

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A1-00(2005)	All-Weights	NC-310/312	CSF-312(P)		
A1-84	All-Weights			MGC-310	
A2-02	All-Class	NC-310/312	CSF-91B3(L) CSF-312(P)		
A2-80	All-Class			MGC-310	
A3-01(2006)	Grade 1 & 2	CR-13	CSF-71T, CSM-70C,71U		
	Grade 3		CSF-110T		
A3-87	Grade 1 & 2			MC-50A, MC-50T, MC-50S	
A20(M)-06			CSF-71T		
A27(M)-03	All		CSF-71T, CSM-70C,71U		
A27-87	All			MC-50A, MC-50T, MC-50S	
A36(M)-05	E71T-1,4,5,6,7,8,9,11,12,G		CSF-71T, CSM-70C, 71U,70T		
A36-88b				MC-50A, MC-50T, MC-50S	
A36M-2007			CSF-71T, CSM-70C 71U,70T		
A47(M)-99(2004)		CI-400, CI-500			
A48(M)-03		CI-400, CI-500			
A53(M)-06			CSF-71T, CSM-70C,71U		
A53-88a				MC-50A, MC-50T, MC-50S	
A67-00(2005)	Grade 1 & 2		CSF-91T, CSF-81W		
A67-84				MC-60	
A74-04a		CI-400, CI-500			
A82-88				MC-50A, MC-50T, MC-50S	
A82-97a			CSF-71T, CSM-70C,71U		
A105(M)-05			CSF-71T, CSM-70C,71U		
A105-87a				MC-50T, MC-50S	
A106(M)-06	Grade A,B,C		CSF-71T, CSM-70C,71U		
A106-88a				MC-50T, MC-50S	
A108-03	1008~1020		CSF-71T, CSM-70C,71U		
	1022~1215				
A109(M)-03	All		CSF-71T, CSM-70C,71U	MC-50T, MC-50S	
A111-99a(2004)				MC-50T, MC-50S	
A123(M)-02				MC-50T, MC-50S	

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A126-04		CI-400, CI-500, NC-312	CSF-312(P)		
A128-93(1998)		NC-312	CSF-312(P)		
A131(M)-04a	A ~ DS		CSF-71T, CSM-70C, 71U	MC-50T, MC-50S	
	A,B,D,DS, AH32,AH36, DH32,DH36, EH32,EH36	LC-318, LC-318N	CSF-460S CSF-81K2		
A134-96(2005)			CSF-71T, CSM-70C,71U	MC-50A, MC-50T, MC-50S	
A135(M)-06	A & B		CSF-71T, CSM-70C,71U	MC-50T	
A139(M)-04	All		CSF-71T, CSM-70C,71U	MC-50T	
A148(M)-03	80-40, 80-50		CSF-91T		
	90-60		CSF-91T,110T		
	105-85		CSF-110T		
A148(M)-03	115-95		CSF-110T		
A159-83(2001)	All	CI-400, CI-500			
A161-88				MC-50T	
A167-99(2004)	301,302,302B,304, 305,308	NC-308, NC-308L	CSF-308H(P)	MGC-308	
	304L	NC-308, NC-308L	CSF-308L(P)	MGC-308	
	309(S)	NC-309, NC-309L	CSF-309P, CSF-309L(P)	MGC-309L	
	309Cb	NC-309Cb			
	310(S)	NC-310		MGC-310	
	316(L)	NC-316, NC-316L	CSF-316L(P)	MGC-316, MGC-316L	
	317(L)	NC-317L	CSF-317L(P)		
	321,347,348 XM-15	NC-347 NC-310	CSF-347(P)	MGC-347 MGC-310	
A176-99(2004)	403,420,422,431	NC-410	CSF-410, 410NiMo	MGC-410	
	442,446	NC-309, NC-310	CSF-309L(P)	MGC-309, MGC-309L	
A178(M)-02			CSF-71T, CSM-70C,71U	MC-50T	
A179(M)-90a(2005)			CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
A181(M)-06	60 & 70		CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
A182(M)-06	A 182/A 182M - 00b				
	F1		CSF-71A1		
	F2		CSF-81B2(L)		
	F5,F5a	NC-309, NC-310	CSF-309L(P)	MGC-309, MGC-310	
	F9,F91,F911		CSF-91B9		
	F11,F12		CSF-81B2(L), CSF-80B2T5		

ASTM Designation	Class or Grade	조선선재 용접재료				
		SMAW	FAW	GMAW	SAW	
A182(M)-06	F21,F22,F22V,F3VCb		CSF-91B3(L), CSF-90B3T5	MGC-309, MGC-310, MGC-410		
	F6a,F6b,F6NM	NC-410, NC-410	CSF-410, 410NiMo			
	F429,F430		CSF-430			
	F304,F304H,F304	NC-308	CSF-308H	MGC-430		
	F304L,F304LN	NC-308L	CSF-308L(P)	MGC-308		
	F309H	NC-309	CSF-309HP			
	F310,F310H	NC-310	CSF-310	MGC-310		
	F310MoLN					
	F316,F316H,F316LN	NC-316	CSF-316L(P)	MGC-310		
	F316L,F316LN	NC-316L	CSF-316L(P)	MGC-316		
	F317(L)	NC-317L	CSF-317L(P)	MGC-316L		
	F321M,F321H,F347(H)	NC-347	CSF-318L(P)			
	F348,F348H		CSF-347(P)	MGC-347		
F44,F47,F48,F49,F658	CSI-625					
A192(M)-02			CSF-71T, CSM-70C	MC-50A, TGC-50C		
	High Pressure service		CSF-71A1			
A193(M)-02	B5	NC-309, NC-310	CSF-309LP			
	B6,B6X	NC-410	CSF-410P	MGC-309, MGC-310		
	B7,B7M		CSF-81B2(L)	MGC-410		
	B16		CSF-91B3(L)			
	B8,B8A,B8N,B8NA,B8PA	NC-308	CSF-308HP			
	B8C,B8CA,B8T,B8TA	NC-347	CSF-347(P)	MGC-308		
	B8M,B8MA,B8M2,B8M3	NC-316	CSF-316P	MGC-347		
	B8MN,B8MNA					
	B8LN,B8LNA	NC-308L	CSF-308L(P)			
	B8MNL,B8MLNA	NC-316L	CSF-316L(P)			
	B8MLCuN,B8MLCuNA	CSI-625				
A199-88 & A200-88	T-5			MGC-309 MGC-310		
	T-11			MGC-309, MGC-310 MGC-309		
	T-22			MGC-310		
A202(M)	A		CSF-81B2(L)			
	B		CSF-91B3(L)			
A204(M)-04	A,B,C	CM-76 CM-78	CSF-71A1/81A1			
A209(M)-03	All	CM-76	CSF-71A1			
A210(M)-02	All		CSF-71T, CSM-70C	MC-50T		
A213(M)-06	T2	CM-50 CM-96	CSF-81B2(L)	MC-50T		
	T5		CSF-309L(P)	MGC-309, MGC-310		
	T5b			MGC-309, MGC-310		
	T5c			MGC-309, MGC-310		
	T7	NC-309, NC-310		CSF-309L(P)	MGC-309, MGC-310	
	T9			CSF-309L(P)	MGC-309, MGC-310	

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A213(M)-06	T11		CSF-81B2(L)		
	T12		CSF-81B2(L)		
	T17		CSF-81B2(L)		
	T21	NC-309,NC-310		MGC-309, MGC-310	
	T22		CSF-91B3		
	T91 9%Cr강	CM-90	CSF-91B9		
	TP201	NC-308		MGC-308	
	TP202	NC-308		MGC-308	
	TP304	NC-308		MGC-308	
	TP304L	NC-308L	CSF-308L	MGC-308L	
	TP304H	NC-308			
	TP304LN	NC-308L			
	TP309H	NC-309Cb, NC-309			
	TP309Cb	NC-309Cb, NC-309		MGC-309	
	TP309Hcb	NC-309Cb, NC-309			
	TP310S	NC-310			
	TP316	NC-316, NC-316L		MGC-316	
	TP316L	NC-316, NC-316L		MGC-316L	
	TP316H	NC-316, NC-316L			
	TP317(L)	NC-317L	CSF-317L(P)		
	TP347	NC-347			
	TP347H	NC-347			
	TP347H	NC-347			
	TP348	NC-347			
	T2,T11,T12,T17			CSF-81B2(L)	
	T5,T5b,T5c			CSF-309L(P)	
	T7,T9	NC-309, NC-310		CSF-309L(P)	
	T21			CSF-309L(P), CSF-91B3(L)	
	T22			CSF-91B3(L)	
	TP201,TP202,TP304, TP304H	NC-308	CSF-308HP		
	TP304L,TP404LN	NC-308L	CSF-308L(P)		
	TP309Cb,TP309H, TP309Hcb	NC-309Cb, NC-309			
	TP316(L),TP316H, TP316L(N)	NC-316, NC-316L	CSF-316L(P)		
TP317(L)	NC-317L	CSF-317L(P)			
TP321(H),TP347(H), TP347LN	NC-347	CSF-347(P)			
A214(M)-96(2005)			CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
A216(M)-04	WCA		CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
	WCB		CSF-71A1		
A217(M)-04	WC1		CSF-71A1		

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FAW	GMAW	SAW
A217(M)-04	WC4,WC5,WC6,WC11		CSF-81B2(L)		
	WC9		CSF-91B3(L)		
	C5	NC-309, NC-310	CSF-309L(P)		
	C12,C12A				
	CA15		CSF-410P		
A220-99	All	CI-500			
A225(M)-03	Grade C		CSF-110T		
A234(M)-06a	WPB,WPC		CSF-71T, CSM-70C,71U		
	WP1		CSF-71A1		
	WP11,WP12		CSF-81B2(L)		
	WP22		CSF-91B3(L)		
	WP5	NC-309, NC-310	CSF-309L(P)		
	WPR		CSF-81W		
A240(M)-06b	201,202,302,304,305	NC-308, NC-308L	CSF-308HP, CSF-308L(P)	TGC-308(L) MGC-308	
	304(L)	NC-308(L)	CSF308L(P)	TGC-308(L)	CA-101SUC308(L)
	309S	NC-309	CSF-309HP, CSF-309L(P)	MGC-309	
	309Cb	NC-309cb			
	310S	NC-310		MGC-310	
	310Cb	NC-316			
	316			MGC-316	
	316(L)	NC-316L	CSF-316L(P)	TGC-316(L) MGC-316L	CA-101SUC316(L)
	317(L)	NC-317L	CSF-317L(P)		
	321,347,348	NC-347	CSF-347(P)	MGC-347	
	410	NC-410	CSF-410P	MGC-410	
	430	NC-430	CSF-430	MGC-430	
	S31803 31803	NC-2209	CSF-2209(P)	TGC-2209 MGC-2209	
	32205		CSF-2209	MGC-2209	
		CSF-625		TGC-625	
A242(M)-04	All		CSF-71W,81W	MC-60	
A249(M)-04a	201,202,304,305, 304H,304N	NC-308	CSF-308L(P), 308HP	MGC-308	
	304L,304LN	NC-308L	CSF-308L(P)	MGC-308L	
	309Cb,309H,	NC-309Cb,	CSF-309L(P),		
	309Hcb,309S	NC-309	CSF-309HP		
	310Cb,310H, 310Hcb,310S	NC-310			
	316,316H,316N	NC-316	CSF-316L(P)	MGC-316	
	316L,316LN	NC-316L	CSF-316L(P)	MGC-316L	
	317,317L	NC-317L	CSF-317L(P)		
	321,347,348, 321H,347H	NC-347	CSF-347(P)	MGC-347	
	348H				
A250(M)-05	T1,T1a,T1b		CSF-71A1		
	T-11, T-12		CSF-81B2(L)		

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A250(M)-05	T-22		CSF-91B3(L)		
A252-98(2002)	All		CSF-71T, CSM-70C,71U	MC-50A	
A266(M)-03a	1		CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
	2,3,4		CSF-91T	MC-50T	
A268(M)-05a	TP405,TP410	NC-410	CSF-410	MGC-410	
	TP429,TP430,TP430Ti,TP439			MGC-430	
A269-04	304	NC-308	CSF-308(L)(P)	MGC-308	
	304L,LN	NC-308L	CSF-308(L)(P)	MGC-308L	
	316,316L,316LN	NC-316, NC-316L	CSF-316(L)(P)	MGC-316, MGC-316L	
	317	NC-317L	CSF-317(L)(P)		
A270-03a (austenitic steel)	321,347,348	NC-347	CSF-347(P)	MGC-347	
	TP304	NC-308	CSF-308HP	MGC-308	
A270-03a (austenitic steel)	TP304L	NC-308L	CSF-308(L)(P)	MGC-308L	
	TP316(L)	NC-316, NC-316L	CSF-316(L)(P)	MGC-316, MGC-316L	
A276-06	201,202,205,302,304,308	NC-308	CSF-308HP	MGC-308	
	304L,305	NC-308L	CSF-308(L)(P)	MGC-308L	
	309(Cb)	NC-309	CSF-309HP	MGC-309	
	301(Cb)	NC-310		MGC-310	
	309(S)	NC-309		MGC-309	
	316(L)	NC-316, NC-316L	CSF-316(L)(P)	MGC-316, MGC-316L	
	317	NC-317L	CSF-317(L)(P)		
	321,347,348	NC-347	CSF-347(P)	MGC-347	
	403,405,410,414,421	NC-410	CSF-410	MGC-410	
	430	NC-430	CSF-430	MGC-430	
446	NC-309, NC-310	CSF-309(L)(P)	MGC-309		
A278(M)-01	All	CI-500, CI-400			
A283(M)-03	Grade A,B,C		CSF-71T, CSM-70C,71U	MC-50A	
	Grade D	CSF-71T, CSM-70C,71U		MC-50A, MC-50T	
A284-88	Grade C,D			MC-50A, MC-50T	
A285(M)-03	Grade A,B,C		CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
A288-91(2003)	1		CSF-71T, CSM-70C,71U		
	3		CSF-110T		
	4		CSF-110T		
A289(M)-97(2003)	Class B & C	NC-310		MGC-310	
A290(M)-05	A,B		CSF-71T, CSM-70C,71U	MC-50T	
	C,D		CSF-81B2(L)		
	G,H		CSF-110T		
	I,J		CSF-110T		
	K,L	NC-310		MGC-310	
A291(M)-05	1		CSF-91T		

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FAW	GMAW	SAW
A291(M)-05	4		CSF-110T		
A297(M)-97(2003)	HF	NC-308	CSF-308L(P)	MGC-308	
	HH	NC-309	CSF-309L(P)	MGC-309	
	HI, HK	NC-310		MGC-310	
	HE, HD	NC-312	CSF-312P		
A299(M)-04			CSF-71T,		
			CSM-70C, 71U		
			CSF-81B2(L)		
A302(M)-03	A		CSF-71A1	MC-50T	
	B		CSF-91T		
	C & D		CSF-91T		
A307-04	A		CSF-71T, CSM-70C, 71U	MC-50A, MC-50T	
A311(M)-04	10, 181, 117		CSF-71T, CSM-70C, 71U	MC-50A	
A312(M)-06	TP304, TP304N, TP304H	NC-308	CSF-308HP	MGC-308	
	TP304L(N)	NC-308L	CSF-308L(P)	MGC-308L	
	TP309Cb	NC-309Cb			
	TP309S, 309H	NC-309	CSF-309L(P)	MGC-309	
	TP316, 316H, 316N	NC-316	CSF-316L(P)	MGC-316	
	TP316L, 316LN	NC-316L	CSF-316L(P)	MGC-316L	
	TP317(L)	NC-317L	CSF-317L(P)		
A314-97(2002)	TP321, 347, 348, 321H, 347H TP348H	NC-347	CSF-347(P)	MGC-347	
	202, 302, 302B, 303, 304 305, 308	NC-308	CSF-308HP CSF-309HP	MGC-308 MGC-308	
	309, 309S	NC-309		MGC-309, MGC-309L	
	309Cb	NC-309Cb			
	310, 310S, 314	NC-310		MGC-310	
	316(L)	NC-316, NC-316L	CSF-316L(P)	MGC-316	
	317	NC-317L	CSF-317L(P)		
	321, 347, 348	NC-347	CSF-347(P)	MGC-347	
	429, 430, 431	NC-430		MGC-430	
	403, 410, 414, 416, 416SE, 420	NC-410	CSF-309L(P), 410	MGC-410	
	440A, 440B, 440C	NC-309 or NC-310	CSF-309L(P)	MGC-309, MGC-310	
	501, 502	NC-309, NC-310	CSF-309L(P)	MGC-309, MGC-310	
	A319-71(2003)		CI-400, CI-500		
	A325-06	Type1		CSF-71T, CSM-70C, 71U	MC-50A, MC-50T
Type2			CSF-110T		
A328(M)-05	Plates, Bars, Shapes		CSF-71T, CSM-70C, 71U	MC-50A, MC-50T	
A333(M)-05	1 & 6		CSF-71T, CSM-70C, 71U	TGC-50(S)	
	4		CSF-81K2	MC-60	

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A333(M)-05	8	CSJ-182, CSJ-625			
A334(M)-04a	1 & 6		CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
	8	CSJ-182, CSJ-625			
A335(M)-06	P1 & P15	CM-78	CSF-71A1		
	P2,P11,P12	CM-86			
	P5,P5b,P5c	NC-309, NC-310	CSF-309L(P)	MGC-309, MGC-310	
	P21,P22				
	P91		CSF-91B9		
	P92		CSF-91B9		
A336(M)-06a	F1		CSF-71A1		
	F5,F5A	NC-309, NC-310	CSF-309L(P)	MGC-309, MGC-310	
	F6	NC-410, NC-309, NC-310	CSF-309L(P)	MGC-309, MGC-310, MGC-410	
	F21,F22,F22V		CSF-91B3(L)		
	F11,F12		CSF-81B2(L)		
	F304,H,N	NC-308	CSF-308HP	MGC-308	
	F304L,304LN	NC-308L	CSF-308L(P)	MGC-308L	
	F309H	NC-309	CSF-309HP	MGC-309	
	F310	NC-310	CSF-309L(P)	MGC-310	
	F316,F316H	NC-316	CSF-316L(P)	MGC-316	
	F316L	NC-316L	CSF-316L(P)	MGC-316L	
	F321,F347,F347	NC-347	CSF-347(P)	MGC-347	
A338-84(2004)		CI-400, CI-500			
A350(M)-04a	LF1,LF2,LF6		CSF-91T		
	LF5		CSF-81K2, CSF-460S		
A351(M)-06	CF8,CF8A,CF8C,CF10	NC-308	CSF-308L(P)	MGC-308	
	CF3,CF3A	NC-308L	CSF-308L(P)	MGC-308L	
	CH8,CH10,CH20	NC-309	CSF-309L(P)	MGC-309	
	CF8M,CF10M	NC-316	CSF-316L(P)	MGC-316	
	CF8, CF8A	NC-308	CSF-308P		
	CF8M		CSF-316L(P)		
	CF3MN		CSF-316		
	CF8C		CSF-308L(P)		
	CF10		CSF-308L(P)		
A351(M)-06	CF10M		CSF-316L(P)		
	CK20	NC-310		MGC-310	
	HK30	NC-310		MGC-310	
	HK40	NC-310		MGC-310	
A352(M)-03	LCA,LCB		CSF-71U(SR), CSM-70C	MC-50A, MC-50T	
	LCC		CSF-71U(SR),71U		
	LC1		CSF-71A1		
	LC2		CSF-410NiMoP		
	LC2-1		CSF-110T		

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FAW	GMAW	SAW
A352(M)-03	CA6NM	NC-410NiMo	CSF-410NiMo		
A353(M)-04	9%Ni강	CSF-182, CSF-625	CSF-309L(P)	MGC-310	
A356(M)-04	Grade1		CSF-71T, CSM-70C,71U	MC-50T	
	Grade2		CSF-71A1		
	Grade5,6,8,9		CSF-81B2(L), CSF-80B2T5		
	Grade10		CSF-91B3(L), CSF-90B3T5		
	CA6NM	NC-410NiMo	CSF-410NiMo		
A358(M)-05	304,304N,304H	NC-308	CSF-308HP	MGC-308	
	304L,304LN	NC-308L	CSF-308L(P)	MGC-308L	
	309(Cb)	NC-309, NC-309Cb	CSF-309L(P)	MGC-309	
	310(Cb)	NC-310		MGC-310	
	316,316N,316H	NC-316	CSF-316L(P)	MGC-316	
	316L,316LN	NC-316L	CSF-316L(P)	MGC-316L	
	321,347,348	NC-347	CSF-347(P)	MGC-347	
A361-85				MC-50T	
A366-97			CSF-71T, CSM-70C	MC-50A, MC-50T	
A369(M)-06	FPA,FPB		CSF-71T, CSM-70C	MC-50T	
	FP1		CSF-71A1		
	FP2,FP11,FP12		CSF-81B2(L)		
	FP21,FP22		CSF-91B3(L)		
	FP5,FP7,FP9	NC-309, NC-310	CSF-309L(P)	MGC-309, MGC-310	
FP91	CM-90	CSF-91B9			
A372(M)-03	A		CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
	B		CSF-71A1, CSF-91T		
	C,E,F,G,H,J		CSF-91T		
A376(M)-06	TP304(L),TP304N, TP304H	NC-308	CSF-308HP	MGC-308	
	TP304LN	NC-308L	CSF-308L(P)	MGC-308L	
	TP316(N,H)	NC-316	CSF-316L(P)	MGC-316	
	TP316LN	NC-316L	CSF-316L(P)	MGC-316L	
	TP321,TP321H,TP347 TP347H,TP348	NC-347	CSF-347(P)	MGC-347	
A381-96(2005)	Y35~Y50		CSF-71T, CSM-70C,71U		
	Y52~Y60		CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
	Y65		CSF-91T		
A387(M)-06	Grade2,11,12	CM-50, CM-86	CSF-81B2(L)		
	Grade 11	CM-96, CM-98,CM-93	CSF-81B2(L)	TGC-1CM ER80S-B2	
	Gr 12	CM-96,CM-98,CM-93			

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A387(M)-06	Grade 22(L), 21(L)	CM-106, CM-108	CSF-91B3(L)	TGC-2CM	
	Grade 5, 7, 9, 91, 911				
	Grade 9	CM-90	CSF-91B9		
	Grade 22, 22L	CM-106, CM-108			
	Grade 91		CSF-91B9		
A388(M)-05					
A389(M)-03	C-23		CSF-81B2(L)		
	C-24		CSF-91B3(L)		
A403(M)-06	WP/CR304, 304N, 304H	NC-308	CSF-308HP	MGC-308	
	WP/CR304L, 304LN	NC-308L	CSF-308L(P)	MGC-308L	
	WP/CR309	NC-309L	CSF-309L(P)	MGC-309	
	WP/CR316, 316N, 316H		CSF-316L(P)	MGC-316	
	WP/CR316L, 316LN		CSF-316L(P)	MGC-316L	
	WP/CR317(L)	NC-317L	CSF-317L(P)		
	WP/CR321, 347, 348, 321H, 347H	NC-347	CSF-347(P)	MGC-347	
A409(M)-01(2005)	TP304(L)	NC-308, NC-308L	CSF-308HP/ CSF-308L(P)	MGC-308	
	TP309S	NC-309L	CSF-309L(P)	MGC-309	
	TP309Cb	NC-309Cb			
	TP310S	NC-310		MGC-310	
	TP316(L)	NC-316, NC-316L	CSF-316L(P)	MGC-316, MGC-316L	
	TP317	NC-317L	CSF-317L(P)		
	TP321, 347, 348	NC-347	CSF-347(P)	MGC-347	
A414(M)-06	Grade A, B, C		CSF-71T, CSM-70C, 71U	MC-50A, MC-50T	
	Grade D, E, F, G		CSF-71T, CSM-70C, 71U		
A420(M)-06	WPL6		CSF-71T, CSM-70C, 71U	MC-50A TGC-50S	
	WPL9		CSF-71T, CSM-70C, 71U		
	WPL3		CSF-91T		
	WPL8	CSI-182, CSI-625			
A423(M)-95(2004)	Grade 1		CSF-81B2(L), CSF-81W	MC-60	
	Grade 2		CSF-91T		
A424-06			CSF-71T, CSM-70C, 71U	MC-50A	
A426(M)-05	CP1, CP15		CSF-71A1		
	CP2, CP11, CP12		CSF-81B2(L)		
	CP5, CP5b, CP21	NC-309	CSF-309L(P)	MGC-309	
	CP7, CP9		CSF-309L(P)	MGC-309	
	CP22		CSF-91B3(L)		
A430-88	FP304, 304H, 304N			MGC-308	
	FP316, 316H, 316N			MGC-316	
	FP321, 321H, 347			MGC-347	
A439-83(2004)	All	CI-500, CI-400			

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FAW	GMAW	SAW
A442-86a	55			MC-50T	
	65			MC-50T	
A447-93(2003)		NC-309	CSF-309L(P)	MGC-309	
A451(M)-06	CPF3,CPF3A	NC-308L	CSF-308L(P)	MGC-308L	
	CPF8,CPF8A	NC-308	CSF-308HP	MGC-308	
	CPF3M	NC-316L	CSF-316L(P)	MGC-316L	
	CPF8M		CSF-316L(P)	MGC-316	
	CPF10MC	NC-318			
	CPF8C	NC-347	CSF-347(P)	MGC-347	
	CPH8,CPH20,CPH10	NC-309	CSF-309L(P)	MGC-309	
	CPK20	NC-310		MGC-310	
A455(M)-03			CSF-71T, CSM-70C,71U	MC-50T	
A463(M)-05				MC-50A	
A469(M)-06	Class1		CSF-71U, CSF-71SR	MC-50T, MC-50A	
	Class2		CSF-91T		
	Class3		CSF-81B2(L)		
	Class4		CSF-110T		
	Class5,6,7		CSF-110T		
A470(M)-06	1			MC-50T	
	2		CSF-91T		
	4,6,7,8,9		CSF-110T		
	10		CSF-110T		
A473-01	201,202,205,302, 302B,304	NC-308	CSF-308HP	MGC-308	
	305,308			MGC-308	
	303	NC-312	CSF-308L(P), CSF-312P	MGC-308L	
	304L	NC-308L	CSF-308L(P)	MGC-308L	
	309(S)	NC-309	CSF-309HP/ CSF-309L(P)	MGC-309	
	301(S),314	NC-310		MGC-310	
	316(L)	NC-316, NC-316L	CSF-316L(P)	MGC-316	
	317	NC-317L	CSF-317L(P)		
	321,347,348	NC-347	CSF-347(P)	MGC-347	
	403,405,410(S),414	NC-410	CSF-410	MGC-410	
	416,420				
	429,430,431	NC-430	CSF-312P	MGC-430	
	440A,440B,440C	NC-312 or NC-309, NC-310		MGC-309, MGC-310	
A476(M)-00		CI-500, CI-400			
A478-97(2002)	302,304,305	NC-308	CSF-308HP	MGC-308	
	304L	NC-308L	CSF-308L(P)	MGC-308L	
	309Cb	NC-309Cb			
	316(L)	NC-316, NC-316L	CSF-316L	MGC-316, MGC-316L	
	317	NC-317L	CSF-317L(P)		
A479(M)-06a	302,304,304H,304N	NC-308	CSF-308HP	MGC-308	

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A479(M)-06a	304L,304LN	NC-308L	CSF-308L(P)	MGC-308L	
	309S	NC-309	CSF-309L(P)	MGC-309	
	309Cb	NC-309Cb			
	310S	NC-310		MGC-310	
	316,316N	NC-316	CSF-316L(P)	MGC-316	
	316L,316LN	NC-316L	CSF-316L(P)	MGC-316L	
	321,321H,347,348	NC-347	CSF-347(P)	MGC-347	
	403,410,414,405 430	NC-410 NC-430	CSF-410	MGC-410 MGC-430	
A487(M)-93(2003)	11A,12A,16A		CSF-91T		
A493-95(2004)	302,304,305	NC-308	CSF-308HP,308LP	MGC-308	
	316	NC-316	CSF-316L(P)	MGC-316	
	384	NC-309	CSF-308L(P)	MGC-309	
	429,430	NC-430		MGC-430	
	410,431	NC-410	CSF-410	MGC-410	
	440C	NC-312	CSF-312(P)		
A494(M)-04	M-35-1, M-25S	CSC-NiCu7			
A496(M)-05			CSF-71T, CSM-70C,71U	MC-50T	
A497-97			CSF-71T, CSM-70C,71U	MC-50T	
A499-89(2002)	Grade 50		CSF-71T, CSM-70C,71U	MC-50T	
	Grade 60		CSF-71T, CSM-70C,71U		
A500-03a	All		CSF-71T, CSM-70C,71U	MC-50T, MC-50T	
A501-01(2005)	All		CSF-71T, CSM-70C,71U	MC-50T, MC-50T	
A508(M)-05b	Grade 1	LC-618M			
	Grade 1A	LC-618M			
	Class 1	LC-618M			
	Class 2	LC-718			
	Grade 3				
	Class 1	LC-618M			
	Class 2	LC-718			
	Grade 4N				
	Class 1	LC-118			
	Class 2	LC-128			
	Class 3	LC-718			
	Grade 5				
	Class 1	LC-118			
	Class 2	LC-128			
	Grade 22	CM-106,CM-108	CSF-91B9		
	Grade 3 Class1,2		CSF-110T		
Grade 5 Class1,2		CSF-91B3(L)			
A511-04	MT302,MT304,MT305	NC-308	CSF-308HP	MGC-308	
	MT304L	NC-308L	CSF-308L(P)		
	MT309S	NC-309	CSF-309HP	MGC-309	

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A511-04	MT310S	NC-310	CSF-310	MGC-310	
	MT316(L)	NC-316, NC-316L	CSF-316(LP)	MGC-316, MGC-316L	
	MT317	NC-317L	CSF-317(LP)		
	MT321, MT347	NC-347	CSF-347(P)	MGC-347	
	MT403, MT410, MT414	NC-410	CSF-410	MGC-410	
	MT416SE			MGC-410	
	MT431			MGC-430	
	MT440A	NC-312	CSF-312(P)		
	MT405	NC-410NiMo	CSF410NiMo		
	MT429, MT430	NC-430		MGC-430	
MT446-1, MT446-2	NC-309 or NC-310	CSF-309(LP)	MGC-309, MGC-310		
A512-96(2005)	All except 1110, 1115, 1117		CSF-71T, CSM-70C, 71U	MC-50A	
A513-06a	1008~1015		CSF-71T, CSM-70C, 71U	MC-50A	
	1016~1035		CSF-71T, CSM-70C, 71U	MC-50T	
A514(M)-05	All Quenching-Tempering 구조용강		CSF-91T, CSM-90T		
A515-92(1997)	All		CSF-71T, CSM-70C, 71U	MC-50A	
A515(M)-03	Grade 60G(TS:415~550)	LC-318	CSF-71T, CSM-70T	TGC-50C MC-50A	
A516(M)-06	Grade 55(Grade 380)		CSF-71T, 71U, CSM-70C, 71U, 71SR	MC-50A	
	Grade 60(Grade 415)	LC-300	CSF-71T, 71U, CSM-70C, 71U, 71SR	MC-50T TGC-50S	CA-502
	Grade 65(Grade 450)		CSF-71T, 71U, CSM-70C, 71U, 71SR		
	Grade 70(Grade 485)	LC-318N	CSF-71T, 71U, CSM-70C, 71U, CSF-71SR(12J), 제원용(-45℃) E71T1-12J	ER80S-Ni1	CA-526 (UC12K)
A517(M)-06	All Quenching-Tempering 구조용강		CSF-91T, CSM-90T CSF-110T		
A521(M)-06	CA, CC, CC1		CSF-71T		
	CE, CF, AA, AB		CSF-71T	MC-50A	
	AC, AD, CF1, CG			MC-50T	
	AE		CSF-91T		
	AF		CSF-110T		
A522(M)-01	All	CSI-182, CSI-625			
A523-96(2005)	A & B		CSF-71T, CSM-70C, 71U		
A524-96(2005)	I & II		CSF-71T, CSM-70C, 71U	MC-50T, MC-50A	

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A526-85				MC-50A	
A527-85				MC-50T	
A528-85				MC-50A	
A529(M)-05			CSF-71T, CSM-70C,71U	MC-50T	
A533(M)-93(2004)	Type A1		CSF-71A1	MC-50A	
	Type BA3,B3,C3,D3		CSF-91T		
A536-84(2004)	60-40-18,65-45-12, 60-42-10	CI-500			
A537(M)-06	Class1		CSF-71T, CSM-70C,71U	MC-50A, MC-50T	CA-508
A537(M)-06	Class2,3	LPA-100,LPA-200	CSF-91T		CA-508
A539			CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
A540(M)-06	B24(4340 Mod.)	LC-118,LC-128 LC-800,LC-80E			
A541(M)-05	1,1A		CSF-71T, CSM-70C,71U	MC-50T	
	1C,2Class1, 3Class1		CSF-91T		
	3V, 22Class1		CSF-91B3(L)		
	4NClass1,5Class1, 22Class4		CSF-110T		
A542(M)-99(2004)	11Class4		CSF-81B2(L)		
	1A,1B,3A,3B,4A,4B,4a,4aB		CSF-91B3(L)		
A543(M)-93(2004)	1B,1C,3B,3C		CSF-110T		
	2B,2C		CSF-110T		
A554-04	Same as A511-96 except for the following				
	MT-301	NC-308, NC-308L	CSF-308L(P)	MGC-308	
	MT-309S-Cb, MT-330	NC-309Cb			
A556(M)-96(2005)	A2		CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
	B2, C2		CSF-71T, CSM-70C,71U		
A557-88	B2, C2			MC-50A, MC-50T	
A561-71(2004)			CSF-71T, CSM-70C,71U		
A562(M)-06			CSF-71T, CSM-70C,71U	MC-50A, MC-50T	
A568(M)-06a	All		CSF-71T, CSM-70C,71U		
A569-98	All		CSF-71T, CSM-70C,71U		
A570-98	All		CSF-71T, CSM-70C,71U		
A571(M)-01	All	CI-500,CI-400	CSF-71T, CSM-70C,71U		
A572(M)-06	42, 50, 5, 60		CSF-71T, CSM-70C,71U	MC-50A	

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A572(M)-06	65		CSF-91T	MC-50T	
A573(M)-05	58, 65		CSF-71T, CSM-70C,71U	MC-50T	
	70		CSF-91T	MC-50T	
A575-96(2002)	M1008~M1025		CSF-71T, CSM-70C,71U	MC-50T, MC-50A	
	M1031 & M1044		CSF-91T		
A576-90b(2006)	1008~1029		CSF-71T, CSM-70C,71U	MC-50T, MC-50A	
	1030~1040			MC-50T	
A577(M)-90(2001)	1030~1040		CSF-71T, CSM-70C,71U		
	1042~1055		CSF-91T		
	1070, 1078		CSF-110T		
A581(M)-95b(2004)	303, 303SE	NC-308L	CSF-308HP, 308LP)	MGC-308	
A582(M)-05	416, 416SE	NC-410, NC-312	CSF-312P, CSF-439	MGC-410	
A582(M)-05	430, 430F	NC-430		MGC-430	
A587-96(2005)			CSF-71T, CSM-70C,71U	MC-50T	
A588(M)-05	All	LCW-400	CSF-81W, 71W,80W	MC-60	
	Grade A		CSF-81W, 71W,80W		
	Grade B		CSF-81W, 71W,80W		
	Grade C		CSF-81W, 71W,80W		
A589(M)-06	A & B		CSF-71T, CSM-70C,71U	MC-50T, MC-50A	
A591(M)				MC-50A	
A592(M)-04a	A, E, F		CSF-110T		
A595(M)-06	A, B, C		CSF-71T, CSM-70C,71U	MC-50T, MC-50A	
A602-94(2004)	All	CI-500,CI-400			
A606-04	All		CSF-81W	MC-60	
A607-98	45, 50		CSF-71T, CSM-70C,71U	MC-50A	
	55, 65		CSF-71T, CSM-70C,71U	MC-50T, MC-50A	
	65, 70		CSF-91T		
A608(M)-06	HC30, HD50			MGC-430	
	HE35	NC-312	CSF-312P		
	HF30	NC-347	CSF-347(P)		
	HH30,HH33,HI35	NC-309L	CSF-309L(P)		
	HK30,HK40	NC-310			
	HL30,HL40			MGC-310	
	HK30,HK40,HL30,HL40	NC-310			
	HW50, HX50	CSI-182, CSI-625			

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A611-97	A, B, C, D		CSF-71T, CSM-70C,71U	MC-50A	
			CSF-71W, 81W		
	E			MC-50T	
	ALL			MC-60	
A612(M)-03			CSF-91T		
A615-04b	40		CSF-71T, CSM-70C,71U	MC-50A	
	60		CSF-91T		
A616-96a50			CSF-71T, CSM-70C,71U		
A617-96a	40		CSF-71T, CSM-70C,71U	MC-50T, MC-50A	
	60		CSF-91T		
A618(M)-04	All		CSF-71T, CSM-70C,71U	MC-50T, MC-50A	
A619-82				MC-50A	
A620-97			CSF-71T, CSM-70C,71U	MC-50T	
A633(M)-01(2006)	A, C, D		CSF-71T, CSM-70C,71U	MC-50T, MC-50A	
	E		CSF-91T	MC-50T	
A635(M)-06a	1006 ~ 1023		CSF-71T, CSM-70C,71U	MC-50A	
A642-85				MC-50A	
A649(M)-04	2,4,51		CSF-71T, CSM-70C,71U	MC-50T, MC-50A	
	3		CSF-81B2(L), CSF-80B2		
A656(M)-05	50,60		CSF-71T, CSM-70C,71U	MC-50T, MC-50A	
	70,80		CSF-91T		
A659(M)-06	All		CSF-71T, CSM-70C,71U	MC-50T, MC-50A	
A660-96(2005)	All		CSF-71T, CSM-70C,71U	MC-50A	
A662-99	A & B		CSF-71T, CSM-70C,71U	MC-50A	
	C		CSF-91T		
A663(M)-89(2006)	45,50,55,60,65		CSF-71T, CSM-70C,71U	MC-50A	
	70,75,80			MC-50T	
A666-03	201,202,205,301, 302,304(N)	NC-308	CSF-308HP	MGC-308	
	201L,301LN,301L(N), 304L(N)	NC-308L	CSF-308L(P)	MGC-308L	
	316, 316N	NC-316	CSF-316L(P)	MGC-316	
	316L	NC-316L	CSF-316L(P)	MGC-316L	
A668(M)-04	A,AH, B,BH, C,C,H, D,DH		CSF-71T, CSM-70C,71U	MC-50A	

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A668(M)-04	E, EH, G, GH		CSF-91T	MC-50T	
	F, FH, H, HH		CSF-91B3(L)		
A671-06	CA55, CB60, CB65, CB70,		CSF-71T, CSM-70C, 71U	MC-50A	
	CD80, CE60, CF65, CF70		CSF-91T		
	CK75		CSF-71A1(81A1) or CSF-81B2(L)		
A672-06	A45, A50, A55, B55, B60, B65		CSF-71T	MC-50A	
	B70, C55, C60, C65, C70, D70		CSM-70C		
	H75, H80		CSF-71A1(81A1) or CSF-81B2(L)		
	J80, J90, J100		CSF-71A1, 81A1		
	K75, K85, L65, L70, L75, M70		CSF-81B2(L)		
A675(M)-03	45, 50, 55, 60, 65, 70, 75, 80, 90		CSF-71T, 91T CSM-70C, 70M	MC-50T, MC-50A	
A678(M)-05	A		CSF-71T, CSF-71W, CSM-70C	MC-50T	
	B		CSF-81W		
A688(M)-04	TP304	NC-308	CSF-308HP	MGC-308	
	TP304L, TP304LN	NC-308L	CSF-308L(P)	MGC-308L	
	TP316	NC-316	CSF-316L(P)	MGC-316	
	TP316L, TP316LN	NC-316L	CSF-316L(P)	MGC-316L	
A690(M)-05	All		CSF-71W, CSF-81W	MC-60	
A691-98(2002)	CM-65, CM-70, CM-75		CSF-71A1		
	CMSH-80		CSF-91T		
	1/2CR, 1CR, 1.1/4CR		CSF-81B2(L)		
	2-1/4CR		CSF-91B3(L)		
A694(M)-03	All		CSF-71T, CSM-70C, CSF-71U	MC-50T	
A695-90b(1995)	A, B, C, D Grade 35 & 40		CSF-71T, CSM-70C, CSF-71U	MC-50A	
	A, C, D Grade 45 & 50		CSF-91T	MC-50T	
A696-90a(2006)	B, C		CSF-71T, CSM-70C, CSF-71U	MC-50T, MC-50A	
A704-96	40		CSF-71T, CSM-70C, CSF-71U	MC-50A	
	60		CSF-91T		
A706(M)-06a	60		CSF-91T		
A707(M)-02	L1, L2, L3		CSF-71U(SR)	MC-50T	
	L4		CSF-91T		
	L5		CSF-81K2		
A709(M)-06a	36, 50		CSF-71T, CSM-70C, 71U	MC-50A	
	50W, 70W, HPS 70W		CSF-81W	MC-60	

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A709(M)-06a	100W, 100W		CSF-110T		
A710(M)-02 age-hardening	A1		CSF-91T,CSM-90T		
	A2		CSF-71T, CSM-70C,CSF-71U		
A714-99(2003) high strength low	All alloy welded steel pipe		CSF-81W	MC-60	
A715-98	50, 60, 70, 80		CSF-71T, CSM-70C,71U	MC-50A	
A727(M)-02			CSF-71A1		
A730	A & B		CSF-71T, CSM-70C,71U	MC-50A	
A732(M)-02	1A,2A,2Q,3A,5N,6N		CSF-91T	MC-50A	
A734-87a(2003)	A, B		CSF-91T		
A737(M)-99(2004)	B		CSF-91T		
A738(M)-05	A	LCW-300, LCW-400 LCW-500	CSF-91T, CSF-81W	MC-60	
	B & C		CSF-91T, CSF-81W	MC-60	
A739-90a(2006)	B11	CM-96	CSF-81B2(L)		
	B22	CM-106	CSF-81B2(L)		
A743(M)-03	CA15M	NC-410NiMo	CSF-410NiMo		
	CA6NM	NC-410NiMo	CSF-410NiMo		
A744(M)-00(2004)	CF-8	NC-308(L)	CSF-308(L,P)	MGC-308	
	CF-8M	NC-316(L)	CSF-316(L,P)	MGC-316	
	CF-8C	NC-347	CSF-347(P)	MGC-347	
	CF-3	NC-308(L)	CSF-308(L,P)	MGC-308L	
	CF-3M	NC-316(L)	CSF-316(L,P)	MGC-316L	
A757(M)-00(2004)	A1Q,A2Q	CR-13	CSF-71T, CSM-70C,71U	MC-50A	
	D1N1,D1N2,D1N3,D1Q1		CSF-91B3		
	E1Q,E2N,E3N	LC-800 LC-118	CSF-110T		
A758(M)-00(2005)			CSF-71T, CSM-70C,71U	MC-50A	
A759-00(2005)			CSF-71T, 71U	MC-50A	
A765(M)-04	I, II		CSF-91T		
	III				
	IV	LC-318N	CSF-81K2		
A769(M)-05	36, 40, 45, 50, 60		CSF-71T, CSM-70C,71U	MC-50A	
	45W,50W		CSF-71W, 81W		
	80		CSF-91T		
A771(M)	TP316L	NC-316L	CSF-316(L,P)	MGC-316	
A774(M)-06 &	TP304L	NC-308L	CSF-308(L,P)		CA-101S
	TP316L	NC-316L	CSF-316(L,P)		
A778-01	TP317L	NC-317L	CSF-317(L,P)	T(M)GC-317L	
	TP321,TP347	NC-347	CSF-347(P)	T(M)GC-347	
A782(M)-06	1	CM-96,98	CSF-81B2(L)		

ASTM Designation	Class or Grade	조선선재 용접재료			
		SMAW	FCAW	GMAW	SAW
A782(M)-06	2	CM-106	CSF-81B2(L)		
	3	LC-800,LC-118	CSF-110T		
A787-05	All	CL-100/CL-101 CR-13,LC-300	CSF-71T, CSM-70C,71U	MC-50(T)	
A789(M)-05b	S31803		CSF-2209(P)	TGC-2209	
A792(M)-06	All	CL-100/CL-101 CR-13,LC-300		MC-50(T)	
A793-96(2001)	304(L)	NC-308(L)	CSF-308HP/ CSF-308(L)(P)		
	316(L)	NC-316(L)	CSF-316(L)(P)		
A795(M)-04	A & B		CSF-71T,CSM-70C	MC-50(T)	
A795(M)-04		CL-100/CL-101 CR-13,LC-300			
A823-99(2003)	All	CSI-Ni1		TGC-Ni1	
A830(M)-06	Grade 1020	LC-300	CSF-71S, 71U/E71T-9C/9M)		
	Grade 1018,1020		CSF-71T,70T, 71U,71S		
A832(M)-06	Gr 22V				CA-300S/CA-300E
A841(M)-03a	A, B & C	CL-100/CL-101 CR-13, LC-300	CSF-71T, 71U(SR), CSM-70T	MC-50(T)	
			CSF-81K2		
			CSM-70T,70U		
A842-85(2004)		CI-400,CI-500, CI-600			
A844(M)-04 (9%Ni alloy for pressure vessel)		CSI-182, CSI-625		TGC-625	
A852(M)-03			CSF-81W/ CSM-80W		
A860(M)-06		LC-318N			
A871(M)-03	50		CSF-71W		