Duplex Stainless Steel NAS 900	
ASTM Designation	EN Designation
2205	1.4462
S32205	X2CrNiMoN22-5-3

DESCRIPTION

NAS 900 is a duplex stainless steel having a microstructure with a phase balance of approximately 50% ferrite and 50% austenite, so it combines the best properties of these two constituents. Furthermore, the dual microstructure is responsible for its outstanding mechanical and corrosion resistant behavior.

CHEMICAL COMPOSITION

C	Si	Mn	P	S	Cr	Ni	Mo	N
≤ 0.30	≤ 1.00	≤ 2.00	≤ 0.030	≤ 0.020	22.0-23.5	4.5 - 6.5	3.0 - 3.5	0.14 - 0.20

APPLICATIONS

- Chemical, petrochemical, paper and mining industry
- Storage tanks and tube piping
- Desalination and waste water treatment plants
- Heat exchangers
- Storage tanks and tube in ships
- Civil work

MECHANICAL PROERTIES AFTER COLD ROLLING AND FINAL ANNEALING

UTS	95 ksi min
0.2% YS	65 ksi min
Elongation	25% min
Hardness	max 31 HRC

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)	27.6
Coefficient of Thermal Expansion, 68-212˚F, /˚F	7.5 x 10^{-6}
Thermal conductivity (Btu/hr•ft•°F)	8.7
Electrical resistivity (Micro ohm-in)	33.5

WELDING

NAS 900 can be welded using most of the conventional methods, as stick welding, TIG, MIG, SAW, laser, etc. It is resistant to hot cracking, grain coarsening embrittlement and martensite formation.

The use of nickel-enriched filler material (needed in most cases) and specific process conditions for a controlled cooling are required to obtain correct microstructural and chemistry balances. This will provide a welded area with optimum mechanical, toughness and corrosion resistance properties.

Relatively high thermal inputs can be used as well as shielding gas on both sides of the weld (argon or argon plus helium are normally used). In case of autogenous welding, shielding gas containing nitrogen is recommended as this helps limiting the ferrite content in the weld.

CORROSION RESISTANCE

NAS 900 exhibits an excellent corrosion resistance due to its chromium, molybdenum and nitrogen content.

GENERAL CORROSION

NAS 900 presents corrosion rates lower than 0.004 in / year when in contact with:

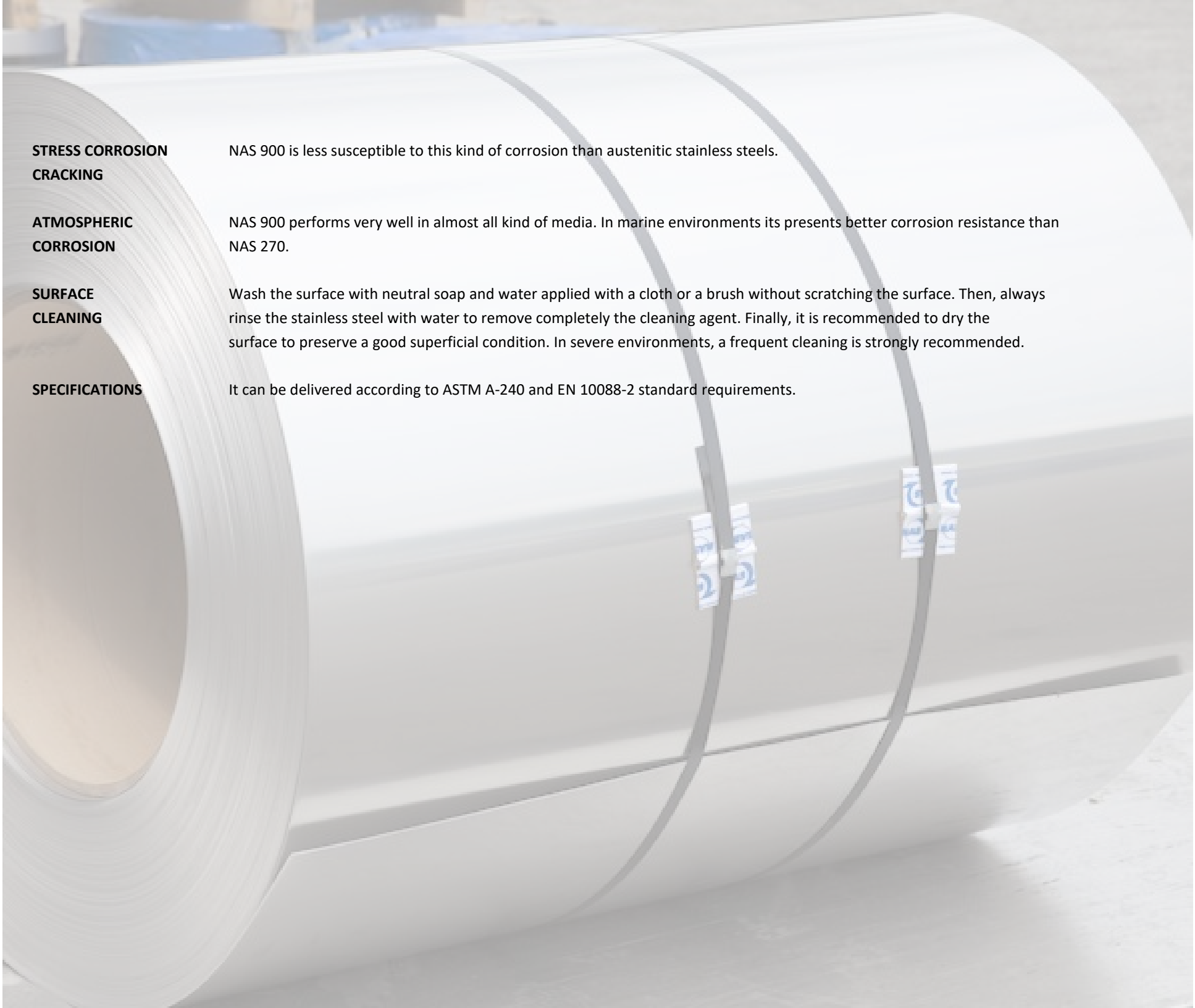
- 100% acetic acid at 175°F.
- 90% formic acid at 50°F.
- 86% phosphoric acid at 185°F.
- 65% nitric acid at 160°F.
- 30% sulphuric acid at 68°F.
- 70% tartaric acid at boiling point.
- 30% Sodium hydroxide at 212°F.
- Toluene
- Beer
- Milk
- Wine
- Fuel

PITTING CORROSION

In order to estimate in a theoretical way the stainless steel pitting corrosion resistance, the Pitting Resistance Equivalent, PRE, is used. One of the most extended formulas to calculate the PRE value is:

PRE = %Cr + 3.3 (% Mo) + 30 (% N)

The higher the PRE, the better the pitting corrosion resistance. NAS 900 has a PRE average value of 38, being in theory more resistant than NAS 270, with an average value of 25.



STRESS CORROSION CRACKING	NAS 900 is less susceptible to this kind of corrosion than austenitic stainless steels.
ATMOSPHERIC CORROSION	NAS 900 performs very well in almost all kind of media. In marine environments its presents better corrosion resistance than NAS 270.
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.