

SELECTION OF MATERIALS

STAINLESS STEELS

COMMON DESCRIPTION	ASTM SPECIFICATION					UNS DESIGN GRADE	CHEMICAL ANALYSIS NOMINAL										NOMINAL MECHANICAL PROPERTIES	
	PLATE	PIPE	FITTINGS	FLANGES/ FORGINGS	CAST VALVES		TUBES	C	Si	Mn	Cr	Mo	Ni	Cu	Others	Tensile min MPa	Yield Point RP 0.2 min MPa	Elongation in 2 or 4D min, %
18-8	A240	A312	A403	A182	A351	A269	0.08	1.00	2.00	18.0-20.0	-	8.0-10.5	-	-	515	205	28-40	
18-8	A240	A312	A403	A182	-	A269	0.035	1.00	2.00	18.0-20.0	-	8.0-12.0	-	-	485	170	28-40	
18-8	A240	A312	A403	A182	-	A271	0.04-0.10	1.00	2.00	18.0-20.0	-	8.0-11.0	-	-	515	205	28-40	
310	A240	A312	A403	A182	A351	A213	0.25	1.50	2.00	24.0-26.0	-	19.0-22.0	-	-	515	205	28-40	
310S	A240	-	-	-	-	A213	0.08	1.50	2.00	24.0-26.0	-	19.0-22.0	-	-	515	205	28-40	
18-10	A240	A312	A403	A182	A351	A269	0.08	1.00	2.00	16.0-18.0	2.00-3.00	10.0-14.0	-	-	515	205	28-35	
18-10	A240	A312	A403	A182	-	A269	0.035	1.00	2.00	16.0-18.0	2.00-3.00	10.0-14.0	-	-	485	170	28-40	
18-10	A240	A312	A403	A182	-	A271	0.04-0.10	1.00	2.00	16.0-18.0	2.00-3.00	10.0-14.0	-	-	515	205	28-40	
316 Ti	A240	-	-	-	-	-	0.08	1.00	2.00	16.0-18.0	2.00-3.00	10.0-14.0	-	-	515	205	28-40	
317	A240	A312	A403	A182	-	A269	0.08	1.00	2.00	18.0-20.0	3.00-4.00	11.0-15.0	-	-	515	205	28-35	
18-10 Ti	A240	A312	A403	A182	-	A269	0.08	1.00	2.00	17.0-20.0	-	9.0-12.0	-	-	515	205	28-40	
18-10 Ti	A240	A312	A403	A182	-	A271	0.04-0.10	1.00	2.00	17.0-20.0	-	9.0-13.0	-	-	515	205	28-40	
18-10 Cb	A240	A312	A403	A182	A351	A269	0.08	1.00	2.00	17.0-20.0	-	9.0-12.0	-	-	515	205	28-40	
Duplex	A240	A790	A815	A182	-	A789	0.03	1.00	2.00	21.0-23.0	2.50-3.50	4.5-6.5	-	-	620	450	25	
6 Mo	A240	A312	A403	A182	-	A269	0.02	0.80	1.00	19.5-20.5	6.00-6.50	17.5-18.5	0.5-1.0	-	650	300	28-35	
Super Duplex	A240	A790	A815	A182	-	A789	0.03	0.80	1.20	24.0-26.0	3.00-5.00	6.0-8.0	0.50	-	800	550	15	
Super Duplex	A240	A790	A815	A182	-	A789	0.05	1.00	1.00	24.0-26.0	3.00-4.00	6.0-8.0	0.50	-	750 (895max)	550	25	
410	A240	A268	A815	A182	-	A268	0.15	0.75	1.00	11.5-13.5	-	0.50	-	415	215	20		

ALLOY STEELS

COMMON DESCRIPTION	ASTM SPECIFICATION					UNS DESIGN GRADE	CHEMICAL ANALYSIS NOMINAL										NOMINAL MECHANICAL PROPERTIES	
	PLATE	PIPE	FITTINGS	FLANGES/ FORGINGS	CAST VALVES		TUBES	C	Si	Mn	Cr	Mo	Ni	Cu	Others	Tensile min MPa	Yield Point RP 0.2 min MPa	Elongation in 2 or 4D min, %
3 1/4% Ni	A203	A333	A420	A350	-	A334	0.19	0.18-0.37	0.31-0.64	-	-	3.18-3.82	-	-	450	240	30	
1 Cr-1/2 Mo	A387	A335	A234	A182	-	A213	0.15	0.50	0.3-0.61	0.8-1.25	0.44-0.65	-	-	415	205	30		
1 1/4 Cr-1/2 Mo	A387	A335	A234	A182	A217	A213	0.15	0.5-1.0	0.3-0.6	1.0-1.5	0.44-0.65	-	-	415	205	30		
2 1/4 Cr-1 Mo	A387	A335	A234	A182	A217	A213	0.15	0.50	0.3-0.6	1.9-2.6	0.87-1.13	-	-	415	205	30		
5 Cr-1/2 Mo	A387	A335	A234	A182	A217	A213	0.15	0.50	0.3-0.6	4.0-6.0	0.45-0.65	-	-	415	205	30		
9 Cr-1 Mo	A387	A335	A234	A182	A217	A213	0.15	0.25-1.0	0.3-0.6	8.0-10.0	0.9-1.1	-	-	415	205	30		

NICKEL ALLOYS

COMMON DESCRIPTION	ASTM SPECIFICATION					UNS DESIGN GRADE	CHEMICAL ANALYSIS NOMINAL										NOMINAL MECHANICAL PROPERTIES	
	PLATE	PIPE	FITTINGS	FLANGES/ FORGINGS	CAST VALVES		TUBES	C	Si	Mn	Cr	Mo	Ni	Cu	Others	Tensile min MPa	Yield Point RP 0.2 min MPa	Elongation in 2 or 4D min, %
Nickel 200	B162	B161/B725	B366	B160	-	B161/B163	0.15	0.35	0.35	-	-	99.0 min	0.25	-	380-550	80-415	10-40	
Monel 400	B127	B165	B366	B164/B564	-	B163/B165	0.3	0.50	2.00	-	-	63.0 min	28-34	-	485-690	195-620	2-35	
Monel K500	-	-	-	-	-	-	0.25	0.50	1.50	-	-	63.0-7.00	bal	-	880	590	15	
Inconel 600	B168	B167/B517	B366	B166/B564	-	B167/B516	0.15	0.50	1.00	14.0-17.0	-	72.0 min	0.50	-	515-825	170-825	7-35	
Inconel 601	-	-	-	-	-	-	0.10	0.50	1.00	21.0-25.0	-	58.0-63.00	1.00	-	600	240	30	
Incolloy 800H	B409	B407/B515	B366	B408/B564	-	B163/B407/B515	0.05-0.1	1.00	1.50	19.0-23.0	-	30.0-35.0	0.75	-	450	170	30	
Incolloy 825	B424	B423/B705	B366	B425/B564	-	B163/B704	0.05	0.50	1.00	19.5-23.5	-	38.0-46.0	1.5-3	-	586	241	30	
Hastelloy C276	B575	B619/B622	B366	B574	-	B622/B626	0.1	0.08	1.00	14.5-16.5	15.0-17.0	rem	-	-	690	283	40	
Hastelloy B2	B333	B619/B622	B366	B335	-	B622/B626	0.02	0.10	1.00	1.0 max	26.0-30.0	rem	-	-	760	352	40	
904L	B625	B677/B673	B366	B649	-	B677	0.02	1.00	2.00	19.0-23.0	4.0-5.0	23.0-28.0	1.0-2.0	-	490	220	35	

Inconel, Incolloy, Hastelloy and Monel are registered trademarks.