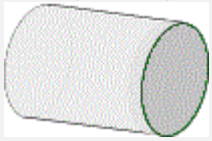
ENGINEERING STEELS + ALLOYS

300M HIGH TENSILE

300M is a low alloy vacuum melted steel of very high strength. It is a modified AISI 4340 with silicon, vanadium and slightly higher carbon and molybdenum content that 4340. It has a very good combination of strength and toughness, fatigue, strength and good ductility. It is a through hardened alloy.
Applications: 300M is used for high strength parts in the range of 55HRc, such as high performance auto parts, aircraft landing gear, airframe parts and any other high strength applications.

Colour Code	Stocked Sizes
Silver (Bar End) 	Rounds
	Hexagons
	Hollow Bar
	Square
	Bar Finish
	Peeled, Smooth Turned.

Related Specifications	
Australia	
Germany	DIN 1.6928
Great Britain	
International	
Japan	
USA	UNS K44220ASTM A579, A646AMS 6417, 6419MIL S-8844DMIL S-8844 Class 2

Chemical Composition (Base Material)		
	Min. %	**Max %**
Carbon	0.38	0.46
Silicon	1.45	1.80
Manganese	0.60	0.90
Chromium	0.70	0.95
Molybdenum	0.30	0.65
Phosphorous	0	0.01
Sulphur	0	0.01
Nickel	1.65	2.00
Vanadium	0.05	

Mechanical Property Requirements for Steels in the Heat-Treated Condition for Turned, Peeled		
Mechanical Property Designation		
Tensile Strength Mpa	Min	1931
	Max	
0.2% Proof Stress Mpa	Min	1586

Elongation on $5.65\sqrt{S_0}$ %	Min	7
Izod Impact J	Min	
Charpy Impact J	Min	
Hardness Brinell HB	Min	
	Max	

Forming

Forming by conventional methods is good in the annealed condition.

Heat Treatment

Annealing

Anneal at 840°C and slow furnace cool at a rate of less than 10°C per hour down to 310C. From there it may be air cooled.

Hardening

300M must be normalized at 960°C before hardening. After the normalizing treatment the alloy is hardened by heating to 870°C and oil quenched.

Nitriding

Normalizing

Heat to 880 °C - 920 °C, hold until temperature is uniform throughout the section, soak for 10 - 15 minutes and cool in still air.

Stress Relieving

290°C

Tempering

temper at 310°C to give a nominal 55Rc

Notes on Heat Treatment

Machining

Perferably done in the normalised or normalised and tempered condition. Final machining to finished tolerances is done by grinding with care due to hardness of (RC55). Stress relieve at 290°C after finish grinding.

Welding

300M can be welded. It must be pre and post heated because the alloy will air harden due to heat input from welding. Job must be re-normalised and tempered prior to final heat treatment. 300M can be joined by fusion methods or flash resistance welding.