

TECHNICAL DATA SHEET

Stainless Steel Grades: AISI 303 / 304 / 316
 (EN 10088-1 – Austenitic Stainless Steels)

General Description

AISI 303, 304, and 316 are non-magnetic, austenitic stainless steels offering excellent corrosion resistance, good mechanical properties, and high formability. They are widely used in various industrial sectors thanks to their oxidation resistance, hygienic surface quality, and fabrication versatility.

- AISI 303: Sulfur-added grade for improved machinability.
- AISI 304: Standard grade with excellent corrosion resistance and weldability.
- AISI 316: Molybdenum-enhanced for superior resistance to chlorides and harsh environments.

CHEMICAL COMPOSITION (% by weight)

Grade	C (max)	Si (max)	Mn (max)	P (max)	S (max)	Cr (%)	Ni (%)	Mo (%)
303	0.10	1.00	2.00	0.05	0.15	17.0–19.0	8.0–10.0	-
304	0.07	1.00	2.00	0.045	0.015	17.5–19.5	8.0–10.5	-
316	0.07	1.00	2.00	0.045	0.015	16.5–18.5	10.0–13.0	2.0–2.5

MECHANICAL PROPERTIES (annealed condition – typical)

Grade	Tensile Strength (MPa)	Yield Strength Rp0.2 (MPa)	Elongation A5 (%)
303	500–750	≥ 190	≥ 35
304	520–720	≥ 210	≥ 45
316	530–750	≥ 220	≥ 45

Physical Properties

- **Density:** ~7.9 g/cm³
- **Modulus of Elasticity:** ~200 GPa
- **Thermal Conductivity:**
 - ~15 W/m·K (303 / 304)
 - ~16 W/m·K (316)
- **Electrical Resistivity:** ~0.73 μΩ·m

Corrosion Resistance

All three grades offer excellent corrosion resistance in typical atmospheric and chemical environments.

- **303** is less resistant due to sulfur content but easier to machine.
- **304** offers balanced corrosion resistance and processability.
- **316** is ideal in marine or chloride-exposed environments due to its molybdenum content.

Typical Applications

- **303:** Precision machined parts, fasteners, fittings
- **304:** Kitchen equipment, piping, tanks, architectural elements
- **316:** Marine hardware, chemical processing, food & pharma equipment, coastal constructions

Standards and Equivalents

- **EN:** 1.4305 (303), 1.4301 (304), 1.4401 / 1.4404 (316)
- **AISI/SAE:** 303 / 304 / 316
- **ISO:** X8CrNiS18-9 (303), X5CrNi18-10 (304), X5CrNiMo17-12-2 (316)
- **ASTM:** A276, A240, A312 (depending on product form)