

Austenitic Stainless Steel	
NAS 270	
ASTM Designation	EN Designation
316L	1.4304
S31603	X2CrNiMo17-12-2

DESCRIPTION

Cr-Ni-Mo austenitic stainless steels contain Mo to increase resistance to pitting corrosion. "L" grades with low carbon content, are preferred for applications involving uses at sensitization temperatures, such as welding because chromium carbides precipitation is prevented, then, their resistance to intergranular corrosion is increased.

CHEMICAL COMPOSITION

C	Si	Mn	P	S	Cr	Ni	Mo
≤ 0.030	≤ 0.75	≤ 2.00	≤ 0.045	≤ 0.015	16.00-18.00	10.00 - 14.00	2.00 - 3.00

APPLICATIONS

- Chemical and petrochemical industries
- Food, pharmaceutical and textile industries
- Architectural decoration
- Welding Applications
- Tubes and boilers
- Vehicle tanks

MECHANICAL PROPERTIES AFTER COLD ROLLING AND FINAL ANNEALING

UTS	70 ksi min
0.2% YS	25 ksi min
Elongation	40% min
Hardness	max 95 HRB

PHYSICAL PROPERTIES

At 68 °F, it has a density of 0.290 lb/in³ and a specific heat of 0.12 Btu/lb/°F

Modulus of Elasticity (x10 ⁶ psi)	29
Coefficient of Thermal Expansion, 68-212°F, /°F	9.2 x10 ⁻⁶
Thermal conductivity (Btu/hr•ft•°F)☐	9.4
Electrical resistivity (Micro ohm-in)	27.4

WELDING

The recommended consumable electrodes are:

Shielded electrodes	Wires and rods	Hollow electrodes
E 1912 3 L	G 19 12 3 L (GMAW) W 19 12 3 L (GTAW)	T 19 12 3 L
ER 316L (Si)	P 19 12 3 L (PAW) S 19 12 3 L (SAW)	ER 316L (Si)
ER 317L (Si)	ER 316 (Si) ER 317 (Si)	ER 317L (Si)

STRESS CORROSION CRACKING

Stress corrosion cracking can happen in austenitic stainless steels when they are subjected to tensile stresses in chloride containing media and temperatures above 140°F.

CORROSION RESISTENCE

NAS 270 Cr-Ni-Mo austenitic stainless steel shows higher resistance than Cr-Ni grades against generalized and atmospheric corrosion. It exhibits a corrosion rate lower than 0.10 mm/year when in contact with the following media:

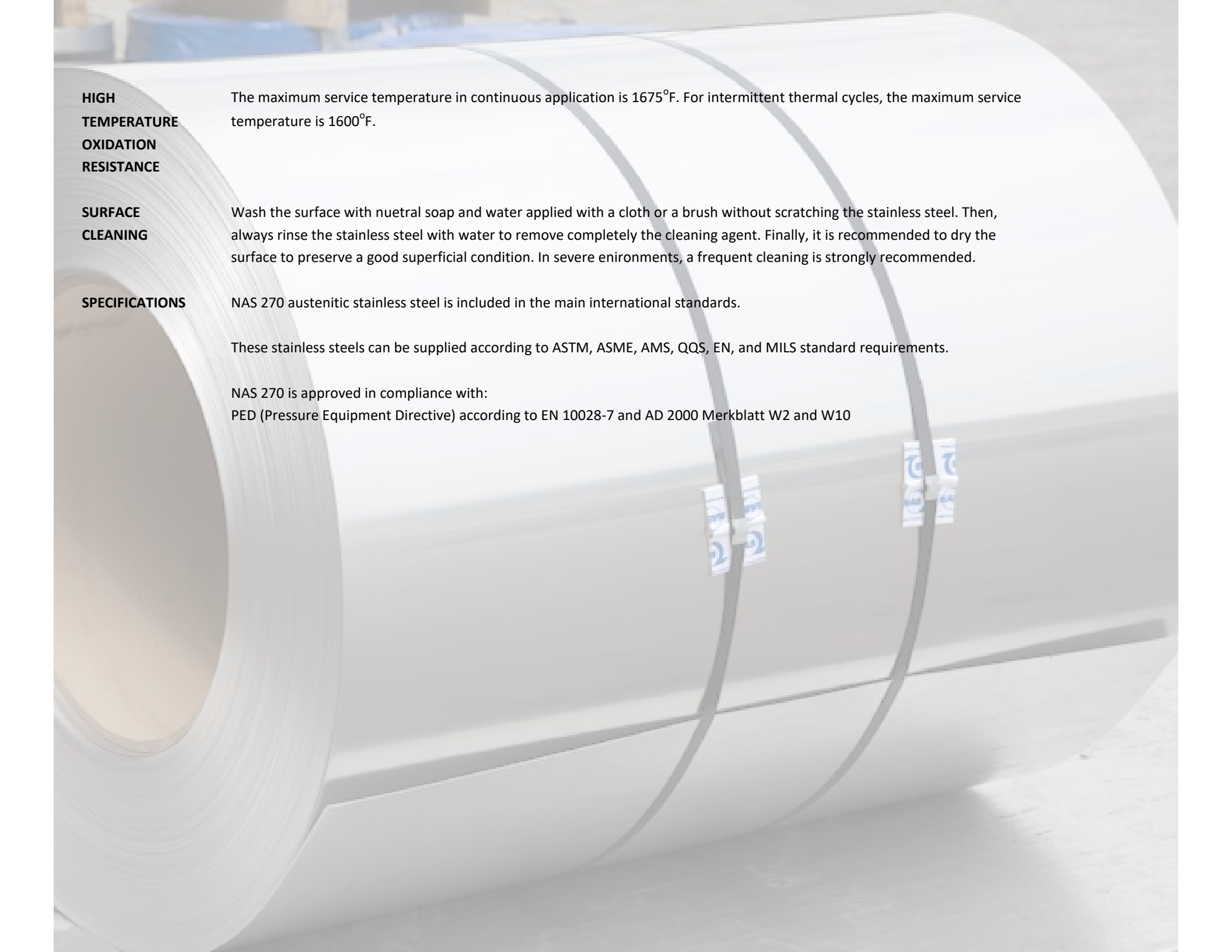
- 20% phosphoric acid at boiling temperature
- 20% sulphuric acid at room temperature.
- 60% tartaric acid at 175°F.
- 50% acetic acid at boiling temperatures.
- 100% formic acid at 140°F.
- Beer
- Milk
- 100% oleic acid at 350°F.
- Petrol

PITTING AND CREVICE CORROSION

NAS 270 is more resistant to pitting and crevice corrosion than NAS 120. Conventional Cr-Ni stainless steels can be used in chloride media containing up to 200 ppm, while those of the Cr-Ni-Mo group can be used in contact with solutions up to 1000 ppm of chloride ions.

INTERGRANULAR CORROSION

NAS 270 is recommended for applications involving continuous work between 840 and 1550°F or welding operations, because of its low carbon content, in order to minimize sensitization.



**HIGH
TEMPERATURE
OXIDATION
RESISTANCE**

The maximum service temperature in continuous application is 1675°F. For intermittent thermal cycles, the maximum service temperature is 1600°F.

**SURFACE
CLEANING**

Wash the surface with neutral soap and water applied with a cloth or a brush without scratching the stainless steel. 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

NAS 270 austenitic stainless steel is included in the main international standards.

These stainless steels can be supplied according to ASTM, ASME, AMS, QQS, EN, and MILS standard requirements.

NAS 270 is approved in compliance with:

PED (Pressure Equipment Directive) according to EN 10028-7 and AD 2000 Merkblatt W2 and W10