

EN24 / 817M40 Alloy Steel

High-tensile nickel-chromium-molybdenum steel · BS 970 · 1.6582

MATERIAL DATASHEET

EN24 (817M40 / 34CrNiMo6) is a through-hardening nickel-chromium-molybdenum steel. It combines high strength with good toughness and fatigue resistance, and its high hardenability gives uniform properties even in large sections. EN24T is EN24 hardened and tempered to condition T (850–1000 MPa).

EQUIVALENT GRADES

BS 970	817M40
EN / DIN	34CrNiMo6
Material no.	1.6582
AISI / SAE	4340
JIS	SNCM439
IS (India)	40Ni2Cr1Mo28

READY STOCK IN MUMBAI

Round bar	Ø16–205 mm
Ø16–100 mm	Annealed
Ø105–205 mm	As-rolled
EN24T (H&T)	Against orders of 3–5 t

Every dispatch comes with the mill test certificate for its heat. Minimum order 100 kg.

EN24T = EN24 hardened and tempered (BS 970 condition T: 850–1000 MPa, 248–302 HB).

CHEMICAL COMPOSITION, %

	C	Si	Mn	P	S	Cr	Ni	Mo
As supplied: Indian mill range	0.35–0.45	0.10–0.35	0.45–0.70	max 0.050	max 0.050	0.90–1.40	1.30–1.80	0.20–0.35
Standard: 817M40, BS 970	0.36–0.44	0.10–0.35	0.45–0.70	max 0.035	max 0.040	1.00–1.40	1.30–1.70	0.20–0.35

Balance iron. The mill range is slightly wider than 817M40 for carbon, chromium, nickel, phosphorus and sulphur; the recent heat we checked sits inside the BS 970 limits. If your drawing calls for the strict standard, mention it in your enquiry. The mill test certificate with each dispatch gives the actual result for that heat.

HARDENED AND TEMPERED (+QT) PROPERTIES BY SECTION (EN 10083-3)

DIAMETER	YIELD RPO.2, MPA	TENSILE RM, MPA	ELONG. A, %	RED. AREA Z, %	HARDNESS
up to 16 mm	1000 min	1200–1400	9 min	40 min	359–404 HB
16–40 mm	900 min	1100–1300	10 min	45 min	331–380 HB
40–100 mm	800 min	1000–1200	11 min	50 min	298–359 HB
100–160 mm	700 min	900–1100	12 min	55 min	271–331 HB
160–250 mm	600 min	800–950	13 min	55 min	240–286 HB
Soft annealed (+A)	—	—	—	—	248 HB max

Reference treatment: oil quench from 850 °C, temper 540–660 °C. Impact (Kv) 45 J for 16–250 mm.

HEAT TREATMENT

TREATMENT	TEMPERATURE	COOLING / QUENCH
Hot forging	900–1100 °C	Still air
Normalising	860–880 °C	Still air
Soft annealing	650–680 °C	Furnace cool
Hardening	830–860 °C	Oil
Tempering	540–660 °C	Air
Stress relieving	550–650 °C	Still air

TRANSFORMATION TEMPERATURES

Ac1	715 °C
Ac3	770 °C
Ms	320 °C

PHYSICAL PROPERTIES

Density	7,850 kg/m ³
Young's modulus	205 GPa
Thermal expansion 20–300 °C	12.5 µm/m·K
Thermal conductivity	38 W/m·K

TYPICAL APPLICATIONS

Axles, crankshafts, connecting rods, gears, high-tensile bolts, shafts and spindles, propeller shafts, machine-tool parts.

ORDERING

Minimum order	100 kg
Cutting	Available when the balance piece is also taken; cutting charged extra
Documents	Mill test certificate with every dispatch
Delivery	Ex-Darukhana, Mumbai; transport and loading extra at actuals

Read more: [EN24 vs EN24T: what the T means](#) · [EN24 sizes and stock](#) · [Round bar weight calculator](#)

ASK FOR SIZES AND PRICE

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