



20MnCr5 Steel | Properties, Equivalents, Applications | Steelmet Industries

Description

20MnCr5 is a low-alloy case hardening steel known for its excellent wear resistance, core strength, and fatigue resistance. It is one of the most preferred grades for manufacturing components that need a tough core and hard, wear-resistant surface. At **Steelmet Industries**, we supply **20MnCr5 steel bars** in various forms including **hot rolled bars**, **bright bars**, and **custom profiles**, with complete traceability and consistent quality.

Chemical Composition of 20MnCr5 Steel

| Element | Composition (%) |
|----------------|-----------------|
| Carbon (C) | 0.17 - 0.22 |
| Manganese (Mn) | 1.10 - 1.40 |
| Chromium (Cr) | 1.00 - 1.30 |
| Silicon (Si) | 0.10 - 0.40 |
| Sulphur (S) | ≤ 0.035 |
| Phosphorus (P) | ≤ 0.035 |

Mechanical Properties (Typical Values After Case Hardening)

| Property | Value |
|-----------------------|-------------------------------|
| Core Tensile Strength | 750 - 1000 MPa |
| Case Hardness | 58 - 62 HRC |
| Core Hardness | ~30-35 HRC |
| Elongation | 10 - 14% |
| Impact Resistance | Good (especially at the core) |

Final properties depend on heat treatment and case depth.

• Equivalent Grades of 20MnCr5

| Standard | Equivalent Grade |
|------------|-----------------------------|
| AISI / SAE | 5120 |
| DIN / EN | 1.7147 |
| IS (India) | 20MnCr5 (IS 4432 / IS 5517) |
| JIS | SCM420H (similar) |
| BS | 805A20 (similar) |

• Applications of 20MnCr5 Steel

20MnCr5 is used in critical parts that require a hard, wear-resistant surface and a tough core:

- Gears and gear shafts
- Transmission components
- Camshafts and crankshafts
- Steering components
- Pins, bushings, and rollers
- Agricultural machinery parts
- Automotive and industrial equipment

It is ideal for **carburizing** and **case hardening applications** due to its structure and alloying elements.

• Machinability, Weldability & Heat Treatment

- **Machinability:** Good in normalized or annealed condition.

- **Weldability:** Moderate. Preheating and post-weld stress relieving recommended.

- **Heat Treatment:**

- Carburizing: 870-950°C
- Hardening: Oil quench at 780-820°C after carburizing
- Tempering: 150-200°C to reduce stresses without affecting case hardness

20MnCr5 is well-suited for **deep case hardening** applications with excellent wear resistance on the surface and toughness in the core.

20MnCr5 Steel Bars from Steelmet Industries

Steelmet Industries supplies 20MnCr5 steel bars in the following forms:

- **Bright Bars:** Drawn, Peeled, Ground
- **Hot Rolled Bars:** Rounds, Squares, Flats
- **Custom Profiles:** Round-corner squares, hex bars, D-shaped bars, and more
- **Available Sizes:**
 - Rounds: 12 mm to 90 mm
 - Custom shapes: As per customer drawings
- **Tolerances:** ISO H9, H10, H11 or customer-specified
- **Supply Condition:** As rolled, normalized, annealed, or case-hardened

Every bar is produced with **tight tolerances, smooth surface finish, and full traceability.**

Why Choose Steelmet Industries for 20MnCr5?

- Consistent quality from **VD route steel** (on request)
- Small batch or bulk availability
- Custom sizes, lengths, and shapes as per drawing
- Support for **OEMs, machinists, and exporters**
- **In-house QC** and **NABL-certified lab tie-ups**
- Competitive pricing and reliable delivery schedules

Certifications & Compliance

- Supplied with **Test Certificate (TC)** indicating heat number and analysis
- Complies with IS 4432, IS 5517, EN 10084, and customer-specific requirements
- Optional: Third-party inspections (TPI), UT reports, NABL-certified test reports

Enquire Now

Looking for high-quality 20MnCr5 steel bars with tight tolerances and full compliance?

Contact **Steelmet Industries** today or send your enquiry online.

Website: <https://www.steelmet.in>

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1. Posts

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1. 20MnCr5 chemical composition

2. 20MnCr5 mechanical properties
3. 20MnCr5 steel supplier
4. 20MnCr5
5. bright bars
6. case hardening steel
7. hot rolled steel
8. Steelmet Industries

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