

Material Grades

Austenitic Stainless Steel Tube and Pipe

Applicable Standards			Material Grade	Code	Chemical Composition (%)												Mechanical Properties			Main Uses
ASTM/ASME	JIS	EN			C,max	Si,max	Mn,max	P,max	S,max	Ni	Cr	Mo	Cu	Ti	N	Others	T.S, min. ksi MPa	Y.S, min. ksi MPa	EL, min. %	
	SUS303	1.4305	18Cr-8Ni-S	KES303	0.15	1.00	2.00	0.200	0.15min.	8.00-10.00	17.00-19.00	0.60max.					- 520	- 205	- 40	Machined parts
	SUS303Se		18Cr-8Ni-Se	KES303Se	0.15	1.00	2.00	0.200	0.060	8.00-10.00	17.00-19.00				Se 0.15min.	- 520	- 205	- 40		
TP304/MT304 UNS S30400	SUS304TP/SUS304TB SUS304TK/SUS304TF	1.4301	18Cr-8Ni	KES304	0.07	0.75	2.00	0.040	0.015	8.00-10.50	18.00-19.50				0.10max.	75 520	30 205	35	Corrosion-resistant heat exchangers, tubes, and pipes	
TP304H UNS S30409	SUS304HTP/SUS304HTB SUS304HTF		HC-18Cr-8Ni	KES304H	0.04-0.10	0.75	2.00	0.040	0.030	8.00-11.00	18.00-20.00					75 520	30 205	35	Boiler tubes and pipes that must be resistant to high temperature	
TP304L/MT304L UNS S30409	SUS304LTP SUS304LTB		LC-18Cr-8Ni	KES304L	0.030	0.75	2.00	0.040	0.015	9.00-13.00	18.00-20.00					70 485	25 170	35	Heat exchangers and pipes that require corrosion-resistant welds	
TP304N UNS S30451	SUS304N1		18Cr-8Ni-N	KES304N	0.08	0.75	2.00	0.040	0.030	8.00-11.00	18.00-20.00				0.10-0.16	80 550	35 240	35	High-strength, corrosion-resistant heat exchangers, tubes, and pipes	
			ELC-18Cr-9Ni-N	KES304ELC	0.020	0.75	2.00	0.040	0.030	9.00-13.00	18.00-20.00					70 485	25 170	35	Equipment that must be especially corrosion resistant, nuclear fuel reprocessing equipment	
			ELC-18Cr-9Ni-N	KES304ELN	0.020	0.75	2.00	0.040	0.030	9.00-11.00	18.00-20.00				0.12max.	70 485	25 170	35	Equipment that must be especially corrosion-resistant, nuclear plant	
TP316/MT316 UNS S31600	SUS316TP/SUS316TB SUS316TK/SUS316TF		18Cr-12Ni-2.5Mo	KES316	0.07	0.75	2.00	0.040	0.015	11.00-14.00	16.00-18.00	2.00-3.00				75 520	30 205	35	Corrosion-resistant heat exchangers, tubes, and pipes Nuclear fuel cladding tubes and wrapper tubes for fast breeder reactors	
TP316H UNS S31609	SUS316HTP/SUS316HTB SUS316HTF		HC-18Cr-12Ni-2.5Mo	KES316H	0.04-0.10	0.75	2.00	0.030	0.030	11.00-14.00	16.00-18.00	2.00-3.00				75 520	30 205	35	Boiler tubes and pipes that must be resistant to high temperature	
TP316L/MT316L UNS S31603	SUS316LTP SUS316LTB		LC-18Cr-12Ni-2.5Mo	KES316L	0.030	0.75	2.00	0.040	0.015	12.00-16.00	16.00-18.00	2.00-2.50				70 485	25 170	35	Heat exchangers and pipes that require corrosion-resistant welds	
TP316L/MT316L UNS S31603		1.4435	LC-18Cr-12Ni-2.5Mo	KES316L-A	0.030	0.75	2.00	0.040	0.015	10.00-14.00	17.00-18.50	2.50-3.00			0.10max.	70 485	25 170	35		
TP316L UNS S31603			LC-18Cr-10Ni-2.5Mo-1.50Mn-HS(VOD)	KES316L-S1	0.030	0.75	1.50	0.040	0.005-0.010	10.00-14.00	16.00-18.00	2.00-3.00				70 485	25 170	35	Semiconductor manufacturing equipment	
TP316L UNS S31603	SUS316LTP SUS316LTB		LC-18Cr-12Ni-2.5Mo-0.80Mn-LS(VOD)	KES316L-S2	0.030	0.75	0.80	0.040	0.002	12.00-16.00	16.00-18.00	2.00-3.00				70 485	25 170	35		
TP316L UNS S31603	SUS316LTP SUS316LTB		ULC-18Cr-12Ni-2.5Mo-0.05Mn-LS(VIM/VAR)	KES316L-S3	0.010	0.75	0.05	0.040	0.002	12.00-16.00	16.00-18.00	2.00-3.00				70 485	25 170	35		
TP316N UNS S31651	SUS316N		18Cr-12Ni-2.5Mo-N	KES316N	0.08	0.75	2.00	0.040	0.030	11.00-14.00	16.00-18.00	2.00-3.00			0.10-0.16	80 550	35 240	35	High-strength, corrosion-resistant heat exchangers, tubes, and pipes	
TP316LN UNS S31653	SUS316LN		LC-18Cr-12Ni-2.5Mo-N	KES316LN	0.030	0.75	2.00	0.040	0.030	11.00-14.00	16.00-18.00	2.00-3.00			0.10-0.16	75 520	30 205	35	Boiler tubes and pipes that must be resistant to high temperature	
			ELC-18Cr-12Ni-2.5Mo-N	KES316ELN	0.020	0.75	2.00	0.040	0.030	12.00-14.00	16.00-18.00	2.00-3.00			0.12max.	70 485	25 170	35	Nuclear plant, boiler tubes, and other equipment that must possess excellent corrosion resistance and creep strength	
TP316Ti UNS S31635		1.4571	18Cr-12Ni-2.5Mo-Ti	KES316BC	0.10	1.00	2.00	0.040	0.015	10.50-13.50	16.50-18.50	2.00-2.50		5xC-0.70		75 520	30 205	35	Heat exchangers and pipes that must be resistant to phosphoric and sulfuric acids	
	SUS316J1		18Cr-12Ni-2Mo-2Cu	KES316J1	0.08	1.00	2.00	0.045	0.030	10.00-14.00	17.00-19.00	1.20-2.75	1.00-2.50			- 520	- 205	- 40		
	SUS316J1L		LC-18Cr-12Ni-2Mo-2Cu	KES316J1L	0.030	1.00	2.00	0.045	0.030	12.00-16.00	17.00-19.00	1.20-2.75	1.00-2.50			- 480	- 175	- 40		
TP317/MT317 UNS S31700	SUS317TP SUS317TB		19Cr-12Ni-3.5Mo	KES317	0.08	0.75	2.00	0.040	0.030	11.00-15.00	18.00-20.00	3.00-4.00				75 520	30 205	35	Corrosion-resistant heat exchangers, tubes, and pipes	
TP317L UNS S31700	SUS317LTP SUS317LTB		LC-18Cr-12Ni-3.5Mo	KES317L	0.030	0.75	2.00	0.040	0.030	11.00-15.00	18.00-20.00	3.00-4.00				75 515	30 205	35		
TP321/MT321 UNS S31703	SUS321TP/SUS321TB SUS321TK/SUS321TF	1.4541	18Cr-9Ni-Ti	KES321	0.08	0.75	2.00	0.040	0.015	9.00-12.00	17.00-19.00			5xC-0.70		75 520	30 205	35	Boiler tubes and pipes that must be resistant to high temperature	
TP321H UNS S3210	SUS321HTP/SUS321HTB SUS321HTF		HC-18Cr-9Ni-Ti	KES321H	0.04-0.10	0.75	2.00	0.030	0.030	9.00-13.00	17.00-20.00			4xC-0.60		75 520	30 205	35		
TP347/MT347 UNS S34700	SUS347TP/SUS347TB SUS347TK/SUS347TF	1.4550	18Cr-9Ni-Nb	KES347	0.08	0.75	2.00	0.040	0.015	9.00-12.00	17.00-19.00				Nb 10xCmin.	75 520	30 205	35	Corrosion-resistant heat exchangers, tubes, and pipes	
TP347H UNS S34709	SUS347HTP/SUS347HTB SUS347HTF		HC-18Cr-9Ni-Nb	KES347H	0.04-0.10	0.75	2.00	0.030	0.030	9.00-13.00	17.00-20.00				Nb 8xC-1.00	75 520	30 205	35	Boiler tubes and pipes that must be resistant to high temperature	
TP348 UNS S34800			18Cr-9Ni-Nb-(Ta)	KES348	0.08	0.75	2.00	0.040	0.030	9.00-13.00	17.00-20.00				Nb+Ta 10xC-1.00 Ta 0.10max.	75 515	30 205	35	Corrosion-resistant heat exchangers, tubes, and pipes	

Material Grades

Austenitic Stainless Steel Tube and Pipe

Applicable Standards			Material Grade	Code	Chemical Composition (%)												Mechanical Properties			Main Uses
ASTM/ASME	JIS	EN			C,max	Si,max	Mn,max	P,max	S,max	Ni	Cr	Mo	Cu	Ti	N	Others	T.S, min. ksi MPa	Y.S, min. ksi MPa	EL, min. %	
TP309/MT309 UNS S30900	SUS309TP SUS309TB		22Cr-12Ni	KES309	0.15	0.75	2.00	0.040	0.030	12.00-15.00	22.00-24.00					75 520	30 205	35	Heat exchangers and pipes that must be resistant to oxidation and corrosion at high temperature	
TP309S/MT309S UNS S30908	SUS309STP SUS309STB		22Cr-12Ni	KES309S	0.08	1.00	2.00	0.040	0.030	12.00-15.00	22.00-24.00	0.75max.				75 520	30 205	35		
TP310/MT310 UNS S31000	SUS310TP/SUS310TB SUS310TF		25Cr-20Ni	KES310	0.15	1.50	2.00	0.035	0.010	19.00-22.00	24.00-26.00					75 520	30 205	35		
TP310S(UNS S31008) MT310S	SUS310STP SUS310STB		25Cr-20Ni	KES310S	0.08	1.50	2.00	0.035	0.010	19.00-22.00	24.00-26.00	0.75max.				75 520	30 205	35		
TP310S(UNS S31008) MT310S	SUS310STP SUS310STB		ELC-25Cr-20Ni	KES310C	0.025	1.50	2.00	0.035	0.010	19.00-22.00	24.00-26.00					75 520	30 205	35		
TP310S(UNS S31008) MT310S	SUS310STP SUS310STB		ELC-25Cr-20Ni	KES310ELC	0.020	0.30	2.00	0.030	0.030	19.50-21.50	23.50-25.50	0.75max.				75 520	30 205	35		
	KA-SUS310J1TB		25Cr-20Ni-0.3Nb-0.25N	KES310J1	0.10	1.50	2.00	0.030	0.030	17.00-23.00	23.00-27.00			0.15-0.35	Nb 0.20-0.60 Ta 0.25-0.60	95 660	43 295	30	Boiler tubes and pipes that must be resistant to high temperature and oxidation at high temperature	
TP316L UNS S31603			ELC-18Cr-15Ni-2Mo	KESU1	0.015	0.75	1.55-1.95	0.028	0.010	13.70-14.70	17.20-18.20	2.20-2.60		0.20max.		70 485	25 170	35	Urea plants, heat exchangers and pipes that must be especially resistant to corrosion	
TP310MoLN UNS S31050		1.4466	ELC-25Cr-22Ni-2Mo	KESU2	0.015	0.40	1.55-1.95	0.020	0.010	21.50-22.50	24.50-25.50	2.00-2.30		0.10-0.14		70 485	25 170	35		
A213/A269/A312 UNS N08904	SUS890LTP SUS890LTB	1.4539	ELC-20Cr-25Ni-4.5Mo-1.5Cu	KES904L	0.020	1.00	2.00	0.040	0.030	23.00-28.00	19.00-23.00	4.00-5.00	1.00-2.00	0.10max.		71 490	31 215	35	Heat exchangers and pipes that must be resistant to phosphoric and sulfuric acids	
B622 UNS N08320			22Cr-26Ni-5Mo-Ti	KESC25A	0.05	1.00	2.50	0.025	0.010	25.00-27.00	21.00-23.00	4.00-6.00		5xCmin.		73 517	28 193	35		
			21Cr-25Ni-4.5Mo-1.5Cu-Ti	KESC25T	0.06	0.17-1.00	1.20-2.00	0.035	0.030	24.00-26.00	20.00-22.00	4.00-5.00	1.20-1.80	5xCmin.		73 517	28 193	35		
			24Cr-28Ni-3Mo-3Cu-Ti	KESC28T	0.06	0.80	2.00	0.030	0.010	26.00-29.00	22.00-25.00	2.50-3.50	2.50-3.50	0.50-0.90		73 517	28 193	35		
	SUS836LTP SUS836LTB		LC-20Cr-25Ni-5.5Mo	KES836L	0.030	1.00	2.00	0.035	0.015	24.00-25.00	19.00-24.00	5.00-7.00		0.25max.		- 520	- 205	- 35	Heat exchangers and pipes that must be resistant to chloride solution	
A213/A269/A312 UNS S31254	SUS312LTB		ELC-20Cr-18Ni-6Mo-N	KES254	0.020	0.80	1.00	0.030	0.010	17.50-18.50	19.50-20.50	6.00-6.50	0.50-1.00	0.18-0.22		95 655	45 310	35		

Duplex Stainless Steel Tube and Pipe

Applicable Standards			Material Grade	Code	Chemical Composition (%)												Mechanical Properties			Main Uses
ASTM/ASME	JIS	EN			C,max	Si,max	Mn,max	P,max	S,max	Ni	Cr	Mo	Cu	Ti	N	Others	T.S, min. ksi MPa	Y.S, min. ksi MPa	EL, min. %	
A789/A790 UNS S32900	SUS329J1TP SUS329J1TB		25Cr-4Ni-1.5Mo	KES329	0.080	0.75	1.00	0.040	0.030	2.50-5.00	23.00-28.00	1.00-2.00				90 620	70 485	20	Heat exchangers that must be resistant to SCC (Stress Corrosion Cracking)	
			ELC-22Cr-6Ni-Ti	KES329LR	0.030	0.80	0.80	0.035	0.025	5.30-6.30	21.00-23.00		5xC-0.65			- -	- -	- -		
A789/A790 UNS S31500			LC-19Cr-5Ni-2.7Mo-1.5Si	KES329LA	0.030	1.40-2.00	1.20-2.00	0.030	0.030	4.30-5.20	18.00-19.00	2.50-3.00		0.05-0.10		92 630	64 440	30	Heat exchangers and pipes that must be resistant to crevice corrosion	
			ELC-21Cr-6Ni-2Mo-Ti	KES329LS	0.020	0.80	0.80	0.035	0.025	5.50-6.50	20.00-22.00	1.80-2.50	0.20-0.40			- -	- -	- -		
A789/A790 UNS S32304			LC-22Cr-4Ni-0.3Mo-N	KES329G	0.030	1.00	2.50	0.030	0.020	3.00-5.50	21.50-24.50	0.05-0.60	0.05-0.60	0.05-0.20		87 600	58 400	25	Heat exchangers and pipes that must be resistant to crevice corrosion	
A789/A790 UNS S31803 UNS S32205		1.4462	LC-22Cr-6Ni-3Mo-N	KES329W	0.030	1.00	2.00	0.030	0.015	4.50-6.50	22.00-23.00	3.00-3.50		0.14-0.20		95 655	70 485	25		
	SUS329J3LTP SUS329J3LTB		LC-22Cr-5Ni-3Mo-N	KES329J3L	0.030	1.00	1.50	0.030	0.020	4.50-6.50	21.00-24.00	2.50-3.50		0.08-0.20		90 620	65 450	25	Heat exchangers that must be resistant to SCC (Stress Corrosion Cracking)	
			22Cr-6.5Ni-3.5Mo-Cu-N	KES329X	0.040-0.080	1.00	2.50-3.50	0.030	0.010	6.00-7.00	21.50-22.50	3.00-4.00	0.30-0.70	0.10-0.20		- -	- -	- -		
	SUS329J4LTP SUS329J4LTB		LC-25Cr-6Ni-3Mo-N	KES329J4L	0.030	1.00	1.50	0.040	0.030	5.50-7.50	24.00-26.00	2.50-3.50		0.08-0.30		620	450	18	Heat exchangers and pipes that must be resistant to crevice corrosion	
A789/A790 UNS S31260	SUS329J4LTP SUS329J4LTB		LC-25Cr-6Ni-3Mo-Cu-N-W	KES329C	0.030	0.75	1.00	0.030	0.030	5.50-7.50	24.00-26.00	2.50-3.50	0.20-0.80	0.10-0.30	W 0.10-0.50	100 690	65 450	25		
			25Cr-7.5Ni-3.5Mo-Cu-N	KES329Y	0.040-0.080	1.00	2.50-3.50	0.030	0.010	7.00-8.00	24.50-25.50	3.00-4.00	0.30-0.70	0.10-0.20		- -	- -	- -	Heat exchangers and pipes that must be resistant to chloride solution	
			LC-25Cr-7Ni-3.5Mo-Cu-N	KES329YM	0.030	1.00	1.50	0.040	0.030	4.50-7.50	21.00-26.00	2.50-4.00	0.40-0.60	0.08-0.30		116 800	550 550	15	Tubing for deep sour well environment	
A789/A790 UNS S32750			LC-25Cr-7Ni-4.0Mo-Cu-N	KES329E	0.030	0.80	1.20	0.035	0.020	6.00-8.00	24.00-26.00	3.00-5.00	0.50max.	0.24-0.32	%Cr+3.3x%Mo+16x%N≥41	116 800	80 550	15		
A789/A790 UNS S32760			LC-25Cr-7Ni-3.5Mo-Cu-N-W	KES329M	0.030	1.00	1.00	0.030	0.010	6.00-8.00	24.00-26.00	3.00-4.00	0.50-1.00	0.20-0.30	%Cr+3.3x%Mo+16x%N≥40 W 0.50-1.00	109 750	80 550	25		

Material Grades

Nickel Alloy, High-Nickel Alloy, and Nickel Tube and Pipe

Applicable Standards			Material Grade	Code	Chemical Composition (%)											Mechanical Properties			Main Uses	
ASTM/ASME	JIS	EN			C,max	Si,max	Mn,max	P,max	S,max	Ni	Cr	Mo	Cu	Ti	N	Others	T.S, min. ksi MPa	Y.S, min. ksi MPa		EL, min. %
B729 UNS N08020			20Cr-34Ni-2.5Mo-3.5Cu	KESC20	0.07	1.00	2.00	0.045	0.035	32.00-38.00	19.00-21.00	2.00-3.00	3.00-4.00			Nb+Ta 8×C-1.00	80 550	35 240	30	Heat exchangers and pipes that must be resistant to phosphoric and sulfuric acids
B668 UNS N08028			27Cr-31Ni-3.5Mo-1.0Cu	KES28	0.030	1.00	2.50	0.030	0.010	30.00-34.00	26.00-28.00	3.00-4.00	0.60-1.40				73 500	31 214	40	
B163/B407/A213/A312 UNS N08800	NCF800TP/NCF800TB NCF800TF	1.4876	20Cr-32Ni-Al-Ti	KES800AT	0.10	1.00	1.50	0.030	0.015	30.00-34.00	19.00-23.00		0.75max.	0.15-0.60		Al 0.15-0.60	75 517	30 207	30	Heat exchangers and pipes that must be resistant to oxidation and corrosion at high temperature
B163/B407/A213/A312 UNS N08800	NCF800TP/NCF800TB NCF800TF	1.4876	LC-20Cr-32Ni-Al-Ti	KES800LC	0.030	1.00	1.50	0.030	0.015	30.00-34.00	19.00-23.00		0.75max.	0.15-0.60		Al 0.15-0.60	75 517	30 207	30	
B163/B407/A213/A312 UNS N08800 UNS N08811	NCF800TP/NCF800TB NCF800TF		HC-20Cr-32Ni-Al-Ti	KES800H	0.06-0.10	1.00	1.50	0.030	0.015	30.00-34.00	19.00-23.00		0.75max.	0.15-0.60		Al 0.15-0.60 Al+Ti 0.85-1.20	65 448	25 172	30	
B163/B423 UNS N08825	NCF825TP NCF825TB	2.4858	40Ni-21Cr-3Mo-2Cu-Ti	KES825	0.05	0.50	1.00	0.030	0.015	38.00-46.00	19.50-23.50	2.50-3.50	1.50-3.00	0.60-1.20		Al 0.20max.	85 586	35 241	30	Heat exchangers and pipes that must be resistant to chloride solution, seawater Steel pipes for chemical use (must be resistant to sulfate and phosphate) and steel pipes that must be resistant to stress corrosion cracking
			53Ni-19Cr-3Mo-Al, Ti	KES718	0.08	0.35	0.35	0.015	0.015	50.0-55.0	17.00-21.00	2.80-3.30	0.30max.	0.65-1.15		Co 1.0max., Al 0.2-0.8	-	-	-	For rocket engines and nuclear plant
B622 UNS N10276	NW0276		ULC-60Ni-16Cr-16Mo-4W-Fe	KESC276	0.010	0.08	1.00	0.030	0.010	Bal.	14.50-16.50	15.00-17.00				Co 2.5max., Fe 4.0-7.0 V 0.35max., W 3.0-4.5	100 690	41 283	40	Heat exchangers and pipes that must be resistant to chloride solution, seawater
B622 UNS N06022	NW6022	2.4602	ELC-56Ni-21Cr-13Mo-3W-Fe	KESC22	0.010	0.08	0.50	0.010	0.010	Bal.	20.00-22.50	12.50-14.50				Co 2.5max., Fe 2.0-6.0 V 0.35max., W 2.5-3.5	100 690	45 310	45	
B444 UNS N06625	NCF625TP NCF625TB	2.4856	58Ni-22Cr-9Mo-Nb	KES625	0.03-0.10	0.50	0.50	0.015	0.015	58.0min.	20.00-23.00	8.00-10.00		0.40min.		Nb+Ta 3.15-4.15, Co 1.00max. Al 0.40max., Fe 5.00max.	100 690	40 276	30	Tubes and pipes for the chemical plant and nuclear plant that must be resistant to SCC
B163/B167 UNS N06601		2.4851	58Ni-23Cr	KES601	0.10	0.50	1.00	0.020	0.010	58.0-63.0	21.00-25.00					Al 1.00-1.70 Cu 0.50max.	80 552	30 207	30	Heat exchangers and pipes that must be resistant to oxidation and corrosion at high temperature
B163/B167 UNS N06690			58Ni-29Cr	KES690	0.05	0.50	0.50	0.030	0.010	58.0min.	27.00-31.00		0.50max.			Fe 7.00-11.00	85 586	35 241	30	
B163/B167 UNS N06600	NCF600TP NCF600TB		72Ni-15Cr	KES600	0.15	0.50	1.00	0.030	0.015	72.0min.	14.00-17.00		0.50max.			Fe 6.00-10.00	80 552	35 241	30	
			77Ni-20Cr	KES80-20	0.15	0.75-1.50	2.50			77.0min.	19.00-21.00					Fe 1.00max.	-	-	-	Heat-resistant protective pipe
B163 UNS N02200	NW2200		Ni	KESNi	0.15	0.35	0.35		0.01	99.0min.			0.25max.			Fe 0.40max.	55 379	15 103	40	Heat exchanger for chemical plant Rocket engines
B163 UNS N02201	NW2201		ELC-Ni	KESNiLC	0.020	0.35	0.35		0.01	99.0min.			0.25max.			Fe 0.40max.	50 345	12 83	40	

Ferritic Stainless Steel Tube and Pipe

Applicable Standards			Material Grade	Code	Chemical Composition (%)											Mechanical Properties			Main Uses	
ASTM/ASME	JIS	EN			C,max	Si,max	Mn,max	P,max	S,max	Ni	Cr	Mo	Cu	Ti	N	Others	T.S, min. ksi MPa	Y.S, min. ksi MPa		EL, min. %
TP405/MT405 UNS S40500	SUS405TB		13Cr-0.2Al	KES405	0.08	1.00	1.00	0.040	0.030	0.50	11.50-14.50						60 415	30 205	20	Heat exchangers
TP409 UNS S40900	SUS409TB		11Cr-Ti	KES409	0.08	1.00	1.00	0.040	0.030	0.50	10.50-11.75			6×C-0.75			410	205	18	
	SUS409LTP SUS409LTB		LC-11Cr-Ti	KES409L	0.03	1.00	1.00	0.040	0.030	0.50	10.50-11.75			6×C-0.75			360	175	20	
TP410/MT410 UNS S41000	SUS410TB SUS410TK		13Cr	KES410	0.15	0.75	1.00	0.040	0.030	0.50	11.50-13.50						60 415	30 205	20	
UNS S40800	SUS410TITB		13Cr-Ti	KES410Ti	0.08	1.00	1.00	0.040	0.030	0.60	11.50-13.50			6×C-0.75			55 380	30 205	20	
TP430/MT430 UNS S43000	SUS430TB SUS430TK	1.4016	18Cr	KES430	0.08	0.75	1.00	0.040	0.015	0.50	16.00-18.00						410	245	20	
TP430Ti UNS S43036			18Cr-Ti	KES430Ti	0.10	1.00	1.00	0.040	0.030	0.75	16.00-18.00			7×C-0.75			410	245	20	
	SUS436LTP SUS436LTB		ELC-18Cr-1Mo-Ti	KES436L	0.025	1.00	1.00	0.040	0.030	0.50	16.00-19.00	0.75-1.25		8×(C+N)-0.80	0.025max.		410	245	20	
18Cr-2Mo UNS S44400	SUS444TP SUS444TB		ELC-19Cr-2Mo-Nb	KES18-2	0.015	0.40	0.40	0.035	0.025	0.50	18.50-19.30	1.80-2.30			0.025max.	Nb 8(C+N)-0.80	60 415	40 275	20	Chemical reactors, heat exchangers
TP443/MT443 UNS S44300			22Cr-1Cu	KES443	0.20	0.75	1.00	0.040	0.030	0.50	18.00-23.00		0.90-1.25				70 485	40 275	20	Soot blowers
TP446/MT446 UNS S44600			25Cr	KES446	0.20	0.75	1.50	0.040	0.030	0.50	23.00-30.00				0.01-0.25		65 450	40 275	20	Chemical reactors, heat-resistant protective pipe
			ELC-18Cr-1Si-1Al-Nb	RECLOY10	0.020	0.70-1.20	1.00	0.040	0.030		17.00-19.00					Al 0.70-1.20 Nb+Ta 10×(C+N)-0.5	-	265	10	Chemical reactors, heat exchangers, and heat-resistant protective pipe for such uses as recuperators in limestone roaster furnaces
			ELC-24Cr-1.5Si-1.5Al-Nb	RECLOY12	0.020	1.10-1.60	1.00	0.040	0.030		23.00-25.00					Al 1.20-1.70 Nb+Ta 10×(C+N)-0.5	-	295	8	

Precipitation hardening Stainless Steel Tube and Pipe

Applicable Standards			Material Grade	Code	Chemical Composition (%)											Mechanical Properties			Main Uses	
ASTM/ASME	JIS	EN			C,max	Si,max	Mn,max	P,max	S,max	Ni	Cr	Mo	Cu	Ti	N	Others	T.S, min. ksi MPa	Y.S, min. ksi MPa		EL, min. %
	SUS630		17Cr-4Ni-4Cu-Nb	KES630	0.07	1.00	1.00	0.035	0.025	3.50-4.50	15.50-17.00		3.50-4.50			Nb 0.15-0.45	75 515	30 205	35	Mechanical parts with high strength