

# 4140 HIGH TENSILE STEEL

4140 is a 1% Chrome Moly general purpose high tensile steel and is the most commonly used of the high tensile steels. 4140 is generally supplied hardened and tempered (to condition T or U). Pre hardened and tempered 4140 can be further surface hardened by flame or induction hardening as well as nitriding. 4140 is used in almost all industry sectors where high tensile parts/components are required.

<b>Stocked Sizes</b>	-	Rounds	8 mm – 710 mm Ø
		Hexagons	19 mm – 65 mm A/F
<b>Bar Finishes</b>	-	Hot Rolled, Peeled, Turned & Polished, Cold Drawn & Centreless Ground	

## Related Specifications

Australia	AS 1444 – 1996 4140
Japan	JIS G4105 SCM440
USA	AISI 4140 ASTM A29/A29M – 91 4140 SAE 4140

## Chemical Composition

	Min. %	Max %
Carbon	0.36	0.44
Silicon	0.10	0.40
Manganese	0.65	1.10
Chromium	0.75	1.20
Molybdenum	0.15	0.35
Phosphorous	0	0.04
Sulphur	0	0.04

## Mechanical Properties – Hardened & Tempered 4140 to AS1444 (all finishes except cold drawn)\*

Mechanical Property Designation		R	S	S	T	U	V	W
Limited Ruling Section mm*		250	250	150	100	63	30	20
Tensile Strength Mpa	Min	700	770	770	850	930	1000	1080
	Max	850	930	930	1000	1080	1150	1230
0.20% Proof Stress (Yield) Mpa	Min	480	540	570	665	740	835	925
	Max							
Elongation on %	Min	15	13	15	13	12	12	12
	Max							
Izod Impact J	Min	34	27	54	54	47	47	40
	Max							
Charpy Impact J	Min	28	22	50	50	42	42	35
	Max							
Hardness Brinell HB	Min	201	223	223	248	269	293	311
	Max	255	277	277	302	331	352	375

\*For Cold Drawn information contact our office or refer to AS1444-1996

## Annealing

Heat to 800-850 Deg C. Hold until temperature is uniform throughout the section and allow to cool in furnace.

## Normalising

For As Rolled, Heat to 870- 900 Deg C. Hold until temperature is uniform through the section, soak for 10-15 minutes per 25mm of cross section, and allow to cool in still air. For Q&T 4140 normalising temperature is restricted by the tempering temperature of the material otherwise the mechanical properties will be affected. It is highly recommended that normalizing of Q&T steel be undertaken by a recognized heat treatment company.