UNS S32760 / 1.4501 / F55

Technical Datasheet

Super Duplex Stainless Steel

Service. Quality. Value.

Product Description

Material to UNS S32760 (and the other specifications listed below) is described as a super duplex stainless steel with a microstructure of 50:50 austenite and ferrite. The steel combines high mechanical strength (typically up to 600 MPa yield strength) and good ductility with outstanding corrosion resistance to marine environments and a wide, diverse range of oil & gas production environments. The alloy is supplied with a PREN (Pitting Resistance Equivalent) at >= 40.0 which guarantees high resistance to pitting corrosion. In addition, the steel offers high resistance to crevice corrosion and stress corrosion cracking. Ambient and sub-zero (down to minus 50 °C) notch ductility is good. These attributes mean that this super duplex steel can be used successfully as an alternative to 300 series stainless steel (such as type 316), standard 22% Cr duplex steel and precipitation hardening stainless steels. Where appropriate the alloy can be considered in lieu of more costly Grade 5 titanium or nickel based alloys.

Machinability / Welding

The machining and welding of this grade of super duplex stainless steel presents no particular problems. Guidance notes are available upon request.

Typical Applications

Pumps, valves, chokes, Xmas trees, pipework / flanges, bolting, connectors & manifolds. In oil and gas industry. Equipment in defence, chemical and marine industries.

Related Specifications

- UNS S32760 in various ASTM product form specifications
- EN 10088-3 1.4501 (Grade X2CrNiMoCuWN25-7-4)
- NORSOK MDS D51 to D55, D57 & D58
- ASTM A182 F55
- NACE MR01-75 (latest revision) / ISO 15156

Availability

Bar, forgings, sheet, plate, pipe, tube, closed die forgings, flanges and welding consumables.

Chemical Composition (weight %)

Weight (%)	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	N	W	*PreN
Min						24.0	6.0	3.0	0.50	0.20	0.50	40.0
Max	0.03	1.00	1.00	0.015	0.035	26.0	8.0	4.0	1.00	0.30	1.00	

* PREn = Cr % + 3.3Mo% + 16N%

Minimum Mechanical Properties at Room Temperature

(EN 10088-3 1.4501 max diameter 160mm - Solution Treated)

Ultimate Tensile Strength	730 – 930 MPa	(106 – 135 ksi)
0.2% Proof Strength	530 MPa	(77 ksi)
Elongation	25 %	
Hardness (Max)	290 HB	
Impact	100 J	(74 ft.lb)

Typical Properties

Density	7.8	kg/dm³
Specific Thermal Capacity at 20°C	500	$J.Kg^{-1}.K^{-1}$
Mean Coefficient of Thermal Expansion at 20 - 100°C	13.0	$x\ 10^{-6}K^{-1}$
Thermal Conductivity at 20°C	15	$W.m^{-1}.K^{-1}$
Electrical Resistivity at 20°C	0.80	$\Omega.mm^2.m^{-1}$
Modulus of Elasticity at 20°C	200 GPa	
Magnetisable	Yes	

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Quality & Testing:

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