39NiCrMo3 *Datasheet*

TECHNICAL DATA SHEET

Steel Grade: 39NiCrMo3
(UNI 7845 / EN 10083-3:2006 – Equivalent to AISI 9840 / 1.6510)

General Description
39NiCrMo3 is a high-strength, low-alloy steel known for its excellent hardenability, toughness and fatigue resistance. It is typically used in the quenched and tempered condition for highly stressed components such as shafts, gears, crankshafts, and heavy-duty mechanical parts.

CHEMICAL COMPOSITION (*typical values % by weight*)

Element	C	Si	Mn	P (max)	S (max)	Cr	Mo / Ni
%	0.36–0.44	0.15–0.40	0.45–0.70	≤0.025	≤0.035	0.90–1.20	0.15–0.25 / 1.65–2.00

MECHANICAL PROPERTIES (typical in quenched and tempered condition)

Tensile Strength (Rm)	900–1100 MPa
Yield Strength (Rp0.2)	≥ 650 MPa
Elongation (A5)	≥ 12%
Impact Toughness (KV, +20°C)	≥ 40 J
Hardness (HB)	250–300 HB
Note	*Values may vary depending on heat treatment and section size.*

Physical Properties

Density	7.85 g/cm³
Thermal Conductivity	~42 W/m·K
Specific Heat Capacity	~460 J/kg·K
Modulus of Elasticity	~210 GPa

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Heat Treatment Recommendations

- Annealing: ~650–700°C, slow furnace cooling
- Hardening: 830–860°C (oil or polymer quenching)
- Tempering: 540–680°C depending on desired hardness
- Stress Relieving: ~550–600°C after machining

Applications

- Power transmission components
- Automotive and aerospace shafts
- Gearboxes, axles, spindles
- High-load mechanical parts requiring toughness and wear resistance

Standards and Equivalents

- EN: 39NiCrMo3 (1.6510)
- AISI/SAE: 9840
- UNI: 7845
- DIN: 1.6510
- AFNOR: 35NCD6

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