



AISI	Material No.	EN	UNS	Austenitic Stainless Steel
316	1.4401	X5CrNiMo17-12-2	S31600	
316L	1.4404	X2CrNiMo17-12-2	S31603	

Steel Properties

AISI 316 / 316L, are molybdenum-alloyed austenitic stainless steel grades that provide higher overall corrosion resistance than AISI 304/304L. They are especially valued for their improved resistance to pitting and crevice corrosion in chloride-bearing environments. Their austenitic structure also provides good formability, weldability, and balanced mechanical performance across a broad temperature range. With its lower carbon content, AISI 316L is particularly suitable for welded constructions where reducing the risk of intergranular corrosion is important. This combination of corrosion resistance and ease of fabrication has made the 316/316L family one of the most widely used stainless steel groups in industry.

Chemical Composition

Grade	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	N %	Fe %
AISI 316/ S31600*	≤0,080	≤0,75	≤2,00	≤0,045	≤0,030	16,00–18,00	10,00–14,00	2,00–3,00	≤0,10	Bal.
AISI 316L/ S31603*	≤0,030	≤0,75	≤2,00	≤0,045	≤0,030	16,00–18,00	10,00–14,00	2,00–3,00	≤0,10	Bal.

* ASTM A240 chemical composition limits

Mechanical Properties

Grade	Condition	Rp0,2 MPa	Rm MPa	Elong. %	Hardness HRB	Density g/cm ³
1.4401 / AISI 316*	Annealed	≥ 205	≥ 515	≥ 40	≤ 95	8,00
1.4404 / AISI 316L*	Annealed	≥ 170	≥ 485	≥ 40	≤ 95	8,00

*ASTM A240/A240M minimum values at room temperature for annealed plate, sheet and strip

Application Areas

Sector	Products
Chemical & Petrochemical	Process and storage tanks, Pressure vessels / reactors, Piping systems
Food & Beverage	Process / mixing tanks, Hygienic piping systems, Heat exchangers
Pharmaceutical & Biotechnology	Process tanks, Hygienic process piping, Purified water / WFI and clean steam systems
Oil & Gas	Process piping, Flanges, Valves
Pulp & Paper	Process tanks, Piping systems, Heat exchangers
Water & Wastewater Treatment	Treatment tanks, Piping, Filtration and process equipment
Textile	Dyeing tanks, Process vessels, Chemical transfer piping
Medical Equipment	Surgical instruments and equipment components, Sterilization equipment, Medical device components



Description

AISI 316/316L, cannot be hardened by heat treatment, but cold working can significantly increase their strength. Their austenitic structure also provides high toughness at cryogenic temperatures. Because they work-harden during machining, sharp tools, suitable cutting parameters and steady feed are important. In oxidizing air, approximate limits of **920°C for continuous service** and **870°C for intermittent service** may be used, but these should not be treated as design temperatures for corrosive process environments. In chloride-containing environments under tensile stress, **stress-corrosion cracking may become a concern above about 60°C**.

Specification

AISI 316, 1.4401, UNS S31600, X5CrNiMo17-12-2, SUS316, SS316
AISI 316L, 1.4404, UNS S31603, X2CrNiMo17-12-2, SUS316L, SS316L

Standards

Product Form	ASTM Spec.	AISI 316 AMS	AISI 316L AMS
Bar / Round Bar	ASTM A276, ASTM A479	AMS 5648	AMS 5653
Plate	ASTM A240	AMS 5524	AMS 5507
Sheet	ASTM A240	AMS 5524	AMS 5507
Tube & Pipe	ASTM A269, ASTM A312, ASTM A213	AMS 5648*	AMS 5653*

** AMS 5648 and AMS 5653 cover mechanical tubing, not process / pressure pipe. ASTM A312 is more appropriate for process pipe; ASTM A269 covers general-service tubing and ASTM A213 covers boiler, superheater and heat-exchanger tubing.*

Alternative Grades

Grade to Consider	Why Consider It?
AISI 316Ti / 1.4571	Titanium-stabilized 316; worth considering for elevated temperatures and where resistance to intergranular corrosion after welding is important.
AISI 317	Higher molybdenum than 316 provides better resistance in chloride-bearing and more corrosive environments.
904L / 1.4539	Higher nickel and molybdenum provide greater resistance than 316/316L in strong acidic and aggressive chemical environments.