

IS 2062 : 2006

Table 2 Mechanical Properties
(Clause 5, 5.3 and 5.3.1)

Grade	Quality	Yield strength, f_y (MPa)	Tensile strength, f_u (MPa)	Elongation at break, A_{gt} (%)	Elongation at break, A_{gV} (%)	Impact energy, KCV_{10} (J)	Charpy V-notch transition temperature, T_{10} (°C)
E165	Q235	235	375	26	18	27	10
E250	Q345	355	490	26	18	27	10
E300	Q390	390	520	26	18	27	10
E350	Q460	460	570	26	18	27	10
E410	Q550	550	660	26	18	27	10
E450	Q590	590	700	26	18	27	10
E500	Q680	680	800	26	18	27	10
E550	Q785	785	930	26	18	27	10

Table 3 Permissible Variations for Product Analysis
(Clause 5.2)

Characteristic	Permissible Variation from the nominal value (%)
Carbon	±0.02
Manganese	±0.03
Silicon	±0.03
Copper	±0.03
Nickel	±0.03
Phosphorus	±0.005

NOTES:
1. Values of Charpy energy shall be subject to mutual agreement.
2. Temperature of Charpy impact shall be subject to mutual agreement.
3. The steel manufacturer shall ensure that the steel grade designation has been agreed to between the purchaser and the manufacturer.
4. The values in parentheses are the minimum values to be achieved.
5. The values in parentheses are the maximum values to be achieved.

IS 2062:2006 Steel Grades Complete Comparison Guide

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:

- Steel plates (3-100mm thickness)
- Structural sections (beams, channels, angles)
- Round/square/flat bars (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 -20°C impact test
- **D/E:** Micro-alloyed high-strength versions

Key Comparison Tables

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:

- Full range of IS 2062:2006 grades
- Custom processing (cutting, drilling, bending)
- Mill test certificates (MTC) per EN 10204 3.1
- 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 -20°C impact toughness.

Q: Difference between E450D and E450E?

A: E450E has higher manganese (1.80% vs 1.60%) for improved strength.

Conclusion

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

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10. structural steel grades

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