

## TYPICAL MATERIALS CHART

Body & Bonnet Material	Forgings	Casting	Chemical Comp	Temperature Range
Carbon Steel	A 105	A216 WCB		-20 to 800 F
Carbon Steel (Low Temperature)	A350 LF 2  LF 3	A352 LCB LC2 LC3	2 1/2Ni  3 1/2Ni	-50 to 605 F -100 to 605 F -150 to 650 F
Carbon Steel (High Temperature)	A182 F1  F 11 F22 F5a	A217 WC1 WC4 WC6 WC9 C5	C-1/2W 1/2Cr-1/2W 1 1/4Cr-1/2Mo 2 1/4Cr-1Mo 5Cr-1/2Mo	-20 to 850 F -20 to 1000 F -20 to 1100 F -20 to 1100 F -20 to 1200 F
Stainless Steel	A182 F304 F316 F316L	A351 CF 8 CF8M CF3M	18Cr-8Ni 16Cr-12Ni-2Mo 16Cr-12Ni-2Mo	-425 to 1500 F -325 to 1500 F -325 to 850 F
Nickel Alloy	Alloy 20Cb Hastelloy C276 Inconel 600 Monel 400		34Ni--20Cr 55Ni-16Cr-16Mo 76Ni-16Cr-8Fe 67Ni-32Cu	-325 to 800 F -325 to 1250 F -325 to 1200 F -325 to 500 F

Trim	Nominal Trim	Material Type	Typical Specification
Seating Surface	F6  Hardfaced	13Cr  CoCr-A Ni-Cr	ASTM A217 CA115 (Cast) ASTM A182 F6a (Forged) Stellite 6 Colmonoy S46
	Otr.	13Cr 18Cr 8Ni	ASTM A276 Type 410 ASTM A276 Type 316

Bolt & Nut	Typical Specification	Chemical Composition
Bolt	ASTM A193 B7 B7M B 8 B16 A320 L7	Cr-Mo Cr-Mo with HB 235 max.  18Cr-8Ni (Type 304 SST) Cr-Mo-V (for high temperature) Cr-Mo (for low temperature)
Nut	ASTM A194 2H 8 8M	Carbon Steel 18Cr-8Ni (Type 304 SST) 18CR-10Ni-2Mo (Type 316 SST)

	Chemical Composition	Tensile	Yield	Hardness
Inconel 718	53Ni-19Cr-19Fe-3Mo-5Cb	203 ksi	181 ksi	HB 393
625	61Ni-22Cr-3Fe-9Mo-4Cb	135 ksi	75 ksi	HB 180
600	76Ni-16Cr-8Fe	90 ksi	40 ksi	HB 150
Hastelloy C276	55Ni-16Mo-15Cr-5Fe-4W-2Co	115 ksi	52 ksi	HB 187
Type 321 SS	18Cr-11Ni-04Ti	85 ksi	35 ksi	HB 150
316L SS	18Cr-12Ni-2Mo	82 ksi	34 ksi	HB 156