

Cast components for the pump & valve industries

Steloy Castings has supplied as-cast and machined components to the pump and valve industry since 1984. Its castings carry European Pressure Equipment Directive (PED) accreditation, ratified by TÜV Rheinland, to assist OEMs producing pressurised systems to CE requirements.

Specialising in stainless steels, nickel-based corrosion resistant alloys, carbon steels and low alloy steels, Steloy produces castings for applications where severe corrosion, high pressures and high or cryogenic temperatures are prevalent. Typical applications are the petrochemical (exploration and refining), mining and food & beverage industries as well as desalination, fertiliser and chemical plants. Customers include Sulzer Pumps, KSB, Weir, Spirax Sarco, AZ Armaturen, Flowserve, Allis Chalmers (Goulds), Tomoe, Samco and Gunric. Castings are produced at the three Steloy plants, all of which have access to centralised solidification analyses and modelling (MagmaSoft) and CNC patternmaking.



Castings and examples of typical applications

CASTINGS	MATERIAL	EXAMPLE OF APPLICATION
Pump Casings	ASTM A890 4A SEW 410 1.4538 ASTM A352 CA6NM ASTM A890 6A ASTM A352 CA6NM ASTM A744 CK3MCuN	Salt water pump station, Hong Kong Fertiliser plant, Phalaborwa RSA Water purification pump station, Sudan Zinc extraction concentrate, Namibia Water treatment pump station, Egypt PMG extraction concentrate, Rustenburg RSA
Valve Bodies	ASTM A217 WC9 ASTM A351 CF8M ASTM A890 4A EN 10213-4 1.4409	Power station, UK (80mm #2500 angle globe) Oil refinery, Middle East (cryogenic) North Sea (16"x10" #1500 in-line globe) Chemical plant, Germany (plug)
Impellers	ASTM A351 CF8M ASTM A494 M-35-1 ASTM A352 CA6NM	Chemical plant, Sasol RSA. Fertiliser production, Phalaborwa RSA Water treatment pump station, Rand Water Board RSA
Wear Rings	ASTM A217 CA15	Chemical plant, Sasol RSA
Pump Bowls	ASTM A890 6A EN 10213-2 1.0619	Desalination plant, Middle East Steel mill cooling station, Germany
Balls	ASTM A351 CF8M	Chemical plant, Sasol RSA
Butterflies	ASTM A351 CF8M	Chemical plant, Sasol RSA.
Bell Mouths	ASTM A890 4A	Salt water pump station, Hong Kong
Stage Casings	ASTM A890 6A	Desalination plant, Middle East

ALLOYS AND SPECIFICATIONS

Steloy's castings are produced in accordance with the relevant ASTM, DIN EN and SEW specifications and conform to applicable NACE specifications. The stainless steel grades – which include the traditional ferritic, martensitic and austenitic grades as well as super austenitic, duplex and super duplex cast alloys – and the most popular nickel-based alloys and carbon and low alloy steels are indicated in the accompanying table.



ALLOY CLASSIFICATION	COMMON DESIGNATION	SPECIFICATION	MAJOR APPLICATIONS
Austenitic	316	ASTM A351 CF8M EN 10213-4 1.4408	Chemical, marine, mining & chloride containing corrosive media.
	316L	ASTM A744 CF3M ASTM A351 CF3M EN 10213-4 1.4409	Similar to CF8M but lower carbon – for cases where PWHT is impractical.
Super Austenitic	Alloy20	ASTM A743 CN7M ASTM A351 CN7M	Chemical, marine, mining, dilute- and hot chloride salts & handling of bleaching chemicals.
	904L	SEW 410 1.4538	Handling sulphuric & phosphoric acids. SCC resistant.
	254 SMO	ASTM A744 CK3MCuN	Resistance to pitting & crevice corrosion. Halide containing environments, sea water & pulp bleaching.
Duplex and Super Duplex	2205	ASTM A890 gr 4A EN 10283 1.4470	High resistance to SCC, especially in chloride containing media like sea water.
	2507	ASTM A890 gr 6A EN 10283 1.4417	Exceptional SCC & pitting resistance. Desalination plants & chloride containing media.
Martensitic	CA15	ASTM A487 CA15 ASTM A217 CA15	Pressure applications at sub-zero temperatures. Resistant to atmospheric corrosion, staining by organic acids.
	CA40	ASTM A743 CA40	Resistant to atmospheric corrosion, organic acids. Food processing, oil refining, pulp & paper.
	17-4PH	ASTM A747 CB7Cu-1 EN 10283 1.4525	Exceptional combination of corrosion resistance & strength. Precipitation hardened after final machining.
	13Cr4Ni	ASTM A487 CA6NM ASTM A352 CA6NM EN 10213-2 1.4713	High pressure, low temperature. Exceptionally corrosion resistant in marine environments.
Carbon and low alloy steels	WCB	ASTM A216 WCB EN 10213-2 1.0619	Applications at ambient temperatures involving welding during fabrication.
	LCB	ASTM A352 LCB EN 10213-2 1.1131	Pressure applications at sub-zero temperatures.
	1¼Cr½Mo	ASTM A217 WC6 EN 10213-2 1.7357	High-temperature pressure applications.
Nickel-based alloys	Nickel 200	ASTM A494 gr CZ100 DIN 17 730 2.4170.01	High resistance to caustics, halides & halide salts. Used in food processing due to low risk of contamination.
	Monel 400	ASTM A494 M-35-1	Resistant to sea water, brackish water, chlorinated solvents, acids & most alkalis.
	Hastelloy C	ASTM A494 CW12MW	Excellent resistance to pitting, SCC, acids, sea water & brine.
	Hastelloy B	ASTM A494 N12MV	Handling of hydrochloric acid in range of concentrations & temperatures.

QUALITY ASSURANCE AND CERTIFICATION

Steloy Castings is ISO 9001:2008 listed (TÜV Rheinland and SANAS – RvA). Quality Assurance, Control and Certification are conducted to relevant design specifications such as ASME, API, ANSI, DIN EN, and generally include combinations of the following:

QA ASPECT	ACCORDING TO
General technical conditions	DIN EN 1559-1 & DIN EN 1559-2
Chemical composition	Applicable specification
Mechanical properties	ASTM A370 / EN 10002-1 / EN 10045-1
Surface finish	MSS SP55 / ASTM A802 / EN 1370 / EN 12454
Dimensional tolerances	ISO 8062
Liquid penetrant testing	ASTM E165 / EN 571-1 / EN 1371-1
Radiographic testing	ASTM E94 / ASTM E186 / ASTM E446 / ASTM E280 EN 444 / EN 462-1 / prEN 12681:1996
Magnetic particle testing	ASTM E709 / prEN ISO 9934-1:2000 / EN 1369
Ultrasonic testing	ASTM A609 / EN 583-1 / prEN 12680-1:1996
Specific NACE requirements	ref. NACE MR-0175
Pressure testing	ASTM E1003
PMI	General framework of ASTM E1476

