

Typical Applications

- Marine systems
- Pump & propeller shafts
- Outboard motor drive shafts
- Valve stems
- Aircraft components
- Axles

Product Description

Type 431 is a hardenable martensitic stainless steel alloy which has a combination of high tensile and torsional strength - this makes it well suited to shaft manufacture. The alloy is intended for use in applications requiring good strength and toughness combined with reasonable corrosion resistance. As the alloy offers considerable resistance to saltwater corrosion, it is used widely in marine equipment and systems. Type 431 is easily machined in the annealed state but welding is difficult due to cracking and it is recommended that the material is preheated to improve welding performance.

Key features

- Heat treatable martensitic stainless steel
- High tensile and torsional strength and is well suited to shaft manufacture.
- Welding is poor and cannot be easily cold worked.

Machinability

Easily machined in the annealed state

Weldability

Risk of cracking. Pre-heating recommended.

Availability

Round bar, plate, sheet and tube

Corrosion resistance

Similar to Type 304 stainless steel. Considerable resistance to saltwater and therefore useful in marine applications.

Chemical Composition (weight %)

	C	Mn	Si	P	S	Cr	Ni		
min						15.00	1.25		
max	0.20	1.00	1.00	0.04	0.03	17.00	2.50		

Mechanical Properties (T condition)

Ultimate Tensile strength	850 - 1000	MPa
Proof Stress	665 min	MPa
Elongation A5	12	%

Physical Properties

Density	7800	kg/m ³
Modulus of Elasticity	200	GPa
Electrical Resistivity	720	n. Ω.m
Thermal Conductivity at 100°C	20.2	W/m.K

Technical Assistance

Our knowledgeable staff backed up by our resident team of qualified metallurgists and engineers, will be pleased to assist further on any technical topic.

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