

STEEL GATE VALVES—FLANGED AND BUTT-WELDING ENDS, BOLTED BONNETS

Table 8—Nominal Seating Surface, Stem and Backseat Bushing or Weld-deposit Materials and Hardness

Trim Number	Nominal Trim	Seat Surface Hardness (HB) Minimum ^a	Seat Surface Material Type ^b	Seat Surface Typical Specifications Grade				Stem/Bushing		Backseat Bushing Hardness (HB)
				Cast	Forged	Welded ^m	Material Type ^b	Typical Specifications Type	Stem Hardness (HB)	
1	F6	Note ^c	13Cr	ASTM A217(CA15)	ASTM A105 (F6a)	AWS A5.9 ER410	13Cr	ASTM A276-T410 or T420	200 min 275 max	250 min.
2	304	Note ^d	18Cr-8Ni	ASTM A351 (CF8)	ASTM A182 (F304)	AWS A5.9 ER308	18Cr-8Ni	ASTM A276-T304	Note ^d	Note ^d
3	F310	Note ^d	25Cr-20Ni	NA	ASTM A182 (F310)	AWS A5.9 ER310	25Cr-20Ni	ASTM A276-T310	Note ^d	Note ^d
4	Hard F6	750 ^e	Hard 13Cr	NA	Note ^f	NA	13Cr	ASTM A276-T410 or T420	200 min 275 max	250 min.
5	Hardfaced	350 ^e	Co-Cr-A ^g	NA	NA	AWS A5.13 E or R CoCrA	13Cr	ASTM A276-T410 or T420	200 min 275 max	250 min.
5A	Hardfaced	350 ^e	Ni-Cr	NA	NA	Note ^h	13Cr	ASTM A276-T410 or T420	200 min 275 max	250 min.
6	F6 and Cu-Ni	250 ⁱ	13Cr and Cu-Ni	ASTM A 217 (CA 15)	ASTM A182 (F6a)	AWS A5.9 ER410	13Cr	ASTM A276-T410 or T420	200 min 275 max	250 min.
7	F6 and Hard F6	175 ^j	13Cr and Hard 13Cr	NA	Note ^k	NA	NA	NA	NA	NA
8	F6 and Hardfaced	250 ⁱ	13Cr and Co-Cr-A ^g	ASTM A 217 (CA 15)	ASTM A182 (F6a)	AWS A5.9 ER410	13Cr	ASTM A276-T410 or T420	200 min 275 max	250 min.
8A	F6 and Hardfaced	350 ⁱ	13Cr and Ni-Cr	NA	ASTM A182 (F6a)	AWS A5.13 E or R CoCrA	13Cr	ASTM A276-T410 or T420	200 min 275 max	250 min.
9	Monel	350 ⁱ	Ni-Cu Alloy	NA	NA	Note ^h	NA	NA	NA	NA
10	316	Note ^d	18Cr-8Ni	ASTM A351 (CF8M)	ASTM A182 (F316)	AWS A5.9 ER316	Ni-Cu Alloy	MFG Standard	Note ^d	Note ^d
11	Monel and Hardfaced	Note ^d	Ni-Cu Alloy and Trim 5 or 5A	NA	MFG Standard	NA	18Cr-8Ni-Mo	ASTM A276-T316	Note ^d	Note ^d
12	316 and Hardfaced	350 ⁱ	18Cr-8Ni-Mo	ASTM A351 (CF8M)	ASTM A182 (F316)	See Trim 5 or 5A	Ni-Cu Alloy	MFG Standard	Note ^d	Note ^d
13	Alloy 20	350 ⁱ	Trim 5 or 5A	ASTM A351 (CF8M)	ASTM A182 (F316)	AWS A5.9 ER316	18Cr-8Ni-Mo	ASTM A276-T316	Note ^d	Note ^d
14	Alloy 20 and Hardfaced	Note ^d	19Cr-29Ni and Trim 5 or 5A	ASTM A351 (CN7M)	ASTM B473	See Trim 5 or 5A	NA	NA	Note ^d	Note ^d
15	Hardfaced	350 ⁱ	Co-Cr-A ^g	ASTM A351 (CN7M)	ASTM B473	AWS A5.9 ER320	19Cr-29Ni	ASTM B473	Note ^d	Note ^d
16	Hardfaced	350 ^e	Co-Cr-A ^g	NA	NA	See Trim 5 or 5A	NA	NA	Note ^d	Note ^d
17	Hardfaced	350 ^e	Co-Cr-A ^g	NA	NA	AWS A5.13 E or R CoCrA	18Cr-8Ni	ASTM A276-T304	Note ^d	Note ⁿ
18	Hardfaced	350 ^e	Co-Cr-A ^g	NA	NA	AWS A5.13 E or R CoCrA	18Cr-8Ni-Mo	ASTM A276-T316	Note ^d	Note ⁿ
NOTE	Cr = Chromium; Ni = Nickel; Co = Cobalt; Cu = Copper; NA = Not Applicable.						18Cr-10Ni-Cb	ASTM A276-T347	Note ^d	Note ⁿ

^a HB (formerly BHN) is the symbol for the Brinell hardness per ASTM E10.

^b Free machining grades of 13Cr are prohibited.

^c Body and gate seat surfaces should be 250 HB minimum with a 50 HB minimum differential between the body and gate seat surfaces.

^d Manufacturer's standard hardness.

^e Differential hardness between the body and gate seat surfaces is not required.

^f Case hardness by nitriding to a thickness of 0.13 mm (0.005 in.) minimum.

^g This classification includes such trademark materials as Stellite 6™, Stoddy 6™, and Wallex 6™.

^h Manufacturer's standard hardfacing with a maximum iron content of 25%.

ⁱ Hardness differential between the body and gate seat surfaces shall be the manufacturer's standard.

^j Not used.

^k Manufacturer's standard with 30 Ni minimum.

^l Not used.

^m Typical backseat weld deposit material.

ⁿ Per manufacturer's standard if not hardfaced, 250 HB minimum if hardfaced.

^o This term is used as an example only, and does not constitute an endorsement of this product by API.