

431 MARTENSITIC STAINLESS STEEL

431 is a high chromium- low nickel high hardenability martensitic stainless steel which exhibits high strength and good corrosion resistance. It is generally supplied hardened and tempered to 850-1000 Mpa UTS (Condition T). 431 is capable of being through hardened up to 44 HRC, as well as the ability to be nitride with surface hardness up to 65 HRC. Note that nitriding does reduce the corrosion resistance of this grade and should be considered carefully when choosing this process.

Typical uses include pump shafts, propeller shafts, studs, valve parts, fasteners etc.

Stocked Sizes	-	Rounds	6.35 mm – 230 mm Ø
Bar Finishes	-	Peeled, Turned & Polished, Cold Drawn & Centreless Ground	

Related Specifications		
Germany	W. Nr 1.4057 X20CrNi17 2	
Japan	JIS G4303 SUS 431	
United Kingdom	BS 970 Pt 3 1991 431S29	
USA	ASTM A276-98b 431 SAE 51431 AISI 431 UNS43100	
Chemical Composition		
	Min. %	Max %
Carbon	0.12	0.20
Silicon	0	1.00
Manganese	0	1.00
Nickel	1.25	2.50
Chromium	15.00	17.00
Phosphorous	0	0.04
Sulphur	0	0.03
Typical Mechanical Properties		
	Annealed	Q&T Cond T
Tensile Strength Mpa		850-1000
0.20% Proof Stress (Yield) Mpa		635 Min
Elongation on %		11
Hardness Brinell HB	277 Max	248-302
Annealing		
Full annealing of this grade is not possible, as 431 hardens even during a slow cooling cycle. It is recommended that you consult with a heat treatment company should you wish to anneal this material. Process annealing is performed at 620-660 deg C and then air cooled.		