630 *(17/4 PH)* Precipitation hardening stainless steel

Typical Analysis (Ave. values %)	C	Si	Mn	Cr	Ni	Cu	Nb	S	P
	0.04	0.6	0.3	16.0	4.2	3.3	0.3	0.03	0.03

NEAREST STANDARD	DIN	UNS	AISI
	1.4542 X5CrNiCuNb17-4	S17400	630

DESCRIPTION	**630** is Martensitic precipitation hardenable chromium, nickel, copper steel possessing high strength and toughness. Further strength increments can be obtained by cold forming, followed by a precipitation hardening treatment. **630** has similar corrosion resistance to 304.

APPLICATIONS	Industries including marine, aerospace, petrochemical, chemical, food processing. Applications including propeller shafts, highly strength shafts, hydraulic fittings, fasteners etc.

HEAT TREATMENT	Forge	850-1150^{o}C.
	Solution Anneal	1030-1060^{o}C air, Oil
	Temper (Artificial ageing)	480^{o}C Air cool 500^{o}C Air cool 550^{o}C Air cool 580^{o}C Air cool 600^{o}C Air cool 620^{o}C Air cool 760^{o}C + 620^{o}C Air cool
	Nitriding	The nitriding process reduces the steel's corrosion resistance. It is applied in cases where increased friction and wear is required. Plasma nitriding in combination with precipitation hardening will result in a hardness depth of 0.1- 0.15mm. A surface hardness of 67 HRC can be achieved.

MECHANICAL PROPERTIES	Condition	Hardness HB	Tensile Strength MPa	Yield Strength MPa	Elong %
	Solution. Annealed	365	1100	900	10
	PH480	400-450	1310	1170	8
	PH500	375-430	1170	1070	10
	PH550	330-390	1080	1000	12
	PH580	300-370	1000	900	13
	PH600	290-360	965	800	14
	PH620	270-340	930	750	16
	PH620	260-310	790	590	18
	PH = Precipitation Hardened				

PHYSICAL PROPERTIES		
	Density (kg/dm^3)	7.78
	Nodulus of elasticity 10^3 N/mm^2	196
	Thermal conductivity W/(m.K)	17
	Electric resistivity $Ohm.mm^2/m$	0.77
	Specific heat capacity J/(kg.K)	400
	Thermal expansion 10^6 m/(m.K)	10.8

WELDING	
	630 can be welded using either TIG or electric arc, but should be conducted in the solution annealed condition only. Keep heat input as low as possible preheat to 100 - 200ºC only if component thickness exceeds 25mm or for welding heavy castings. Post-weld heat treatment can be varied as required by the specified mechanical properties and may consist in a solution anneal, a precipitation hardening treatment or a combination of both. Filler materials upon request.

Round Peeled & Polished h9/h10											
SIZE RANGE	38.1	44.45	50.8	63.5	76.2	145					
Round Ground h8											
SIZE RANGE	88.9										
Round Machined k12											
SIZE RANGE	101.6										

Sizes normally stocked in Australia. Some branches may not hold the entire range.
Other sizes available on request.

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