

Specifications:

Specification	GB13296-91	GB/T14976-94	GB5310-95	ASTM A213/A213M	ASTM A312/A312M	ASTM A269	ASTM A790	ASTM A789	
Steel Grade	0Cr18Ni19Ti 0Cr18Ni10Ti 00Cr19Ni10 0Cr18Ni12Mo2 0Cr17Ni12Mo2 0Cr19Ni13Mo3 0Cr17Ni14Mo3 00Cr19Ni13Mo3 0Cr18Ni11Ti 0Cr18Ni11Ti	0Cr18Ni19Ti 0Cr18Ni10Ti 00Cr19Ni10 0Cr25Ni20Mo2 0Cr17Ni12Mo2 0Cr19Ni13Mo3 0Cr17Ni14Mo3 00Cr19Ni13Mo3 Mo2 0Cr18Ni11Ti 0Cr18Ni11Ti	1Cr18Ni9 1Cr19Ni11 b	TP30 4L TP304 TP3 TP31 TP3 TP31 TP34 TP31 TP3 TP32 TP3 IH	TP30 4L TP304 TP31 TP31 TP31 TP31 TP34 TP31 TP3 TP32 TP3 IH	TP3 04 TP3 16 TP3 17 TP34 7H TP3 21	TP30 4L TP3 16 TP3 17 TP34 7H TP3 21	S318 03 S322 05	S318 03 S322 05
Yield Strength (Mpa)	≥ 175 ; ≥ 205	≥ 175 ; ≥ 205	≥ 205	≥ 170 ; ≥ 205	≥ 170 ; ≥ 205	≥ 170 ; ≥ 205	≥ 45	≥ 45	
Tensile Strength (Mpa)	≥ 480 ; ≥ 520 ; ≥ 530	≥ 480 ; ≥ 520 ; ≥ 530	≥ 520	≥ 485 ; ≥ 515	≥ 485 ; ≥ 515	≥ 485 ; ≥ 515	≥ 620	≥ 620	
Elongation (%)	≥ 35 ; ≥ 40	≥ 35 ; ≥ 40	≥ 35	≥ 35	≥ 35	≥ 35	≥ 25	≥ 25	
Flattening Test	$S \leq 10$ mm $H=1.09S/(0.09+S/D)$	$S \leq 10$ mm $H=1.09S/(0.09+S/D)$	$S \leq 10$ mm $H=1.09S/(0.09+S/D)$	$H=1.09t/(0.09+t/D)$ and check if the tube has cracks.	$H=1.09t/(0.09+t/D)$ and check if the tube has cracks.	$H=1.09t/(0.09+t/D)$ and check if the tube has cracks.	$H=1.08t/(0.08+t/D)$ and check if the tube has cracks.	$H=1.08t/(0.08+t/D)$ and check if the tube has cracks.	
Flaring Test	Acc. to GB/T242	Acc. to GB/T242	Acc. to GB/T242	Acc. to ASTM A450	Acc. to ASTM A1016	Acc. to ASTM A1016	/	/	
Hardness	Optional hardness test 90	Optional hardness test 90	Optional hardness test 90	HRB < 90	HRB < 90	HRB < 90	HRC < 30	HRC < 30	
Grain Size	"*" GB/T6394 Grade 4-7	/	/	H steel grade \leq Grade 7	H steel grade \leq Grade 7	/	/	/	
Hydrostatic Test (Mpa)	GB241 P=2RS/D In the formula: R=25% σ_b Max pressure test Pmax=20MPa Eddy current test GB/T 7735 Grade A should not do hydrostatic test.	GB241 P=2RS/D In the formula: R=40% σ_b It can be taken place GB/T of Acc. to GB/T 7735 Grade A should not do hydrostatic test.	GB241 P=2RS/D In the formula: R=70% σ_b Max pressure test Pmax=20MPa It should not do hydrostatic test after the tube is qualified.	Hydrostatic test P=220.6S/D can be taken place of nondestructive test, Pmax:7MPa	Acc. to ASTM A999 In the formula: S \geq 50% σ_b	Hydrostatic test P=220.6S/D can be taken place of nondestructive test, Pmax:7MPa	Acc. to ASTM A999 In the formula: S \geq 50% σ_b	Acc. to ASTM A1016 In the formula: S \geq 50% σ_b	
Corrosion Test	GB4334	GB4334	/	ASTM A262 E (additional requirement)	ASTM A262 E (additional requirement)	/	/	/	
Nondestructive Test	GB/T 5777 Grade C10	It can do ultrasonic test by mutual agreement.	GB/T 5777 Grade C5	ASTM E13 E309 E426	ASTM E13 E309 E426	ASTM E13 E309 E426	ASTM E13 E309 E426	ASTM E13 E309 E426	
Straightness (mm/m)	$S \leq 15$ mm $S > 15$ mm	$S \leq 15$ mm $S > 15$ mm	$S \leq 15$ mm $S > 15$ mm	Reasonable straightness	Reasonable straightness	Reasonable straightness	Reasonable straightness	Reasonable straightness	

Specification:

Specification	ASTM B677	ASTM A511	JIS G 3463	JIS G 3459	DIN 17456	DIN 17458
Steel Grade	N08904	MT304 MT304L MT316 MT316L MT317 MT321 MT347	SUS 304TB SUS 304LTB SUS 316TB SUS 316LTB SUS 317TB SUS 317LTB SUS 310TB SUS 310STB SUS 321TB SUS 347TB SUS 321HTB	SUS 304TP SUS 304LTP SUS 316TP SUS 316LTP SUS 317TP SUS 317LTP SUS 310TP SUS 310STP SUS 321TP SUS 347TP SUS 321HTP	1. 4301 I. 4306 1. 4307 I. 4401 1. 4404 1. 4541 I. 4550	1. 4301 I. 4306 1. 4307 I. 4401 1. 4404 1. 4541 I. 4550
Yield Strength (Mpa)	≥ 220	/	≥ 177; ≥ 206	≥ 175; ≥ 205	Acc. to the specification	Acc. to the specification
Tensile Strength (Mpa)	≥ 490	/	≥ 481; ≥ 520	≥ 480; ≥ 520	Acc. to the specification	Acc. to the specification
Elongation (%)	≥ 35	/	≥ 27; ≥ 35	≥ 35	Acc. to the specification	Acc. to the specification
Flattening Test	H=1.09t/(0.09+t/D) and check if the tube has cracks.	/	H=1.09t/(0.09+t/D) and check if the tube has cracks.	H=1.09t/(0.09+t/D) and check if the tube has cracks.	/	DIN 50136
Flaring Test	Acc. to ASTM B829-04	/	α = 60° flares 12% D	/	/	DIN 50136
Hardness	HRB < 90	/	/	/	/	/
Grain Size	/	/	JIS G0551, 321HTB ≤ Grade 7	JIS G0551, 321HTP ≤ Grade 7	/	/
Hydrostatic Test (Mpa)	Acc. to ASTM B829 Pmax: 7MPa	/	Acc. to the specification	Acc. to the specification	Acc. To DIN 50104 seal test (hydrostatic test) P=8MPa, it can be taken place of eddy current test SEP1925.	Acc. To DIN 50104 seal test (hydrostatic test) P=8MPa, it can be taken place of eddy current test SEP1925.
Corrosion Test	/	/	/	/	/	/
Nondestructive Test	ASTM E426 or E 571 E213	/	Choose eddy current or ultrasonic JIS G0583 EV ultrasonic JIS G0582 UD	Choose eddy current or ultrasonic JIS G0583 EV ultrasonic JIS G0582 UD	Ultrasonic test acc. To SEP 1915	Grade 2 should be done ultrasonic test acc. To SEP 1915.
Straightness (mm/m)	Reasonable straightness	/	Practical straightness	Practical straightness	/	/