

**Material Grades and Standards**

Pipes, BW fittings and Forged Fittings

According ASTM and ASME standards



Piping	Material																
	Carbon steel			Alloy steel			Stainless steel			(Super)Duplex			Incolloy/Inconel				
	ASTM/ ASME Standard	Material Grade	Application	ASTM/ ASME Standard	Material Grade	Application	ASTM/ ASME Standard	Material Grade	Application	ASTM/ ASME Standard	Material Grade	Application	ASTM/ ASME Standard	Material Grade	Application		
Seamless pipes	A/SA 53	Grade A, B	Ambient/low-temperature (A333/AC71/A420/A350), Moderate Temperature (A672) and High Temperature (A53/A106/A691/A234/A105) service	A/SA 335	P1	High-Temperature and High-Pressure service	A/SA 312	TP304 (L/H)	High temperature and general corrosive service	A/SA 790	S31803	General corrosive service, resistance to stress corrosion cracking	B/BS 407	UNS N08800 (800)	Service temperatures up to, including and above 1100°F (593°C), resistance to creep and rupture, controlled grain size for optimum properties		
	A/SA 106	Grade A, B, C			P11					TP310 (S/H)			S32750			B/BS 407	UNS N08810 (800H)
	A/SA 333	Grade 6 (Grade 1, 3, etc)			P22					TP316 (L/H/Ti)			S32760				UNS N08811 (800HT)
	API 5L	X52, X60, X65			P5					TP317 (L)						B/BS 167	N06600 (600)
				P9			TP321 (H)				B/BS 444	N06625 (625)					
				P91			TP347 (H)				B/BS 423	N08825 (825)					
Welded pipes	A/SA 53	Grade A, B		A/SA 691	1CR		A/SA 358, A/SA 312	WX304 (L/H)		A/SA 928	S31803		A/SA 358, B/BS 514	N0880 (800)			
	A/SA 333	Grade 6 (Grade 1, 3, etc)			1 1/4 CR			WX310 (S/H)			S32750			N08810 (800H)			
	A/SA 671	CB/CC60, CB/CC65, CB/CC70			21/4 CR			WX316 (L/H/Ti)			S32760			N08811 (800HT)			
	A/SA 672	B/C60, B/C65, B/C70			5CR			WX317 (L)					B/BS 517	N06600 (600)			
	A/SA 691	CM-65, CM-70, CM-75			9CR			WX321 (H)					B/BS 507	N06625 (625)			
					91			WX347 (H)						N08825 (825)			
Seamless BW fittings	A/SA 234	WPB		A/SA 234	WP1		A/SA 403	WPS304 (L/H)		A/SA 815	WPS31803		B/BS 366	N0880 (800)			
		WPC			WP11			WPS310 (S/H)			WPS32750			N08810 (800H)			
	A/SA 420	WPL6 (WPL9, 3, 8)			WP22			WPS316 (L/H/Ti)			WPS32760			N08811 (800HT)			
	A/SA 860	WPHY52, 60, 65			WP5			WPS317 (L)						N06600 (600)			
					WP9			WPS321 (H)						N06625 (625)			
					WP91			WPS347 (H)						N08825 (825)			
Welded BW fittings	A/SA 234	WPB		A/SA 234	WP1		A/SA 403	WP-W/WX/WU304 (L/H)		A/SA 815	WP-W/WX/WU31803		B/BS 366	N0880 (800)			
		WPC			WP11			WP-W/WX/WU310 (S/H)			WP-W/WX/WU32750			N08810 (800H)			
	A/SA 420	WPL6 (WPL9, 3, 8)			WP22			WP-W/WX/WU316 (L/H/Ti)			WP-W/WX/WU32760			N08811 (800HT)			
	A/SA 860	WPHY52, 60, 65			WP5			WP-W/WX/WU317 (L)						N06600 (600)			
					WP9			WP-W/WX/WU321 (H)						N06625 (625)			
					WP91			WP-W/WX/WU347 (H)						N08825 (825)			
Forged fittings and flanges	A/SA 105			A/SA182	F1		A/SA 182	F304 (L/H)		A/SA 182	F51		B/BS 564	N0880 (800)			
	A/SA350	LF2 (LF1, LF3, LF6)			F11			F310 (S/H)			F53			N08810 (800H)			
	A/SA694	F52, 60, 65			F22			F316 (L/H/Ti)			F55			N08811 (800HT)			
					F5			F317 (L)						N06600 (600)			
					F9			F321 (H)						N06625 (625)			
					F91			F347 (H)						N08825 (825)			