MATERIAL DATA SHEET

817M40 [EN24]

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Condition of supply:-	*As Rolled/Forged, Annealed, Quenched & Tempered*
Surface Condition:-	*Black, Bright, Proof machined, Machined to Requirements*

Description:

817M40 grade steel is a general purpose steel used for a wide range of engineering parts.
It is capable of being heat treated to produce a wide range of tensile strengths combined with good ductility and resistance to shock.
It has good hardenability, enabling it to be used for medium tensile strengths in fairly large sections, and possesses with good resistance to wear.
At low temperatures good impact values can also be obtained.
817M40 is a 1.5% Ni-Cr-Mo high hardenability, high tensile strength steel. It is generally supplied in the Hardened and Tempered condition in the tensile range of 850 – 1000Mpa (T Condition) but can be heat treated to 850 – 1550Mpa dependent on section size (T – Z Condition). It could also be supplied in the annealed condition suitable for pre-heat treatment machining. This grade is very popular and widely used for many high strength applications where a good combination of strength and impact properties are essential in fairly large components.

Typical Applications:

This alloy is used in most industry sectors for a wide variety of applications including high strength machine parts, collets, spindles, gears, Engine Con Rods, HT bolts, shafts, couplings etc.

Typical Chemical Composition:

	C	Si	Mn	S	P	Cr	Ni	Mo
Min	0.44	0.10	0.45			1.00	1.30	0.20
Max	0.36	0.35	0.70	0.040	0.035	1.40	1.77	0.35

Mechanical properties annealed condition

Yield	*Tensile strength*	*Elongation*	*Hardness HB*
			277

Mechanical Properties:

Condition	*Ruling Section*	*Tensile strength Mpa*	*Yield (0.2%] MpA*	*Elongation*	*Izod Ft/Lbs*	*Charpy J*	*Hardness HB*
T	250	850/1000	635	13	30	35	248-302
U	100	925/1075	740	12	35	42	269-331
V	63	1000/1150	835	12	35	42	293-352
W	29	1075/1225	925	11	30	35	311-375
X	29	1150/1300	1005	10	25	28	341-401
Y	29	1225/1375	1080	10	18	21	363-429
Z	29	1550Min	1125	5	8	9	444 Min

Machining
817M40 is readily machinable in the hardened and tempered condition allowing processes such as Sawing, Turning, Drilling, Boring and Milling to be relatively easily achieved.

Welding
Welding of 817M40 in the hardened and tempered condition is not advised and should be avoided if possible, as the mechanical properties will be altered in the heat affected zone. If welding is required it should be done using low hydrogen electrodes, while the material is in the annealed condition, and the work piece should be stress relieved (640 – 660oC) immediately after cooling to hand warm, prior to hardening and tempering.
If welding in the quenched and tempered condition, the work piece should be stress relieved at 15oC below the original tempering temperature.
Pre-heat temperature should be at least 370oC

Form of supply:
Material can be supplied, Black Annealed - Rolled/Forged Bar, Proof Machined, Bright Turned or Ground Bar, Cut Pieces or Machined to customer specification.

Size ranges from:
60mm diameter - 760mm diameter