



## EN8 vs EN8A vs EN8B vs EN8C vs EN8D vs EN8M vs EN8DM: Complete Steel Grade Comparison

EN8 vs EN8A vs EN8B vs EN8C vs EN8D vs EN8M vs EN8DM

### Introduction

The EN8 series represents a family of versatile medium-carbon steels with subtle variations that impact machinability, strength, and heat treatment response. This guide compares:

- Chemical composition differences
- Mechanical properties
- Optimal heat treatment
- Recommended applications

Steelmet Industries supplies all EN8 variants as:

• Round bars (Ø 10mm to 300mm)

• Flat bars and forged blanks

• Turned or ground precision stock

### Chemical Composition Comparison

Grade	C%	Si%	Mn%	P%	S%	Other
EN8	0.36-0.44	0.10-0.40	0.60-1.00	≤0.05	≤0.05	
EN8A	0.36-0.44	0.10-0.40	0.60-1.00	≤0.05	≤0.05	Improved purity

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Grade	C%	Si%	Mn%	P%	S%	Other
EN8B	0.36-0.44	0.10-0.40	0.60-1.00	≤0.05	≤0.05	Lead added
EN8C	0.36-0.44	0.10-0.40	0.60-1.00	≤0.05	≤0.05	Sulfur increased
EN8D	0.36-0.44	0.10-0.40	0.60-1.00	≤0.05	≤0.05	Controlled Mn
EN8M	0.36-0.44	0.10-0.40	0.90-1.50	≤0.05	≤0.05	Higher Mn
EN8DM	0.36-0.44	0.10-0.40	0.90-1.50	≤0.05	≤0.05	Higher Mn + controlled chemistry

### Key Variations:

- **EN8B:** Contains lead (Pb) for improved machinability
- **EN8C:** Higher sulfur for better chip formation
- **EN8M/EN8DM:** Increased manganese for better hardenability

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### Mechanical Properties (Normalized Condition)

Grade	Tensile (MPa)	Yield (MPa)	Elongation (%)	Hardness (BHN)
EN8	700-850	460	14	201-255
EN8A	700-850	460	14	201-255
EN8B	700-850	460	14	201-255
EN8C	700-850	460	14	201-255
EN8D	700-850	460	14	201-255
EN8M	800-950	550	12	248-302
EN8DM	800-950	550	12	248-302

EN8M/EN8DM offer 15-20% higher strength due to increased manganese

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### Key Differences & Applications

#### 1. Machinability Comparison

- **Best Machinability:** EN8B (lead added) > EN8C (sulfur added) > Standard EN8
- **EN8M/EN8DM:** Require more power but maintain good tool life

#### 2. Heat Treatment Response

- **EN8M/EN8DM:** Achieve deeper hardening (ideal for large sections)
- **Standard EN8:** Suitable for smaller components

### 3. Recommended Uses

- **EN8/EN8A:** General engineering components, shafts, bolts
- **EN8B/EN8C:** High-volume machined parts (gears, fittings)
- **EN8M/EN8DM:** Heavy-duty gears, high-stress components

### Equivalents & Alternatives

Grade	AISI	DIN	ISO
EN8	1040	1.0511	C40
EN8M	1045	1.1191	C45

For better machinability: **EN1A (free-cutting steel)**

### Selection Guide

- **General purpose:** EN8/EN8A
- **Mass machining:** EN8B/EN8C
- **Heavy sections/strength:** EN8M/EN8DM

#### Steelmet Industries provides:

- All EN8 variants in stock
- Custom heat treatment (quenching & tempering)
- Precision ground bars (h9 tolerance)

• **Contact our technical team** for grade recommendations.

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## Conclusion

While all EN8 grades share similar base composition, subtle variations significantly impact their performance in machining, heat treatment, and final applications.

**Steelmet Industries** maintains ready stock of all EN8 variants from standard EN8 to specialty EN8DM. Request a quote for your specific requirements.

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### EN8 Grades

1. BS970 1955 EN8 Steel and variants

### EN8 Variants

1. EN8A
2. EN8B
3. EN8C
4. EN8D
5. EN8DM
6. EN8M
7. engineering steel
8. medium carbon steel
9. steel grade comparison
10. Steelmet Industries

EN8 Steel

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