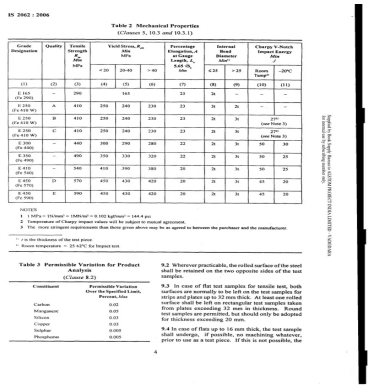


IS 2062 : 2006

Table 2 Mechanical Properties
(*Clauses* 5, 10.3 *and* 10.3.1)

Grade Designation	Quality	Tensile Strength R_m Min MPa	Yield Stress, R_{eH} Min MPa			Percentage Elongation, A on Gauge Length, L_o $5.65\sqrt{S_o}$ Min	Internal Bend Diameter Min		Charpy V-Notch Impact Energy Min
			< 20	20-40	> 40		≤ 20	> 20	Room Temp*	-20°C
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
E 165 (Fe 290)	–	290	165			23	2t	–	–	–
E 250 (Fe 410 W)	A	410	250	240	230	23	2t	2t	–	–
	B	410	250	240	230	23	2t	3t	27# (see Note 3)	
	C	410	250	240	230	23	2t	3t	27# (see Note 3)	
E 300 (Fe 440)	–	440	300	290	280	22	2t	3t	30	20
E 350 (Fe 490)	–	490	350	330	320	22	2t	3t	30	20
E 410 (Fe 540)	–	540	410	390	380	20	2t	3t	30	25
E 450 (Fe 570)	D	570	450	430	420	20	2t	3t	40	30
E 450 (Fe 590)	E	590	450	430	420	20	2t	3t	45	30

NOTES
1 1 MPa = 1N/mm² = 1MN/m² = 0.102 kgf/mm² = 144.4 psi.
2 Temperature of Charpy impact values will be subject to mutual agreement.
3 The more stringent requirements than those given above may be as agreed to between the purchaser and the manufacturer.

* t = the thickness of the test piece
\# Room temperature = 25 ±2°C for Impact test

Table 3 Permissible Variation for Product Analysis
(*Clause* 8.2)

Constituent	Permissible Variation Over the Specified Limit, Percent, Max
Carbon	0.02
Manganese	0.05
Silicon	0.03
Copper	0.03
Sulphur	0.005
Phosphorus	0.005

9.2 Wherever practicable, the rolled surface of the steel shall be retained on the two opposite sides of the test samples.

9.3 In case of flat test samples for tensile test, both surfaces are normally to be left on the test samples for strips and plates up to 32 mm thick. At least one rolled surface shall be left on rectangular test samples taken from plates over 32 mm thick. Machined round test samples are permitted, but should only be adopted for thickness exceeding 20 mm.

9.4 In case of flats up to 16 mm thick, the test sample shall undergo, if possible, no machining whatever, prior to use as a test piece. If this is not possible, the

4

Bureau of Indian Standards (BIS) Certified Steel Grades

IS 2062:2006 Steel Grades â?? Complete Comparison Guide

Steelmet Industries Bright Bars, Alloy Steels, Free Cutting Steels, Stainless Steels

Description

IS 2062:2006 is the Indian Standard governing **hot-rolled structural steel**, superseding IS 1977:1996 and IS 8500:1991. This guide compares all 9 grades (E165-E650) and their sub-qualities to help:

- Select the optimal grade for structural projects
- Understand chemical and mechanical property differences
- Identify suitable applications for each variant

Steelmet Industries manufactures all IS 2062:2006 grades as:
â? Steel plates (3-100mm thickness)
â? Structural sections (beams, channels, angles)
â? Round/square/flat bars (Ã?5-300mm)

Grade Classification System

Grade	Old Designation	Yield Strength (MPa)	Sub-Qualities	Key Characteristics
E165	Fe 290	165	â??	Basic structural grade
E250	Fe 410 W	250	A, B, C	Improved weldability in Quality C
E300	Fe 440	300	â??	Medium strength
E350	Fe 490	350	â??	Common construction grade
E410	Fe 540	410	â??	High strength
E450	Fe 570/590	450	D, E	Micro-alloyed variants

Sub-Quality Explanation:

- **A**: Standard quality (semi-killed/killed)
- **B**: Killed steel with room temp impact test
- **C**: Killed steel with -20Â°C impact test
- **D/E**: Micro-alloyed high-strength versions

Key Comparison Tables

Steelmet Industries - Bright Bars, Alloy Steels, Free Cutting Steels, Stainless Steels

1. Chemical Composition (Selected Grades)

Element	E165	E250B	E350	E450E
C (max)	0.25	0.22	0.20	0.22
Mn (min)	1.25	1.50	1.50	1.80
P (max)	0.045	0.045	0.045	0.045
S (max)	0.045	0.045	0.045	0.045
CE (max)	â??	0.41	0.42	0.48

Note: Quality C has stricter limits (P/S â?¤0.040%)

2. Mechanical Properties

Grade	Tensile (MPa)	Yield (MPa)	Elongation (%)	Impact Test
E165	290	165	23	Not required
E250B	410	250	23	27J @ RT
E350	490	350	22	â??
E450E	590	450	20	20J @ RT

Applications Guide

Grade	Best For	Form Available
E165	Light structures, roofing	Plates, bars
E250C	Welded bridges, cryogenic	Plates, sections
E350	Building frames, cranes	All forms
E450D/E	Heavy mining equipment	Plates, special sections

Why Choose Steelmet Industries?

We provide:
â?? Full range of IS 2062:2006 grades
â?? Custom processing (cutting, drilling, bending)
â?? Mill test certificates (MTC) per EN 10204 3.1
â?? Just-in-time delivery across India

Request samples of any IS 2062 grade for your project testing!

FAQ Section

Q: Can E250A be used for welded structures?
A: Yes, but E250C is recommended for critical welds due to its -20Â°C impact toughness.

Q: Difference between E450D and E450E?
A: E450E has higher manganese (1.80% vs 1.60%) for improved strength.

Steelmet Industries - Bright Bars, Alloy Steels, Free Cutting Steels, Stainless Steels

Conclusion

Understanding IS 2062:2006 grade differences ensures optimal material selection for structural integrity. **Steelmet Industries** stocks all grades from E165 to E650 â?? contact our technical team today for project-specific recommendations.

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