

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

All chemical compositions, mechanical properties, dimensions and other technical data presented on this page are provided by Raunaq Steels Trading Pvt. Ltd. for **general reference only**. While we endeavour to ensure that the information is as accurate and upto-date as possible, **no warranty, express or implied, is given** as to its completeness, correctness or fitness for any particular purpose. Raunaq Steels Trading Pvt. Ltd. **accepts no liability** for any loss or damage arising directly or indirectly from the use of, or reliance upon, the information contained herein. For **authoritative** and **legally binding** specifications, users must refer to the **official publications** of the relevant standards—such as the BIS, ASTM, EN or JIS standards—available through their respective websites or published documents