



Cr-Ni-Mo AUSTENITIC STAINLESS STEEL ACX 280	
EN DESIGNATION	ASTM DESIGNATION
1.4571	316Ti
X6CrNiMoTi17-12-2	S31635

**DESCRIPTION** Cr-Ni-Mo austenitic stainless steels contain Mo to increase resistance to pitting corrosion. ACX 280 being titanium stabilized is preferred for applications involving 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	Ti
	≤0.060	≤0.75	≤2.00	≤0.040	≤0.015	16.50-18.00	11.00-12.50	2.00-2.50	≥5 (C+N)

- APPLICATIONS**
- Petrochemical and chemical industries
  - Food, pharmaceutical and textile industries
  - Architectural decoration
  - Welding applications
  - Tubes and boilers
  - Vehicle tanks

MECHANICAL PROPERTIES AFTER COLD ROLLING AND FINAL ANNEALING	Property	Value
	<b>Rp<sub>0.2</sub></b>	> 240 N/mm <sup>2</sup>
	<b>Rm</b>	540 - 690 N/mm <sup>2</sup>
	<b>Elongation</b>	> 40%
	<b>Hardness</b>	< 210 HB

**PHYSICAL PROPERTIES** At 20°C it has a density of 8 kg/dm<sup>3</sup> and a specific heat of 500 J/kg·K

	20°C	100°C	200°C	300°C	400°C	500°C
<b>Modulus of elasticity (GPa)</b>	200	194	186	179	172	165
<b>Mean coefficient of linear expansion between 20°C (10<sup>-6</sup> x K<sup>-1</sup>) and</b>	-	16.5	17.5	18	18.5	19
<b>Thermal conductivity (W/m·K)</b>	15	16.2	-	-	-	21.5
<b>Electrical resistivity (Ω·mm<sup>2</sup>/m)</b>	0.75	-	-	-	-	-

**WELDING** The recommended consumable electrodes are:

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

**PITTING AND CREVICE CORROSION** ACX 260 is more resistant to pitting and crevice corrosion than ACX 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.



### CORROSION RESISTANCE

ACX 280 Cr-Ni-Mo austenitic stainless steel exhibits higher resistance than Cr-Ni grades against generalized and atmospheric corrosion. It has a corrosion rate lower than 0.10 mm/year when is in contact with the following media:

- 20% phosphoric acid at boiling temperature.
- 20% sulphuric acid at room temperature.
- 60% tartaric acid at 80°C.
- 50% acetic acid at boiling temperature.
- 100% formic acid at 60°C.
- Beer.
- Milk.
- 100% oleic acid at 180°C.
- Petrol.

### STRESS CORROSION CRACKING

Stress corrosion cracking can happen in austenitic stainless steels when they are subject to tensile stresses in chloride containing media and temperatures above 60°C.

### INTERGRANULAR CORROSION

ACX 280 is recommended for applications involving continuous work between 450 and 850°C or welding operations, because of its titanium stabilization, in order to minimize sensitization.

### HIGH-TEMPERATURE OXIDATION RESISTANCE

Maximum service temperature for these steels in continuous application is 920°C. For intermittent thermal cycles the maximum service temperature is 870°C.

### 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

ACX 280 austenitic stainless steel is included in the main international standards.

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

ACX 280 is approved in compliance with:

- PED (Pressure Equipment Directive) according to EN 10028-7 and AD 2000 Merkblatt W2 and W10.
- Lloyd's Register of Shipping.

ACX 280 complies with the European Directives:

- Food industry, RE 1935/2004.
- Hexavalent chromium, ROHS.
- Electrical instruments, ROHS.