

## S 31803/F51

## DUPLEX ALLOY

BOLTING MATERIAL FOR HIGH TEMPERATURE SERVICE

DUPLEX 31803 is a Stainless ferritic-austenitic Cr-Ni-Mo steel with nitrogen addition. High corrosion resistance, especially against stress corrosion cracking in solutions containing chloride. Good strength properties. Resistant to intergranular corrosion in the temperature range up to 300°C. Heat treatment subsequent to welding not necessary.

Surface condition for optimum corrosion resistance: pickled, heat treated free from scale or machined. UNS 31803 is widely used for Components in the chemical industry, e.g. separator and heat exchanger parts, from the paper industry, oil and gas production, compressor parts, seawater desalination plants.

### Chemical Properties

C	Mn	P	S	Si	Cr	Ni	Mo	N
0.03 Max	2.00 Max	0.03 Max	0.02 Max	1.00 Max	21.0-23.0	4.50-6.50	2.5-3.5	0.08-0.20

### Mechanical Properties

Yield strength	Tensile strength	Elongation	Reduction	Hardness
Mpa	Mpa	%	%	BHN
min	min	min	min	
450	620	25	50	297

### Physical Properties

Density	Elastic Modulus	Mean Coefficient of Thermal	Thermal Conductivity	Specific Heat	Electrical Resistivity
(Kg/m <sup>3</sup> )	(Gpa)	Expansion (µm/m/°C)	(W/m.K)	0-100°C	(µΩ.m)
7810	190	11 X 10 <sup>-6</sup>	15	400	0.85

### Heat Treatment

Solution Annealed @1020°C & liquid Quenced @260°C

### Additional Tests:

ASTM G48A Corrosion test at 40°C	No pitting and weight loss <4.0 g/m <sup>2</sup>
Ultrasonic Testing	According to ASTM A388
Ferrite Content	35%-55%
Microstructure	Microstructure certified free from grain boundary carbides, sigma, chi and laves phases

### Equivalent Designation

UNS S31803  
EN number 1.4462/1.4470  
AISI F51  
W.Nr. 1.4462  
SS 2377  
AFNOR Z2CND22.05Az

### Applications

Chemical Process Industry  
Marine Industry and Shipbuilding  
Oil and Gas Industry:  
Pollution Control  
Pulp and Paper Industry:  
Food Industry:  
Agrochemicals

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