



## E STEEL SDN BHD (891338-A)

NO 3, Lorong Sungai Puloh 7/KU 6,  
Kawasan Perindustrian Sungai Puloh, 42100 Selangor D.E  
Tel : 03-3292 8686 / 32928666 / 32928777  
Fax : 03-3292 8383



## 253MA, UNS S30815, 1.4835, SUS310, SUS310S

**253MA** is a grade combining excellent service properties at high temperatures with ease of fabrication. It resists oxidation at temperatures up to 1150°C and can provide superior service to Grade 310 in carbon, nitrogen and sulphur containing atmospheres. 253MA® is a trademark owned by Outokumpu Stainless AB. The standard grade designation covering this grade is UNS S30815. Other mills produce grades compliant with UNS S30815, including Sirius S15®. 253 MA contains a fairly low nickel content, which gives it some advantage in reducing sulphide atmospheres when compared to high nickel alloys and SS310. The inclusion of high chromium, silicon, nitrogen and cerium contents gives the steel good oxide stability, high elevated temperature (creep) strength and excellent resistance to sigma phase precipitation. The austenitic structure gives this grade excellent toughness, even down to cryogenic temperatures.

### Composition

	C	Mn	Si	P	S	Cr	Ni	N	Ce
min.	0.05	-	1.10	-	-	20.0	10.0	0.14	0.03
max.	0.10	0.80	2.00	0.040	0.030	22.0	12.0	0.20	0.08

### Mechanical Properties

Tensile Str (MPa) min	Yield Str 0.2% Proof (MPa) min	Elongation (% in 50mm) min	Hardness	
			Rockwell B (HR B) max	Brinell (HB) max
600	310	40	95	217



## **E STEEL SDN BHD (891338-A)**

NO 3, Lorong Sungai Puloh 7/KU 6,  
Kawasan Perindustrian Sungai Puloh, 42100 Selangor D.E  
Tel : 03-3292 8686 / 32928666 / 32928777  
Fax : 03-3292 8383



### **Corrosion Resistance of s30815, 1.4835**

Although not designed for aqueous corrosion resistance, the high chromium and nitrogen contents give the grade a pitting resistance approximating that of SUS316. 253MA does however have a high carbon content so is highly susceptible to sensitisation; this is likely to reduce aqueous corrosion resistance after high temperature service or fabrication. Consult Atlas Technical Assistance for specific environmental recommendations.

### **Heat Resistance of 253ma , sus310**

Oxidation - excellent resistance to air, at temperatures up to 1100°C. At high temperatures the steel quickly forms a thin, highly adherent and elastic oxide. This oxide gives good protection even under cyclic conditions, much better than is the case for SUS310. Best resistance is under noncycling conditions. Carburisation - Under oxidising conditions this

grade can perform well, but alloys with higher nickel content are preferred if the atmosphere is reducing. Sulphidation - good resistance to sulphurbearing gases in an oxidising atmosphere, even if only traces of oxygen are present. Reducing gases prevent the protective oxide forming. 253MA has high strength at elevated temperatures so is often used for structural and pressure-containing applications at temperatures above about 500°C and up to about 900°C. 253 MA will become sensitised in the temperature range of 425-860°C; this is not a problem for high temperature applications, but will result in reduced aqueous corrosion resistance.

### **Heat Treatment of stainless steel Solution Treatment (Annealing)**

Heat to 1050-1150°C and cool rapidly. It is recommended that the material be solution treated after 10-20% cold work to achieve maximum creep strength in service. This grade cannot be hardened by thermal treatment.

### **Welding**

Excellent weldability by all standard fusion methods. AS 1554.6 pre-qualifies welding of S30815 with matching Grade 22.12HT rods or electrodes. SUS309 fillers can be used if lower creep strength can be tolerated. Pure argon shielding gas should be used.

### **Machining**

As for other austenitic stainless steels, the machining requires sharp tools, slow speeds and heavy feeds.

### **Applications of 253 ma**

Furnace components including burners, retorts, conveyor belts, fans, jigs and baskets, rollers, walking beams, radiant tubes, electric heater elements, refractory anchors, hoods, flues, grates, expansion bellows. Petrochemical and refinery tube hangers.

### **Specified Properties**

These properties are specified for flat rolled product (plate, sheet and coil) as Grade S30815 in ASTM A240/A240M. Similar but not necessarily identical properties are specified for S30815 in other products such as pipe and bar in their respective specifications, and for Grade 1.4835 in specifications such as EN 10095.