Super Austenitic Stainless Steel Alloy

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).

Chemical Composition (weight %) (EN 10088-3 1.4547)

<table>
<thead>
<tr>
<th>Element</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.020</td>
<td>0.070</td>
</tr>
<tr>
<td>Mn</td>
<td>1.000</td>
<td>1.500</td>
</tr>
<tr>
<td>Si</td>
<td>0.700</td>
<td>0.010</td>
</tr>
<tr>
<td>S</td>
<td>0.010</td>
<td>0.003</td>
</tr>
<tr>
<td>P</td>
<td>0.030</td>
<td>0.030</td>
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<tr>
<td>Cr</td>
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<tr>
<td>Ni</td>
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<td>18.500</td>
</tr>
<tr>
<td>Mo</td>
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<td>7.000</td>
</tr>
<tr>
<td>N</td>
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<td>0.250</td>
</tr>
<tr>
<td>Cu</td>
<td>0.500</td>
<td>1.000</td>
</tr>
<tr>
<td>PREn</td>
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<td>40.000</td>
</tr>
</tbody>
</table>

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

Physical Properties
Density: 7.95 kg/dm³
Specific Thermal Capacity at 20°C: 500 J.Kg⁻¹.K⁻¹
Mean Coefficient of Thermal Expansion at 20 - 100°C: 16.5 x 10⁻⁶ K⁻¹
Thermal Conductivity at 20°C: 14 W.m⁻¹.K⁻¹
Electrical Resistivity at 20°C: 0.85 Ω.mm².m⁻¹
Modulus of Elasticity at 20°C: 195 GPa
Magnetisable: No *

Related 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.

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.

Technical Datasheet
Service, Quality, Value.

Sales & Marketing
sales@smithmetal.com

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