

EN19 vs EN19A vs EN19B vs EN19C a?? Understanding the Variants of a Trusted High Tensile Steel

let Industri When it comes to medium carbon high tensile alloy steels, few grades enjoy as much widespread use as EN19, also known by its equivalents like AISI 4140, 42CrMo4, and 708M40. However, buyers and engineers often encounter EN19 in multiple variants â?? EN19A, EN19B, and EN19C â?? especially in the Indian market where BS 970-1955 designations are still prevalent.

In this guide, Steelmet Industries explains the differences between these EN19 variants â?? including their chemical composition, mechanical properties, and suitability for different applications â?? to help you make an informed selection.

� Chemical Composition Comparison (Typical Values)

Element	EN19	EN19A	EN19B	EN19C
Carbon (C)	0.35â??0.45%	0.35â??0.45%	0.38â??0.45%	0.40â??0.50%
Manganese (Mn)	0.60â??0.90%	0.50â??0.80%	0.60â??0.90%	0.50â??0.90%
Chromium (Cr)	0.90â??1.20%	0.90â??1.20%	0.90â??1.20%	0.90â??1.20%
Molybdenum (Mo)	0.15â??0.35%	0.15â??0.35%	0.15â??0.35%	0.15â??0.35%
Sulphur (S) max	0.035%	0.030%	0.030%	0.030%
Phosphorus (P) max	c 0.035%	0.030%	0.030%	0.030%

â??ï, • Key Differences Between EN19 and Its Variants

Grade **Description**

EN19 Base grade with standard alloy content. Suitable for general high-tensile use.

EN19A Lower sulphur and phosphorus a?? better weldability and toughness.



Grade Description

EN19B Tighter chemistry control and slightly higher carbon â?? improved strength and consistency.

EN19C Higher carbon content â?? better hardenability and fatigue resistance. Used in critical highstress parts.

ð??? Typical Applications

Grade Common Uses

EN19 Shafts, axles, gears, spindles, forged components

EN19A Welded structures, precision machine parts, automotive linkages

EN19B Transmission shafts, pinions, high-load axles

EN19C High-stress gears, crankshafts, aircraft fittings, heavy-duty machine parts

ð??§ Mechanical Properties (After Heat Treatment)

Property EN19 EN19B EN19C

Tensile Strength 850â??1000 MPa 900â??1050 MPa 1000â??1150 MPa

Yield Strength ~700 MPa ~750 MPa ~800 MPa

Case Hardness (surface) ~55 HRC 56â??58 HRC 58+ HRC

Toughness Good Very Good Excellent (if tempered correctly)

Note: Properties may vary with heat treatment and section size. All grades can be induction hardened or oil-quenched for deeper strength profiles.

ð?• Steelmet Industries â?? Stocking All Variants

At **Steelmet Industries**, we offer all major EN19 variants in a wide range of **forms and conditions**:

- Rounds, Flats, Hexagons, Squares
- Supplied in Hot Rolled, Forged, Peeled, Turned, Ground, Drawn or Bright Bar form
- VD route (Vacuum Degassed) material available for improved reliability
- Supplied with test certificates, traceability, and dimensional assurance



Customers across forging, machining, defense, and automotive sectors depend on us for both prototype batches and scheduled high-volume supplies.

ð?§ Frequently Asked Questions

Q1: Are EN19 variants interchangeable?

A: Technically yes for non-critical parts, but EN19B and EN19C are better suited for higher stress or fatigue-prone applications.

Q2: Can EN19 be welded easily?

A: EN19A offers better weldability due to its lower sulphur and phosphorus. Pre-heating and post-weld stress relieving are recommended for all variants.

Q3: What is the international equivalent of EN19?

A: AISI 4140 (USA), 42CrMo4 (Europe), SCM440 (Japan), 708M40 (UK EN system).

Q4: Can I get EN19 bright bars in small quantities?

A: Yes. Steelmet Industries supplies small to large quantities of EN19 and its variants, with customization in length, tolerances, and finish.

ð?§¾ Conclusion

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onts. EN19, EN19A, EN19B, and EN19C are not just alphabetical extensions a?? theya??re engineered for different purposes. From general machine parts to high-performance forged components, understanding these variants allows for more efficient design, longer component life, and lower production risks.

Professionals across India and beyond count on reliable sources to provide the right steel a?? in the right form, at the right time.

For assistance in choosing or sourcing the right EN19 variant, our team is always available.

ŏ??2 Connect with us directly on WhatsApp or drop a line through our contact form â?? letâ??s make sure you get the steel your product deserves.

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- 1. AISI 4140
- 2. alloy steel grades
- 3. BS 970-1955



- 4. EN19A
- 5. EN19B
- 6. EN19C
- 7. forged components
- 8. high tensile steel
- 9. Indian steel supplier
- 10. machinable alloy steel
- 11. SCM440
- 12. steel for automotive parts
- 13. steel for gears
- 14. steel grade comparison
- 15. Steelmet Industries
- 16. bright steel bars

17. vd route sic.

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Cutting Steels, Stainless Steels

Page 4