipment

4. Standard Conformance

IS 2062:2011 – Indian Standard for Hot Rolled Medium and High Tensile Structural Steel.

Grade Code Meaning:

E: Killed steel; 650: Minimum yield strength in MPa; BR: Thermo-mechanically rolled grade

5. Disclaimer

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