



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

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 – **EN19A**, **EN19B**, and **EN19C** – 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 – including their chemical composition, mechanical properties, and suitability for different applications – to help you make an informed selection.

EN19 Chemical Composition Comparison (Typical Values)

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

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 – better weldability and toughness.

Grade	Description
EN19B	Tighter chemistry control and slightly higher carbon → improved strength and consistency.
EN19C	Higher carbon content → better hardenability and fatigue resistance. Used in critical high-stress parts.

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

Mechanical Properties (After Heat Treatment)

Property	EN19	EN19B	EN19C
Tensile Strength	850~1000 MPa	900~1050 MPa	1000~1150 MPa
Yield Strength	~700 MPa	~750 MPa	~800 MPa
Case Hardness (surface)	~55 HRC	56~58 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.

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

FAQs 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.

Conclusion

EN19, EN19A, EN19B, and EN19C are not just alphabetical extensions – they are 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 – in the right form, at the right time.

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

Connect with us directly on WhatsApp or drop a line through our [contact form](#) – let's make sure you get the steel your product deserves.

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