

EN36C / 832M13 Case-Hardening Steel

3% nickel-chromium-molybdenum case-hardening steel · BS 970 · 1.6657

MATERIAL DATASHEET

EN36C (832M13) is a 3% nickel-chromium-molybdenum case-hardening steel. Carburised and hardened, it gives a hard, wear-resistant case over a very tough, shock-resistant core, for heavily loaded gears and shafts. It is not the same as EN36A/B (655M13), which has no molybdenum.

EQUIVALENT GRADES

BS 970	832M13
EN / DIN	14NiCrMo13-4
Material no.	1.6657
AISI / SAE	9310 (nearest)
IS (India)	15Ni13Cr3Mo2
Not equal to	EN36A/B = 655M13

READY STOCK IN MUMBAI

Round bar	Ø14–205 mm
Supply condition	As-rolled
Annealed	Against order

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

We stock EN36C as 832M13. Please state the exact grade (EN36C or EN36A/B) in your enquiry.

CHEMICAL COMPOSITION, %

	C	Si	Mn	P	S	Cr	Ni	Mo
As supplied: recent mill heats (actual)	0.17–0.18	0.24–0.27	0.40–0.44	0.014	0.007–0.010	0.74–0.82	3.06–3.19	0.11–0.17
Standard: 832M13, BS 970	0.10–0.16	0.10–0.35	0.35–0.60	max 0.035	max 0.040	0.70–1.00	3.00–3.75	0.10–0.25

Balance iron. Our EN 36C mill does not print a range, so the left column shows the actual results of recent heats. Carbon runs slightly above the 832M13 maximum of 0.16%; nickel, chromium and molybdenum are within it. 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.

CARBURISED, HARDENED AND TEMPERED (TYPICAL)

PROPERTY	TYPICAL VALUE
Case hardness (surface)	60–62 HRC
Core hardness	30–45 HRC
Core tensile strength	900–1200 MPa
Core elongation A	10–14 %
Supply hardness, annealed	255 HB max

Case and core properties depend on case depth, section size and the carburising cycle.

HEAT TREATMENT

TREATMENT	TEMPERATURE	COOLING / QUENCH
Normalising	850–880 °C	Still air
Carburising	900–925 °C	Case depth as required
Core refining	840–870 °C	Oil
Hardening	780–820 °C	Oil
Tempering	150–200 °C	Air
Soft annealing	650 °C	Furnace cool

TRANSFORMATION TEMPERATURES

Ac1	700 °C
Ac3	780 °C
Ms (core)	360 °C

PHYSICAL PROPERTIES

Density	7,850 kg/m ³
Young's modulus	205 GPa
Thermal expansion 20–300 °C	11.5 µm/m·K
Thermal conductivity	38 W/m·K

TYPICAL APPLICATIONS

Heavy-duty gears, crankshafts, roller bearings, gudgeon pins, cams, aircraft components.

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: [EN36A vs EN36B vs EN36C explained](#) · [EN36C sizes and stock](#) · [Round bar weight calculator](#)

ASK FOR SIZES AND PRICE

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