

Recommended Standard Specifications for Valve Materials Pressure-Containing Castings

MATERIAL CODE AND DESCRIPTION			MINIMUM PHYSICAL PROPERTIES				MODULUS OF ELASTICITY AT 70°F (PSI x 10 ⁶)	APPROXIMATE BRINELL HARDNESS
			Tensile (Psi)	Yield Point (Psi)	Elong. in 2" (%)	Reduction of Area (%)		
1	Carbon Steel	ASTM A 216 Grade WCB	70,000	36,000	22	35	27.9	137-187
2	Carbon Steel	ASTM A 352 Grade LCB	65,000	35,000	24	35	27.9	137-187
3	Chrome Moly Steel	ASTM A217 Grade C5	90,000	60,000	18	35	27.4	241 Max.
4	Carbon Moly Steel	ASTM A217 Grade WC1	65,000	35,000	24	35	29.9	215 Max.
5	Chrome Moly Steel	ASTM A217 Grade WC6	70,000	40,000	20	35	29.9	215 Max.
6	Chrome Moly Steel	ASTM A217 Grade WC9	70,000	40,000	20	35	29.9	241 Max.
7	3 1/2% Nickel Steel	ASTM A352 Grade LC3	65,000	40,000	24	35	27.9	137
8	Chrome Moly Steel	ASTM A217 Grade C12	90,000	60,000	18	35	27.4	180-240
9	Type 304 Stainless Steel	ASTM A351 Grade CF-8	65,000	28,000	35	---	28.0	140
10	Type 316 Stainless Steel	ASTM A351 Grade CF-8M	70,000	30,000	30	---	28.3	156-170
11	Cast Iron	ASTM A126 Class B	31,000	---	---	---	---	160-220
12	Cast Iron	ASTM A126 Class C	41,000	---	---	---	---	160-220
13	Ductile Iron	ASTM A395 Type 60-45-15	60,000	45,000	15	---	23-26	143-207
14	Ductile Ni-Resist Iron ⁽¹⁾	ASTM A439 Type D-2B	58,000	30,000	7	---	---	148-211
15	Standard Valve Bronze	ASTM B62	30,000	14,000	20	17	13.5	55-65*
16	Tin Bronze	ASTM B143 Alloy 1A	40,000	18,000	20	20	15	75-85*
17	Manganese Bronze	ASTM B147 Alloy 8A	65,000	25,000	20	20	15.4	98*
18	Aluminum Bronze	ASTM B148 Alloy 9C	75,000	30,000	12 min.	12	17	150
19	Mondel Alloy 411	(Weldable Grade)	65,000	32,500	25	---	23	120-170
20	Nickel-Moly Alloy "B"	ASTM A494 (Hastelloy "B")	72,000	46,000	6	---	---	---
21	Nickel-Moly-Chrome Alloy "C"	ASTM A494 (Hastelloy "C")	72,000	46,000	4	---	---	---
22	Cobalt-base Alloy No. 6	Stellite No. 6	121,000	64,000	1-2	---	30.4	---
23	Aluminum Bar	ASTM B211 Alloy 20911-T3	44,000	36,000	15	---	10.2	95
24	Yellow Brass Bar	ASTM B16-1/2 Hard	45,000	15,000	7	50	14	---
25	Naval Brass Bar	ASTM B21 Alloy 464	60,000	27,000	22	55	---	---
26	Leaded Steel Bar	AISI 12L14	79,000	71,000	16	52	---	163
27	Carbon Steel Bar	ASTM A108 Grade 1018	69,000	48,000	38	62	---	143
28	AISI 4140 Chrome-Moly Steel	(Suitable for ASTM A193 Grade B7 bolt material)	135,000	115,000	22	63	29.9	255
29	Type 302 Stainless Steel	ASTM A276 Type 302	85,000	35,000	60	70	28	150
30	Type 304 Stainless Steel	ASTM A276 Type 304	85,000	35,000	60	70	---	149
31	Type 316 Stainless Steel	ASTM A276 Type 316	80,000	30,000	60	70	28	149
32	Type 316L Stainless Steel	ASTM A276 Type 316L	81,000	34,000	55	---	---	146
33	Type 410 Stainless Steel	ASTM A276 Type 410	75,000	40,000	35	70	29	155
34	Type 17-4PH Stainless Steel	ASTM A461 Grade 630	135,000	105,000	16	50	29	275-345
35	Nickel-Copper Alloy Bar	Alloy K500 (K Monel)	100,000	70,000	35	---	26	175-260
36	Nickel-Moly Alloy "B" Bar	ASTM B335 (Hastelloy "B")	100,000	46,000	30	---	---	---
37	Nickel-Moly Alloy "C" Bar	ASTM B336 (Hastelloy "C")	100,000	46,000	20	---	---	---

1. 500 kg load.