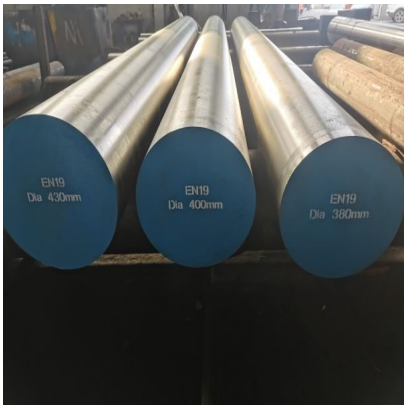


EN19 vs EN19A vs EN19B vs EN19C â?? Understanding the Variants of a Trusted High Tensile Steel

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

Description

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.

ð?§ª 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	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 â?? 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 high-stress 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

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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.

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ð?§¾ Conclusion

EN19, EN19A, EN19B, and EN19C are not just alphabetical extensions â?? theyâ??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 â?? in the right form, at the right time.

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

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

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