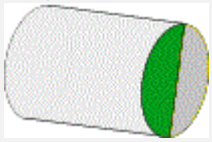
ENGINEERING STEELS + ALLOYS

4145H MODIFIED HIGH TENSILE STEEL

Chromium/Molybdenum high tensile steel has good ductility, shock resistance and wear resistance.4145H modified conforms to API Spec 7.Typical uses are: drilled collars, connecting rods, shafts, gears

Colour Code	Stocked Sizes	
Silver/Green(Bar End) 	Rounds	
	Hexagons	
	Hollow Bar	
	Square	
	Bar Finish	
	Peeled, Black Bar	

Related Specifications	
Australia	
Germany	
Great Britain	
International	API Spec 7
Japan	
USA	SAE J1268, UNS H41450, ASTM A304

Chemical Composition (Base Material)		
	Min. %	**Max %**
Carbon	0.42	0.49
Silicon	0.15	0.35
Manganese	0.65	1.10
Chromium	0.75	1.20
Molybdenum	0.15	0.25
Phosphorous	0	0.035
Sulphur	0	0.04
Nickel	0	0.25
Copper	0	0.35

Mechanical Property Requirements for Steels in the Heat-Treated Condition for Peeled, Black Bar		
Mechanical Property Designation		API - 7
Limited Ruling Section mm		
Tensile Strength Mpa	Min	970
	Max	
0.2% Proof Stress Mpa	Min	755
Elongation on $5.65\sqrt{S_0}$ %	Min	13

Izod Impact J	Min	
Charpy Impact J	Min	54
Hardness Brinell HB	Min	
	Max	341

Forging

Heat to 1200 °C maximum, hold until temperature is uniform throughout the section.
Do not forge below 950 °C.

Heat Treatment

Annealing

Heat to 815 °C - 850 °C, hold until temperature is uniform throughout the section.

Flame or Induction Hardening

Hardening

Heat to 820 °C - 870 °C, hold until temperature is uniform throughout the section. Quench in oil as required.

Nitriding

Normalizing

Heat to 870 °C - 900 °C, hold until temperature is uniform throughout the section, soak for 10 - 15 minutes and cool in still air.

Stress Relieving

Tempering

Re-heat to 430 °C - 700 °C as required and according to properties required.

Notes on Heat Treatment

Machining

Welding

Best results by common fusion or resistance methods. Do not weld by oxyacetylene.