

IRSM 42-93 – Technical Datasheet

(IRS:M-42)

1. Chemical & Mechanical Properties

A. Chemical Composition

Element	% Composition
Carbon (C)	≤ 0.20%
Silicon (Si)	0.15 – 0.40%
Manganese (Mn)	0.90 – 1.60%
Phosphorus (P)	≤ 0.040%
Sulphur (S)	≤ 0.040%
Copper (Cu)	0.20 – 0.35%

B. Mechanical Properties

Property	Value
Yield Strength (YS)	≥ 420 MPa (t ≤ 20 mm)
Tensile Strength (TS)	500 – 650 MPa
Elongation	≥ 20 %
Impact Toughness	≥ 27 J @ -20 °C

2. Equivalent / Alternative Grades

Standard	Grade	YS (MPa)	TS (MPa)
EN 10025-3	S420N	420	520 – 680
ASTM A572	Grade 60	415	520 – 690
JIS G3106	SM490YB	365	490 – 610

3. Common Applications

- Bridges & girders
- Coach under-frames
- Heavy structural members

4. Standard Conformance

Conforms to IRS:M-42 (1993).

High-strength low-alloy structural steel for welded and riveted railway bridges.

5. Disclaimer

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