

## 431 Martensitic Stainless steel

Typical Analysis (Ave. values %)	C	Si	Mn	Cr	Ni	S	P
	0.19	0.25	0.40	15.9	1.6	0.025	0.025
NEAREST STANDARD	AS		DIN		SIS		AISI
	431		1.4057 X20CrNi16-2		2321		431

DESCRIPTION	<b>431</b> Heat treated 850 – 1000 Nmm <sup>2</sup> martensitic, nickel bearing grade. Good corrosion resistance, excellent tensile and torque strength and good toughness. This grade can not be readily cold worked and is therefore not recommended for cold heading and bending.
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APPLICATIONS	Pump shafts, nuts & bolts, studs, valve parts, or other uses where high tensile properties are required.
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MECHANICAL PROPERTIES H & T 60-160 MM	Tensile Strength MPa	Yield Strength MPa	Elong %	Impact strength J
	850 - 1000	600	12	25

HEAT	Forge	800-1100°C. Cool in furnace.
TREATMENT	Anneal	680-800°C. Cool slowly in controlled furnace.
	Harden	950-1050°C Oil or Air.
	Temper	600-650°C hold for 1 hour min. at temperature, air cool.

PHYSICAL PROPERTIES	Density (kg/dm <sup>3</sup> )	7.70
	Modulus of elasticity 10 <sup>3</sup> N/mm <sup>2</sup>	215
	Thermal conductivity W/(m.K)	25
	Electric resistivity Ohm.mm <sup>2</sup> /m	0.70
	Specific heat capacity J/(kg.K)	460
	Thermal expansion 10 <sup>6</sup> m/(m.K)	10

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preheat to 100-200°C. To	<div> <b>WELDING</b>            For joint welding, preheat parts to a temperature of 250-450°C. For building up            To increase toughness in the heat affected zone of the base            metal, anneal welded joints at 650-750°C or conduct a new heat treatment cycle.            Use Bohler SKWAM electrodes or SKWAM-IG for MIG or TIG         </div>
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Round Machined k12										
SIZE RANGE	30	41	50	60	70	78	90	116	155	
	36	42	54	64	72	85	95	145		
Round Ground h9										
SIZE RANGE	14.29	22.23	28.58	38.1	50.8	57.15	69.85	76.2	90	100
	19.05	25.4	31.75	44.45	52	63.5	70	88.9	92.07	101.6
Round Ground h8										
SIZE RANGE	25.4	50.8								

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

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