Ferritic Stainless Steel NAS 540	
ASTM Designation	EN Designation
	1.4509
S44100	X2CrTiNb18

DESCRIPTION

NAS 540 is a titanium and niobium stabilized stainless steel that offers good mechanical and oxidation resistance at high temperature. It exhibits better forming and weldability properties than most ferritic stainless steels.

CHEMICAL COMPOSITION

C	Si	Mn	P	S	Cr	Ti	Nb
≤ 0.30	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	17.50-19.50	0.10 - 0.50	≥ 0.30 + (9 x C)

APPLICATIONS

- Exhaust systems
- Domestic burners
- Catering furniture, household appliances, etc

MECHANICAL PROERTIES AFTER COLD ROLLING AND FINAL ANNEALING

UTS	60 ksi min
0.2% YS	35 ksi min
Elongation	20% min
Hardness	max 90 HRB

PHYSICAL PROPERTIES

At 68 °F, it has a density of 0.278 lb/in^3 and a specific heat of 0.11 Btu/lb/°F

Modulus of Elasticity (x10^6 psi)	29.0
Coefficient of Thermal Expansion, 68-212˚F, /˚F	5.7 x 10^{-6}
Thermal conductivity (Btu/hr•ft•°F)	12.1
Electrical resistivity (Micro ohm-in)	23.1

WELDING

The recommended consumable electrodes are:

Shielded electrodes	Wires and rods	Hollow electrodes
E 23 12 L	G 23 12 L (GMAW) W 23 12 L (GTAW)	T 23 12 L
ER 308L	P 23 12 L (PAW) S 23 12 L (SAW)	308L
430LNb	ER 308L	430LNb

PITTING CORROSION	The titanium and high chromium content gives NAS 540 a satisfactory pitting corrosion resistance. Special care must be taken on the interstices resulting from the design, as they are preferred areas of attack.
CORROSION RESISTANCE	NAS 540 has good corrosion resistance in a wide range of media. For instance, this steel shows a corrosion rate lower than 0.004 in/year in the following media: - 65% nitric acid at 120°F. - 50% phosphoric acid at 175°F. - 90% acetic acid at 195°F. - Fuel - Toluene - Benzene
STRESS CORROSION CRACKING	As a ferritic stainless steel, NAS 540 has good stress corrosion cracking resistance.
INTERGRANULAR CORROSION	NAS 540 has high intergranular corrosion resistance due to the double titanium and niobium stabilization.
ATMOSPHERIC CORROSION	Atmospheric corrosion resistance of NAS 540 is good. For better performance, a homogeneous surface finish with low roughness is recommended.
HIGH TEMPERATURE OXIDATION RESISTANCE	NAS 540 exhibits good oxidation resistance at high temperature service. The maximum working temperature is 1550oF, due to its niobium content. Because of its ferritic structure, the thermal expansion coefficient is lower than austenitic steel one, so its performance is better in thermal cycles.
SURFACE CLEANING	Wash the surface with neutral soap and water applied with a cloth or a brush without scratching the surface. Then, always rinse the stainless steel with water to remove completely the cleaning agent. Finally, it is recommended to dry the surface to preserve a good superficial condition. In severe environments, a frequent cleaning is strongly recommended.
SPECIFICATIONS	It can be delivered according to ASTM A-240 and EN 10088-2 standard requirements.