

## SUPER AUSTENITIC STAINLESS STEEL

### TYPICAL APPLICATIONS

Pumps, valves, chokes, pipework / flanges & manifolds. In oil and gas industry.

### PRODUCT DESCRIPTION

Material to UNS S31254 (and the other specifications listed below) is described as a 6% Mo super austenitic stainless steel. The steel combines moderate mechanical strength (typically over 300 MPa yield strength) and high ductility with excellent corrosion resistance in seawater and a variety of industrial environments. Typically the alloy has a PREn (Pitting Resistance Equivalent) of 42-44 which ensures that the resistance to pitting corrosion is high. In addition, the steel provides good resistance to crevice corrosion. Ambient and subzero temperature notch ductility is very good. These attributes mean that this high molybdenum stainless steel can be used successfully as an alternative to 300 series austenitic stainless steels (such as type 316) in applications where higher mechanical strength and/or enhanced resistance to pitting and crevice corrosion is required. This alloy possesses a lower yield strength than that of duplex stainless steel (and much lower than that of

super duplex steel) and pitting resistance which is comparable to super duplex stainless steel (such as UNS S32760 / S32750).

### AVAILABILITY

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

### MATERIAL SPECIFICATIONS

- UNS S31254 in various ASTM product form specifications
- EN 10088-3 1.4547 (Grade X1CrNiMoN20-18-7)
- NORSOK MDS R11 to R15, R17 & R18
- ASTM A182 F44
- NACE MR01-75 (latest revision) / ISO 15156

### MACHINABILITY / WELDING

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

### CHEMICAL COMPOSITION % (EN 10088-3 1.4547)

Weight (%)	C	Mn	Si	S	P	Cr	Ni	Mo	N	Cu	PREn
Min.						19.5	17.5	6.0	0.18	0.50	40
Max	0.020	1.00	0.70	0.010	0.030	20.5	18.5	7.0	0.25	1.00	

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

### MINIMUM MECHANICAL PROPERTIES AT ROOM TEMPERATURE (EN 10088-3 1.4547 MAX DIAMETER 160mm – SOLUTION TREATED)

Ultimate Tensile Strength	650 – 850 MPa	( 94 – 123 ksi )
0.2% Proof Strength	300 MPa	( 44 ksi )
Elongation	35 %	
Hardness (Max)	260 HB	
Impact	100 J	( 74 ft.lb )

### TYPICAL PHYSICAL PROPERTIES

Density	8.0	kg/dm <sup>3</sup>
Specific Thermal Capacity at 20 <sup>0</sup> C	500	J.Kg <sup>-1</sup> .K <sup>-1</sup>
Mean Coefficient of Thermal Expansion at 20 - 100 <sup>0</sup> C	16.5	x 10 <sup>-6</sup> K <sup>-1</sup>
Thermal Conductivity at 20 <sup>0</sup> C	14	W.m <sup>-1</sup> .K <sup>-1</sup>
Electrical Resistivity at 20 <sup>0</sup> C	0.85	Ω .mm <sup>2</sup> .m <sup>-1</sup>
Modulus of Elasticity at 20 <sup>0</sup> C	195	GPa
Magnetisable	No *	

\*Small amounts of ferrite and/or martensite caused by cold deformation will increase the magnetisability.

### 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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