| Cr-Ni-Mo AUSTENITIC STAINLESS STEEL<br>ACX 250 | |
|---|---|
| EN DESIGNATION | ASTM DESIGNATION |
| 1.4401 | 316 |
| X5CrNiMo17-12-2 | S31600 |

## DESCRIPTION

Cr-Ni-Mo austenitic stainless steels contain Mo to increase resistance to pitting corrosion.

## CHEMICAL COMPOSITION

| C | Si | Mn | P | S | Cr | Ni | Mo | N |
|---|---|---|---|---|---|---|---|---|
| ≤0.07 | ≤0.75 | ≤2.00 | ≤0.045 | ≤0.015 | 16.50-18.00 | 10.00-13.00 | 2.00-2.50 | ≤0.10 |

## 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

| | |
|---|---|
| **$Rp_{0.2}$** | >240 N/mm$^2$ |
| **Rm** | 540 - 680 N/mm$^2$ |
| **Elongation** | > 45% |
| **Hardness** | < 200 HB |

## PHYSICAL PROPERTIES

At 20$^0$C it has a density of 8 kg/dm$^3$ and a specific heat of 500 J/kg·K

| | 20$^0$C | 100$^0$C | 200$^0$C | 300$^0$C | 400$^0$C | 500$^0$C |
|---|---|---|---|---|---|---|
| **Modulus of elasticity (GPa)** | 200 | 194 | 186 | 179 | 172 | 165 |
| **Mean coefficient of linear expansion between 20$^0$C ($10^{-6}$ x $K^{-1}$) and** | - | 16 | 16.5 | 17 | 17.5 | 18 |
| **Thermal conductivity (W/m·K)** | 15 | 16 | 17.5 | 19 | 21 | 22.5 |
| **Electrical resistivity (Ω·mm$^2$/m)** | 0.75 | 0.82 | 0.95 | 1.05 | 1.12 | 1.19 |

## WELDING

The recommended consumable electrodes are:

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

## PITTING AND CREVICE CORROSION

ACX 250 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 250 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$^0$C.
- 50% acetic acid at boiling temperature.
- 100% formic acid at 60$^0$C.
- Beer.
- Milk.
- 100% oleic acid at 180$^0$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$^0$C.

## INTERGRANULAR CORROSION

ACX 250 should be avoided in applications involving continuous work between 450 and 850$^0$C 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 920$^0$C. For intermittent thermal cycles, the maximum service temperature is 870$^0$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 250 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 250 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 250 complies with the European Directives:

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