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Shanghai LJ Metal Industrial Co.Ltd

Your Reliable & Professional Partner of stainless steel and high alloy

Material No.: 1.4541

Description

EN symbol (short)	X6CrNiTi18-10	**Density kg/dm³**	7,9
AISI	AISI 321	**Hardness HB**	130-190
UNS	S 32100 Grade TP 321	**Composition**	chromium nickel steel
AFNOR	X6CrNiTi18-10 / NF EN10088-5 (03/2009) (FR)	**Category**	Stainless steels steel, resistant to rust and acids
BS	X6CrNiTi18-10 / EN 10088-1 (06/2005) (GB)	**Structure**	austenitic
		Corrosion	resistant to intercrystalline corrosion with titanium addition, improvement of intercrystalline corrosion, worsens cutting property non-corroding
		Additional characteristics	chemically resistant

Chemical Composition

		C	Si	Mn	Cr	S	Ni	P	Ti
1.4541	**Min %**				17,00		9,00		>=(5xC)
	Max %	0,08	1,00	2,00	19,00	0,015	12,00	0,045	<=0,70
(Key to steel 2010) S-content and Cu-content may deviate in some aspects due to different product types									
AISI 321	**Min %**				17,00		9,00		>=5xC
	Max %	0,08	0,75	2,00	20,00	0,030	13,00	0,040	<=0,70
SA-213 (TP 321)									
S 32100	**Min %**				17,00		9,00		>=(5xC)
	Max %	0,08	1,00	2,00	20,00	0,030	13,00	0,045	<= 0,70
ASTM A 312 (TP 321)									

Physical properties

Property	Value
Density: kg/dm³	7,9

Hardness: HB	130-190
Hardness HB 30	<=215
magnetizable	no (might increase due to cold deformation)

Temperature T °C/F (°C/F)	**Specific heat J / kgK (Btu / lb °F)**	**Thermal conductivity W/mK (Btu·in / ft²·h·°F)**	**Electric resistance µΩ · cm (Ω circ mill / ft)**	**Modulus of elasticity kN/mm² (10^3 ksi)**	**Expansion rate from 70°F bis T 10^{-6} / K (10^{-6} / °F)**
20 / 68	500 (-)	15 (-)	0,73 (-)	200 (-)	16,0 (-)
200 /392				186 (-)	16,5 (-)
300 / 572				179 (-)	17,0 (-)
400 / 752				172 (-)	17,5 (-)
500 / 932				165 (-)	18,0 (-)

temperature	**0,2%Yield strength in high temperatures**	**1,0% Yield strength in high temperatures**
°C / °F	**Rp 0,2**	**Rp 1,0**
	N/mm² /ksi	**N/mm² /ksi**
100 / 212	176 / 25,50	208 / 30,16
200 / 392	157 / 22,77	186 / 30,00
300 / 572	136 / 19,70	167 / 24,20
400 / 752	125 / 18,10	156 / 22,60
500 / 932	119 / 17,00	149 / 21,60
ksi value calculated		

MECHANICAL PROPERTIES (20°C / 68°F)

1% Yield strength Rp1,0 (Mpa / ksi)	240 / 34,8
Tensile strength Rm (Mpa/ksi)	500-700
Elongation A5 (%)	40
impact work ISO-V	60 J

TEMPERATURE INFORMATION

Application area	
Operation temperature	ºF to 1652 ºF
Explanation report	air
Solution heat treatment	
Working temperature	1886 ºF to 2030 ºF

Processing information	cool down: water;air
Annealing	
Working temperature	1832 ºF to 2012 ºF
Explanation report	duration 5 min; width 5 mm
Processing information	cool down: water;air
Solution heat treatment	
Working temperature	2102 ºF to 1562 ºF
Processing information	cool down: air

Standards / information

Standards	Description
ASTM A 182	Standard Specification for Forged or Rolled Alloy-Steel Pipe Flanges,Forged Fittings and Valves and Parts for High-Temperature Service
ASTM A 213	Standard Specification for Seamless Ferritic and Austenitic Alloy-Steel Boiler,Superheater,and Heat-Exchanger Tubes
ASTM A 240	sheet metal and ribbons from stainless Cr and Ni pressure containers
ASTM A 249	Standard Specification for Welded austenitic steel boiler, Superheaters, heat-exchangers,and condenser Tubes
ASTM A 269	Standard Specification for Seamless and welded, austenic, and stainless steel tubing for general purposes
ASTM A 312	Standard Specification for Seamless and welded austenitic stainless steel pipes
ASTM A 403	Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings
ASTM A 479	Rods and cross-sections made of stainless and heat-resistant steel used in boilers and other pressure tanks
DIN EN 10088-1 (09/2005)	Stainless steels Part 1: List of stainless steels
DIN EN 10088-3 (09/2005)	stainless steels.Technical delivery conditions for semi-finished products,bars,rods,wire selection and bright products of corrosion resisting steels for general and construction purposes
DIN EN 10217-7	Welded steel pipes under compression load Pipes made from stainless steel
DIN EN 10296-2 (02/2006)	Welded circular steel pipes for machine construction and general technical service stainless steel
DIN EN 10297-2 (02/2006)	Welded circular steel pipes for machine construction and general technical service stainless steel. Pipes made from stainless steel

Process information

Welding	

- Material classification acc. CEN ISO/TR 15608	**8.1**
- Type	well weldable WIG submerged arc welding MAG solid wire manual arc welding (E) Laser welding
- Add. material	1.4551.4576;1.4430,1.4551,1.4316 laser welding; consult specialist literature
- Hints	special post heat treating not required

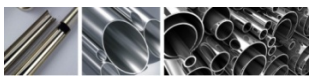
MAIN FIELDS OF APPLICATION

Details of application	certified for delivery acceptance obligating pressure containers in reference to AD data sheet W2
Certifications	
Chemical Industry	for processing nitric acid the production of acetic acid
food processing industry	
crude oil	
petrochemical industry	
food processing industry	

RANGE OF PRODUCTS

Product type	Product
Plates / Sheets	plates/sheets plate/sheet cuts
Fittings	welded reductions Welded T-pieces seamless elbows seamless reductions seamless T-pieces Other Fittings a.o. Weldolets, Nipples
Flanges / Collars / Flared tube ends	flared tube end collars various flanges (weld neck flange,blind flange etc.) weld neck flange/blind flange

Bumped boiler ends / caps / round blanks	from sheets from bar steel
Pipes / Tubes	welded pipes/tubes welded square pipes/tubes Hollow bar seamless pipes/tubes
Round bar	forged raw
Bar steel	flat steel section steel round bar steel hexagon steel
Equipment	screws, screw nuts,shims, straight turning parts, designed components



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