

Nickel Alloy Valves: Inconel, Monel and Hastelloy

Nickel alloy valves are built for services that stainless and duplex steels cannot withstand, such as strong acids, chlorine, hydrofluoric acid, caustic and high-temperature oxidation. Alloy selection depends directly on the chemistry, concentration and temperature of the fluid.

Technical specifications

Alloys	Alloy 600, 625; Alloy 400, K500; Alloy C276; Nickel 200
Valve types	Ball, gate, globe, check, knife gate, triple offset butterfly
Construction	Full alloy body or alloy wetted parts only (trim/overlay)
Quality control	100% PMI, EN 10204 3.1 / 3.2, non-destructive examination

Key features

- Alloy selection specific to acid, chlorine and caustic services
- Full alloy body or alloy trim option
- 100% alloy verification by PMI

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
Ni-Fe-Cr (Incoloy 800H / 825)	n/a	N08810, N08825	High temperature, phosphoric and sulfuric acid

Alloy group	Cast (ASTM)	Forged / bar (UNS)	Typical service
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