

MATERIAL DATA SHEET



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AISI/SAE 4140

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

Description:

AISI 4140 is a 1% Cr-Mo through hardening steel, used particularly where strength and impact toughness is required. It is generally supplied in the Hardened and Tempered condition, especially in the Oil and Gas sector to achieve Ultimate Tensile strengths in excess of 100KSI (690 MPa), moderate impact toughness (>42J) is maintained at temperatures as low as -46°C. This alloy is used in most industry sectors for a wide variety of applications. AISI4140 can be further surface hardened by either flame or induction hardening methods, giving case hardness, in excess of 50 HR

Typical Applications:

Drive shafts, Pump Shafts, couplings, Con rods, Conveyor Pins, bolts and gears, together with many surface and sub-surface components in the oil and gas industries.

Typical Chemical Composition:

	C	Si	Mn	S	P	Cr	Ni	Mo	V	Al	Cu	Sn
Min	0.38	0.15	0.75			0.80		0.15		0.01		
Max	0.40	0.35	1.00	<0.025	0.015	1.10	<0.25	0.25	<0.03	0.04	<0.30	<0.035

Typical Mechanical Properties: At room temp, heat treated to 18-22HRC

	Tensile Strength	Yield (0.2%)	Elongation	Reduction of area	Hardness	Charpy	
	KSI	KSI	%	%	HRc (HB)	-32C	-42C
Min	80	80	20	40	18 [217]	42	42
Max	130	110			22 (235)		

Machining

AISI/SAE 4140 has good machinability allowing processes such as Sawing, Turning, Drilling, Boring and Milling to be relatively easily achieved.

Welding:

Welding of AISI4140 in the hardened and tempered condition can be readily achieved, however the relatively high carbon content mandates the use of carefully controlled pre and post weld heat treatment.

Form of supply:

Material can be supplied as Black As Rolled/Forged Bar, Proof Machined, Bright Turned or Ground Bar, Cut Pieces or Machined to customer specification.

Size ranges from:

<35mm diameter - 1150mm diameter