

Stainless Steel								
Alloy	Specification	Heat treatment condition	Tensile strength Ksi (Mpa)	Yield strength Ksi (Mpa)	Elongation in 4D, %	Reduction areas, %	Hardness	Other Test
Precipitation hardening corrosion resistance steel								
15-5PH	AMS 5400/ AMS 5346/AMS 5347AMS 5357	Homogenization, Solution, Precipitation to following condition						
		H925	180 (1241)	160 (1103)	6	15	40-47 HRC	
		H935	170 (1172)	150 (1034)	7	16	38-47 HRC	
		H1000	150 (1034)	130 (896)	8	18	35-42 HRC	
		H1100	130 (896)	120 (827)	8	20	33-40 HRC	
		H1150	125 (862)	110 (758)	12	30	28-36 HRC	
		Solution only					36 HRC max.	
17-4PH (X5CrNiCu17-4, Z25CNU17)	MIL-S-81591/AMS 5355/AMS 5342/AMS 5343/AMS 5344/CMC6/ DMD 0232	Homogenization, Solution, Precipitation to following condition						
		H900	180 (1241)	160 (1103)	6	15	40 HRC min.	
		H925	180 (1241)	150 (1034)	6	15	40 HRC min.	
		H1000	150(1034)	130 (896)	8	20	34 HRC min.	
		H1025	150(1034)	130 (896)	10	20	34 HRC min.	
		H1100	130(896)	120 (827)	10	25	30 HRC min.	
		H1150	125(862)	110 (758)	12	25	28 HRC min.	
				Solution only				
		HIP2 or Ho + T1 + R5	120 (830)	110 (760)	8	15	28-35 HRC	
Austenitic corrosion resistance steel								
SS302	AMS 5358 /MIL-S-81591/ASTM A 743 GR CF -20	Solution	70 (485)	30 (205)	30		174 HB max.	
SS303	AMS 5341 /MIL-S-81591/ASTM A 743 GR CF 16F OR 16Fa	Solution	70 (485)	30 (205)	25		180 HB max.	
SS304/ 304L	AMS 5370/ MIL-S-81591/ASTM A 743 GR CF 3 OR CF 8 For low ferrite or none-magnetic grade	Solution	70 (485)	30 (205)	30		86 HRB max.	Embrittlement test as per ASTM A262 practice E
		Solution	65 (450)	28 (195)	30			
SS316/316L	AMS 5360/MIL-S-81591/ASTM A 743 GR CF 3Mor 8M ASTM A 351 CF8M	Solution	70 (485)	30 (205)	30		90 HRB max.	
SS347 (Z10CNNB18.10)	AMS 5362/MIL-S-81591/A 743 CF-8C DMD 0214	Solution	70 (485)	30 (205)	30		95 HRB max.	Embrittlement test as per ASTM A262 practice E
		T1	63.8 (440)	29 (200)	25		220 HB max.	
Martensitic corrosion resistance steel								
SS410	AMS 5350 / MIL-S-81591	Harden & temper	95 (656)	75 (517)	8	20	90-105 HRB	
	ASTM A 743 GR CA15		90 (620)	65 (450)	18	30		
	CMC6						85-100 HRB	
		Anneal					25 HRC max.	
SS416	AMS 5349/MIL-S-81591	Harden & temper	90 (620)	65 (450)	8	15	90-105 HRB	
	CMC6						85-100 HRB	
							25 HRC max.	
		Anneal						
SS420	MIL-S-81591	Harden & temper	180 (1241)	150 (1034)	2			
	ASTM A743 CA 40		100 (690)	70 (485)	15	25		
	CMC6						85-100 HRB	
		Anneal					30 HRC max.	
SS440A	MIL-S-81591	Harden & temper					50 HRC min.	
		Anneal					28 HRC max.	
SS440C	AMS 5352/ MIL-S-81591	Harden& temper					58 HRC min.	
		Anneal					30 HRC max.	
Duplex phase corrosion resistance steel								
CD4MCuN (25-5Ph)	ASTM A 890 Gr 1B	Solution	100 (690)	70 (485)	16			30-60 % ferrite content Charpy test >=15lbs-Ft at -20°F
CD3Mn	ASTM A 890 Gr 4A	Solution	90 (620)	60 (415)	25		230-300 HV10 ref	30-60 % ferrite content Charpy test >=30lbs-Ft at -40°F

Heat resistant material								
Alloy	Specification	Heat treatment condition	Tensile strength Ksi (Mpa)	Yield strength Ksi (Mpa)	Elongation in 4D, %	Reduction areas, %	Hardness	Other Test
INCONEL 625	AMS 5402	As cast	76 (524)	40 (276)	16			
	AMS 5401 (Vaccum)		85 (586)	45 (310)	25			
INCONEL 718	AMS 5383 (Vaccum)	Homogenization + Solution + Age	125 (862)	110 (758)	5	5	34-44 HRC	Stree rupture test : 1300°F@ 23h with axile forec 65/0ksi, EL > 3%
INCONEL 100	AMS 5397 (Vaccum)	As cast	115 (793)	95 (656)	5			Stree rupture test :1800F@ 23h with axile forec 29/0ksi, EL > 4%
INCONEL 792+Hf	AMS 5404 (Vaccum)	Solution & precipitation	130 (895)	125 (860)	3			Stree rupture test :1700F@ 35h with axile forec 41/0ksi, EL > 6%
RENE 77	SCA 3080-04	Solution + aged						Creep test: 980°C@ 20h at force 50Mpa R/A >10%
Stellite 21 (inactivity)	AMS 5385	As cast					<34 HRC	High temperature tensile: 1500F@ 10min, 52Ksi strength and 10% EL min.

Carbon and low alloy steel								
IC 1020	MIL-S-81591	Anneal	60 (414)	40 (276)	35			75 HRB max.
	ASTM 732/A732M 1A	As cast	60 (414)	40 (276)	24			80 HRB max.
IC1026	CMC 6	Homogenization & normalized						80-100 HRB
		Carbon restore, Homogenization & normalized						
IC1040	MIL-S-81591/ASTM 732/A732M, 3A/3Q	As cast						85 HRB max.
		Aneal	75 (517)	48 (330.9)	25			95 HRB max.
		Harden & temper	100 (690)	90 (620)	10			25 HRB min.
IC1060	MIL-S-16974C	As cast/ Anneal						
IC4130/AISI 4130	CMC6	Carbon restore + homogenization- full/isothermal anneal						85-100 HRB
	GR 7Q ASTM A732/A732M	Quench + temper	150 (130)	115 (793)	7			
IC4140/AISI 4140	AMS5338	1) Normalized or normalized & temper	175 (1207)	160 (1103)	3	6		30 HRC max.
		2) Harden & temper						38-43 HRC
	CMC6	Carbon restore + homogenization- full/isothermal anneal						85-100 HRB
IC4330/AISI4330	GR 8q ASTM A732/A732M	Quench + temper	180 (1241)	145 (1000)	5			
	CMC6	Carbon restore + homogenization- full/isothermal anneal						85-100 HRB
IC4340/AISI4340	GR 9q ASTM A732/A732M	quench + temper	150 (130)	115 (793)	7			
	CMC6	Carbon restore + homogenization- full/isothermal anneal						85-100 HRB
IC6150/AISI6150	GR 10q ASTM A732/A732M	Quench + temper	180 (1241)	145 (1000)	5			
	GR 12q ASTM A732/A732M	Quench + temper	190 (13101)	170 (1172)	4			
IC8620	CMC6	1) Carbon restore + homogenization + full/isothermal anneal						85-100 HRB
		2) Carbon restore + homogenization + quench & temper						
WCA	ASTM A216	Quench + temper	105 (724)	85 (586)	10			
		Anneal, or normalize or Normalized & temper	60-85 (415-585)	30 (205)	24	35		
WCC	ASTM A216	Quench & temper						
		Anneal, or normalize or Normalized & temper	70-95 (485-655)	40 (275)	22	35		

NI Resist alloy								
NIResist	ASTM A 436 TYPE 5	Stabilization	20(138)					99-124 HB

Other Material								
Alloy	Specification	Heat treatment condition	Tensile strength Ksi (Mpa)	Yield strength Ksi (Mpa)	Elongation in 4D, %	Reduction areas, %	Hardness	Other Test
CARPENTER 49	ASTM A753 Alloy 2	As cast						
Sandvik 19C27*		Anneal	118 (800)				275 HV or 103 HRB max.	
Zirconium 702	ASTM 752 (Vaccum)	As cast	55 (380)	40 (276)	12		HB210 or HRB95 max.	Charpy impact test per request

Aluminum alloy												
A.201.0	ASTM B618	T4 + T6	60.0 (414)	50.0 (345)	3.0		130 BHN min.					
	CMC 6											
	AMS4229	T4+T7	60.0 (414)	50.0 (345)	5.0		110-145 HB/10/500					
	ASTM B618											
	AMS-A-21180 Cl10											
	AMS-A-21180 Cl11		56.0 (386)	48.0 (331)	1.5							
AU5AG (201.0)	BLFE740601	Solution & precipitation	60.0 (415)	50.0 (345)	3		110-145 HB/10/500					
355.0	ASTM B 618	T51	25.0 (170)	18.0 (125)			65 HB min.					
		T4 & T6	32.0 (220)	20.0 (140)	2		80 HB min					
		T4 + T71	30.0 (205)	22.0 (150)			75 HB min					
C355.0	AMS 4215	T4 + T6	37.0 (255)	30.0 (207)	1		75-110 HB/10/500					
	ASTM B 618											
	AMS-A 21180 Cl 10							41.0 (283)	31.0 (213.7)	3		
	AMS-A 21180 Cl 11							37.0 (255)	30.0 (205)	1		
	AMS-A 21180 Cl 12							35.0 (241)	38.0 (262)	1		
356.0	AMS 4260	T4 & T6	33.0 (228)	22.0 (152)	3		27-60 HRB					
	ASTM B 618	As cast F	19.0 (131)		2		55 HB min.					
		T4 & T6	30.0 (207)	20.0 (140)	3		70 HB min.					
		T4 & T7	31.0 (213.7)				75 HB min.					
		T51	23.0 (158.6)	16.0 (110.3)			60 HB min.					
A356.0	AMS 4218	T4 & T6	33.0 (228)	27.0 (186)	3		70-105 HB/10/500					
	ASTM B 618							34.0 (234.4)	24.0 (165.5)	3.5		80 HB min.
	AMS-A-21180	T4 & T6 Cl 10	38.0 (262)	28.0 (193)	5							
		T4 & T6 Cl 11	33.0 (228)	27.0 (186)	3							
		T4 & T6 Cl 12	32.0 (221)	22.0 (152)	2							
F357.0	AMS 4289	T4 & T6	41.0 (283)	32.0 (221)	5		78 HRE min.	Fracture toughness test: K _{IC} >21 Ksi inch 1/2				
E357.0 (Sr modified + Kool cast)	AMS 4288	T4 & T6	50.0 (345)	40 (275)	3							
ASTG06 (357.0 Sr modified)	DMD 0545-31	T1 & R2	(290)	32.0 (220)	2,5		85 HB min.					

Titanium alloy								
Ti 6AL4V	ASTM B367 C-5	As cast	130 (895)	120 (825)	6			
	ASTM B367 C-5	Hipped + Anneal / stree relief	125 (862)	112 (772)	5			E>115 Gpa
	ASTM F 1108 ELI	Hipped + Anneal	125 (860)	110 (758)	8	14		

Copper alloy								
C87300	ASTM B 584	As cast	45 (310)	18 (124)	20			
C87500	ASTM B 584	As cast	60 (414)	24 (165)	16			
C95300	ASTM B 148	As cast	65 (450)	25 (170)	20		110 HB (3000 Kg load)	
C95400	ASTM B 148	As cast	75 (515)	30 (205)	12		150 HB (3000 Kg load)	
Allice	SCA 3146-05	As cast	50.8 (350)	29 (200)	12			