

## WEAR/GALLING RESISTANT STAINLESS STEEL

### TYPICAL APPLICATIONS

Bridge pins and hangers  
Valve stems, seats and trim  
Compressor shafts  
Boat shafting and mooring pins  
Bolts/nuts  
Pump wear rings  
Chain-drive systems – pins, bushings, wear rails & roller bearings  
Automotive valves

### PRODUCT DESCRIPTION

UNS S21800 is a highly alloyed austenitic stainless steel providing good mechanical strength (approaching twice that of Type 316 stainless steel) and corrosion resistance combined with excellent resistance to galling and wear at ambient and elevated temperatures.

Other valuable characteristics of this alloy include good lower temperature impact properties and retention of strength at elevated temperatures, high shear strength, excellent cavitation erosion resistance and good high-temperature oxidation resistance (similar to Type 309). This alloy has a density of 7.62 g/cc.

### CORROSION RESISTANCE

UNS S21800 stainless steel provides good resistance to general corrosion which better than Type 304 but not at the same level as Type 316 stainless steel.

The alloy is not hardenable by heat treatment and is usually put into service in the solution annealed condition. Material in the high strength cold-worked condition is often specified for bolting and shafting but there is some small

compromise in terms of corrosion resistance in some environments when compared with the annealed condition. The resistance to selective attack such as pitting and crevice corrosion and stress corrosion cracking for UNS S21800 stainless steel (annealed) is equivalent to or slightly superior to that of Type 316. In common with most austenitic stainless steels, for example Types 304 and 316, UNS S21800 steel may suffer stress corrosion cracking in hot chloride ion containing environments.

### MATERIAL SPECIFICATIONS

- UNS S21800
- ASTM 276
- ASTM 479
- ASTM 240
- ASTM A193 (B8S)/A194 (8S)
- AMS 5848

### MACHINING AND WELDING

This stainless steel is readily welded employing conventional joining techniques associated with Types 304 and 316 steels.

Due to the desirable metallurgical characteristics of the alloy, machining is not particularly easy. However, with sufficient power and rigidity UNS S21800 can be machined. Generally rates at 50 percent of those adopted for Type 304 steel are appropriate.

### AVAILABILITY

Bar, wire, extrusions, plate, forgings, tubing.

### CHEMICAL COMPOSITION

Weight %	C	Mn	Si	Cr	Ni	N
Min.		7.00	3.50	16.00	8.00	0.08
Max.	0.10	9.00	4.50	18.00	9.00	0.18

### MINIMUM MECHANICAL PROPERTIES (UNS S31800 – annealed bar)

	≤ 12.7 mm diam.	> 12.7 mm diam.
UTS, MPa (ksi)	724 (105)	655 (95)
0.2% PS, MPa (ksi)	379 (55)	345 (50)
Elongation on 4D, %	35	35
Reduction of area, %	55	55
Hardness, HRB	85	85

### TECHNICAL SALES ASSISTANCE

Our resident team of qualified metallurgists and engineers will be pleased to assist further on any technical topic.

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