

ASTM A790 Vs ASTM A789, A213 Vs A312 Stainless Steel, Difference Between ASTM A312 And A213

Specification	GB13296-91	GB/T14976-94	GB5310-95	ASTM A213/A213M	ASTM A312/A312M	ASTM A269	ASTM A790	ASTM A789	
Steel Grade	0Cr18Ni9 0Cr18Ni10T 00Cr19Ni10 i 0Cr18Ni12M 0Cr25Ni20 o2Ti 0Cr17Ni12M 0Cr19Ni13M o2 o3 00Cr17Ni14 Mo2 Mo3 0Cr18Ni11N 1Cr18Ni11T b i*	0Cr18Ni9 1Cr18Ni9Ti 0Cr18Ni10T 0Cr18Ni12M 00Cr19Ni10 i 0Cr18Ni12M 0Cr25Ni20 o2Ti 0Cr17Ni12M 0Cr19Ni13M o2 o3 00Cr17Ni14 00Cr19Ni13 Mo2 Mo3 0Cr18Ni11N b	1Cr18Ni9 1Cr19Ni11N b	TP304H TP316 TP317 TP347H TP321	TP304L TP316L TP317L TP310S TP321H	TP304 TP316 TP317L TP310S TP321H	TP304 TP304L TP316 TP316L TP317 TP317L TP347H TP310S TP321	S31803 S32205	S31803 S32205
Yield Strength (Mpa)	≥ 175; ≥ 205	≥ 175; ≥ 205	≥ 205	≥ 170; ≥ 205	≥ 170; ≥ 205	≥ 170; ≥ 205	≥ 450	≥ 450	
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 ≤ 10mm H=1.09S/(0.09+S/D)	S ≤ 10mm H=1.09S/(0.09+S/D)	S ≤ 10mm 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	H=1.08t/(0.08+t/D) and check if the tube has	H=1.08t/(0.08+t/D) and check if the tube has	
Flaring Test	Acc. to GB/T242	Acc. to GB/T242	Acc. to GB/T242	Acc. to ASTM A450	/	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 ≥ Grade 7	H steel grade ≥ Grade 7	/	/	/	
Hydrostatic Test (Mpa)	GB241 P=2RS/D In the formula:R=25%o 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%o b It can be taken place of Acc. to GB/T 7735 Grade A should not do hydrostatic test.	GB241 P=2RS/D In the formula:R=70%o 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 P=2St/D In the formula:S≥50%o b	Hydrostatic test P=220.6S/D can be taken place of nondestructive test, Pmax:7MPa	Acc. to ASTM A999 P=2St/D In the formula:S≥50%o b	Acc. to ASTM A1016 inch-pound unit:P=64000t/D SI unit:P441.2t/D	
Corrosion Test	GB4334	GB4334	/	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 E213	ASTM E13 E309 E213	
Straightness (mm/m)	S ≤ 15mm S > 15mm	S ≤ 15mm S > 15mm	S ≤ 15mm S > 15mm	Reasonable straightness	Reasonable straightness	Reasonable straightness	Reasonable straightness	Reasonable straightness	

Specification	ASTM B677	ASTM A511	JIS G 3463	JIS G 3459	DIN 17456	DIN 17458
Steel Grade	N08904	MT304 MT304L MT310S 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 1.4306 1.4307 1.4401 1.4404 1.4541 1.4550	1.4301 1.4306 1.4307 1.4401 1.4404 1.4541 1.4550
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° flars 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 ultrasound JIS G0582 UD	Choose eddy current or ultrasonic JIS G0583 EV ultrasound 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	/	/