



Grade	Code	UNS	Austenitic Stainless Steel
AISI 317	SUS 317	S31700	

Steel Properties

AISI 317, with its higher molybdenum content, is an austenitic Cr-Ni-Mo stainless steel offering improved resistance to pitting, crevice corrosion, and many aggressive chemical environments compared with the AISI 316 family. Its approximately 3-4% molybdenum content strengthens localized corrosion resistance, while the chromium and nickel levels provide a balanced combination of general corrosion resistance, ductility, and formability. **AISI 317** is particularly suited to chemical and petrochemical processing, pulp and paper equipment, heat-transfer equipment, and flue-gas treatment systems.

Chemical Analysis (AISI 317)

C %	Mn %	Si %	P %	S %	Cr %	Ni %	Mo %	N %	Fe %
≤0.08	≤2.00	≤0.75	≤0.045	≤0.030	18.00– 20.00	11.00– 15.00	3.00– 4.00	≤0.10	Balance

Mechanical Properties (Solution Annealed)

Form	Rp0.2 [MPa]	Rm [MPa]	Elongation [%]	Hardness [HB]	Density [g/cm ³]
Plate	≥205	≥515	≥35	≤217	8.03
Sheet	≥205	≥515	≥35	≤217	8.03

Application Areas

Sector	Typical Products
Chemical & Process Industries	Chemical storage tanks, process tanks, reactor vessels
Petrochemical & Refining	Process vessels, heat exchangers, column and tower internals
Pulp & Paper	Digesters, process tanks, bleaching equipment
Energy & Flue-Gas Treatment	Wet scrubbers, flue-gas desulfurization equipment, absorber tanks
Heat Transfer / Industrial Process	Heat exchangers, condensers, evaporators
Chemical Transportation	Chemical tanker tanks, cargo tanks, corrosive-liquid storage tanks
Industrial Water / Wastewater	Process tanks, scrubbers, chemical dosing/storage tanks; service-specific selection



Additional Information

AISI 317 does not eliminate the susceptibility of conventional austenitic stainless steels to chloride-induced stress corrosion cracking (SCC). Particular care is required when chlorides, tensile stress, and temperatures above approximately 49 °C occur together. Prolonged exposure within the 427-816 °C range can promote chromium-carbide precipitation and sensitization; for welded sections thicker than about 11 mm, post-weld solution annealing may be required depending on the corrosive service. In air, the alloy can show good oxidation resistance and relatively low scaling up to approximately 871-899 °C; these temperatures should not be interpreted as recommended continuous-service or design temperatures. Solution annealing is typically carried out at approximately 1040-1175 °C followed by sufficiently rapid cooling appropriate to the section thickness.

Designation

AISI 317, UNS S31700, ASTM Type 317, JIS SUS 317

Standards

Form	ASTM / AMS
Plate	ASTM A240/A240M (S31700); AMS —
Sheet	ASTM A240/A240M (S31700); AMS —

Alternative Grades

- AISI 316/316L** — the closest and most readily available lower-alloy alternative. Its molybdenum level is lower, so corrosion resistance is somewhat below that of 317, but commercial availability is generally much better.
- AISI 904L** — a higher-alloy upgrade for more aggressive chemical environments. Its Ni, Mo, and Cu contents are significantly higher.
- 254 SMO / F44 / 1.4547** — a strong upgrade for chloride-rich service where pitting and crevice corrosion are critical, offering performance above AISI 317.