

Duplex and Super Duplex Stainless Steel Valves: F51, F53, F55

Duplex and super duplex stainless steels contain both ferritic and austenitic phases. Compared with 316 stainless steel, they offer much higher resistance to pitting and stress corrosion cracking and about twice the yield strength, which makes them well suited to seawater, brine and chloride-bearing process lines.

Technical specifications

Forged materials	A182 F51 (2205), F53 (2507), F55
Cast materials	ASTM A995 4A, 5A, 6A
Valve types	Ball, gate, globe, check, butterfly
Quality control	100% PMI, ferrite measurement, ASTM G48, EN 10204 3.1 / 3.2
Applications	Seawater, brine, chloride process, offshore, desalination

Key features

- High resistance to chloride corrosion
- High strength, thinner walls
- Quality verified by ferrite and corrosion testing

Alloy and material program

Body, bonnet and internal parts can be produced as castings or forgings in the alloys below. Material is selected by fluid, concentration, temperature and chloride content; for alloy materials, 100% PMI and EN 10204 3.1 certificates are standard.

Alloy group	Cast (ASTM)	Forged / bar (UNS)	Typical service
Duplex stainless	A995 4A (CD3MN)	A182 F51 (S31803), F60 (S32205)	Chloride-bearing water, sour service; seawater depending on conditions
Super duplex	A995 5A (CE3MN), 6A (CD3MWCuN)	A182 F53 (S32750), F55 (S32760)	Seawater, high chloride, pressurized lines
Super austenitic	A351 CK3MCuN (6Mo)	S31254 (6Mo), N08904 (904L)	Seawater, chloride-bearing process fluids
Alloy 20	A351 CN7M	B462 N08020	Sulfuric acid
Ni-Cu (Monel 400 / K-500)	A494 M35-1	N04400, N05500	Hydrofluoric acid, seawater, brine solutions
Ni-Cr-Mo (Inconel 625)	A494 CW6MC	N06625	High temperature, chloride and acid mixtures
Ni-Mo-Cr (Hastelloy C-276 / C-22)	A494 CW12MW, CX2MW	N10276, N06022	Wet chlorine, hypochlorite, mixed acids

Alloy group	Cast (ASTM)	Forged / bar (UNS)	Typical service
Ni-Fe-Cr (Incoloy 800H / 825)	n/a	N08810, N08825	High temperature, phosphoric and sulfuric acid
Pure nickel	n/a	Ni 200 / 201 (N02200 / N02201)	Caustic (NaOH) service
Titanium	B367 (Gr. C-2, C-3, C-5, C-12)	Gr. 2, 3, 5, 7, 12 (B381 / B348)	Seawater, chlorinated media, oxidizing acids
Zirconium	n/a	Zr 702, 705	Hot acids (e.g. acetic and formic acid processes)
Nickel-aluminum bronze	B148 C95800	n/a	Seawater, shipboard systems