

12L14 BRIGHT MILD STEEL

12L14 is a Re-Sulphurised, Re-Phosphorised Free Maching Steel. This is premium grade of free cutting steel is used by repitition engineers and general machining for a wide variety of applications. It has excellent machinability and is suitable for case hardening and electroplating.

Typical applications are: Brake hose ends, pulleys, disc brake pistons, wheel nuts and inserts, control linkages, gear box components (case hardened), domestic garbage bin axles, concrete anchors, padlock shackles, hydraulic fittings, vice jaws (case hardened)

Material: Magnetic in all conditions

Colour Code	Stocked Sizes						
	Rounds		6.35mm - 60mm				
	Hexagons		10mm - 63.5mm				
Purple (Bar End)Rose Pink (Band)	Bar Finish		Peeled, Cold Drawn, TurnedTurned & Polished, Centreless Ground				
Related Specifications							
Australia	AS 1443/ 12L14, AS 1443/D13*, AS1443/T13* *Mechanical Test						
Germany	DIN 95MnPb28, Werkstoff No. 1.0718						
Great Britain	BS970 230M07 leaded, EN1A Leaded						
Japan	JIS: SUM22L						
USA	AISI /SAE 12L14 UNS G12144						
Chemical Composition							
	Min. %				Max. %		
Carbon	0				0.15		
Silicon	0				0.10		
Manganese	0.80				1.20		
Phosphorous	0.04				0.09		
Sulphur	0.25				0.35		
Lead	0.15 0.35						
Typical Mechanical Properties - Cold Drawn and Turned and Polished Condition							
Cold Drawn Size mm			up to 16mm	17 - 38ı	nm	39 - 63mm	Turned & Polished (all sizes)
Tensile Strength Mpa		Min	480	430		400	370
		Max	760	690		630	520
Yield Strength Mpa		Min	350	330		290	230
		Max	590	550		500	310
Elongation in 50mm %		Min	7	8		9	17
Hardness HB		Min	142	120		115	105
		Max	225	205		185	155
Forging							

Heat to 1300 °C maximum, hold until temperature is uniform throughout the section and commence forging. Do not forge below 950 °C

Finished forgings may be air cooled.

Heat Treatment

Annealing

Heat to 890 °C - 920 °C hold until temperature is uniform throughout the section, and cool in furnace.

Carburizing

Pack, salt or gas carburise at 900 °C holding for sufficient time to develop the required case depth and carbon content, followed by a suitable refining/hardening and tempering cycle to optimise case and core properties.

Core Refine

Slow cool from carburising temperature and re-heat to 880 °C - 900 °C, hold until temperature is uniform throughout the section and quench as required in oil, water.

Case Hardening

Following core refining, re-heat to 760 °C - 790 °C, hold until temperature is uniform throughout the section and quench in water. Temper immediately while still hand warm.

Tempering - After Carburising, Core Refining and Case Hardening

Re-heat to 120 °C - 230 °C, hold until temperature is uniform throughout the section, soak for 1 hour per 25 mm of section and cool in still air.NB. Tempering will improve the toughness of the case with only slight reduction in case hardness. It will also reduce it's susceptibility to grinding cracks.

Normalizing

Heat to 900 °C - 940 °C hold until temperature is uniform throughout the section, soak for 10 - 15 minutes. Cool in still air.

Stress Relieving

Heat to 500 °C - 700 °C hold until temperature is uniform throughout the section, soak for 1 hour per 25mm of section, and cool in still air.

Notes on Heat Treatment

Heating temperatures, rate of heating, cooling and soaking times will vary due to factors such as work piece size/shape, also furnace type employed, quenching medium and work piece transfer facilities etc.Please consult your heat treater for best results.

Machining

12L14 is a premium free cutting steel grade suitable for all types of high production and repitition machining.

Welding

12L14 is not recommended for welding due to its lead content. It is a health hazard

Interlloy believes the information provided is accurate and reliable. However no warranty of accuracy, completeness or reliability is given, nor will any responsibility be taken for errors or omissions.