



MATERIAL No.: 1.4878

DESCRIPTION

EN symbol (short)	X8CrNiTi18 10	Density kg/dm³	7,9
UNS	S 32109 Grade TP 321H	Hardness HB	<=215
AFNOR	X8CrNiTi18 10 /NF EN 10088-1 (06/2005) (FR)	Composition	chromium nickel steel
BS	X8CrNiTi18 10 /NF EN 10088-1 (06/2005) (GB)	Category	Heat resistant steels and alloys
		Structure	austenitic
		Corrosion	high corrosion resistance

CHEMICAL COMPOSITION

		901C	Si	Mn	P	S	Cr	Ni	Fe	Ti	C
1.4878	Min %						17,00	9,00		>=5xC	
	Max %	0,10	1,00	2,00	0,045	0,015	19,00	12,00		<=0,80	
(Key to steel 2010)											
S 32109	Min %						17,00	9,00			0,04
	Max %		1,00	2,00	0,045	0,030	20,00	13,00		0,60*	0,10
ASTM A312 (S 32109)-(TP 321H)											

PHYSICAL PROPERTIES

Property		Value				
Density: kg/dm³		7,9				
Hardness: HB		<=215				
magnetizable		no				
Temperature T °C/F (°C/F)	Specific heat J / kgK (Btu / lb °F)	Thermal conductivity W/mK (Btu·in / ft ² ·h·°F)	Electric resistance μΩ · cm (Ω circ mill / ft)	Modulus of elasticity kN/mm ² (10 ³ ksi)	Expansion rate from 70°F bis T 10 ⁻⁶ / K (10 ⁻⁶ / °F)	

20 / 68	500 (--)				
200 / 392					17,0 (--)
400 / 752					18,0 (--)
600 / 1112					18,6 (--)
800 / 1472					19,1 (--)
Temp.	Creep strain limit	Creep strain limit	Creep rupture strength	Creep rupture strength	Creep rupture strength
° C / ° F	Rp 1,0 / 10 000h		10 000h	100 000h	
° C / ° F	N / mm ² / ksi		N / mm ² / ksi	N / mm ² / ksi	
400 / 752					
500 / 932					
600 / 1112	85 / 12,3		115 / 16,6	65 / 9,4	
700 / 1292	30 / 4,3		45 / 6,5	22 / 3,2	
800 / 1472	10 / 1,45		20 / 2,9	10 / 1,45	
ksi value calculated					

MECHANICAL PROPERTIES (20°C / 68°F)

0,2% Yield strength Rp0,2 Mpa/ksi	>=210/>=30,4	
Tensile strength Rm(20°C)	500-700 Mpa	solution heat treatment
Elongation A5	>=40%	solution heat treatment

TEMPERATURE INFORMATION

Application area		
Operation temperature	0°F to 1562 °F	scaling resistance (air) up to 1560°F
Solution heat treatment		
Working temperature	1868 °F to 2048 °F	
Explanation report	cooldown: air / water	
Solution heat treatment		
Working temperature	1562 °F to 2012 °F	
Explanation report	cooldown	

STANDARDS / INFORMATION

Standards	Description
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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 276	Rods and cross-sections made of stainless and heat-resistant steel
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 10095 (05/1999)	heat resistant steel and nickel alloy
SEW 470 (02/1976)	heat-resisting rolled and forged steels

PROCESS INFORMATION

Welding

- Type	WIG submerged arc welding MAG solid wire manual arc welding (E)
- Add. material	1.4548,1.4370

MAIN FIELDS OF APPLICATION

Details of application	scaling resistance in air up to 1562°F
Certifications	
industrial furnace engineering	muffles annealing tubes muffle pipes annealing hood

RANGE OF PRODUCTS

Product type	Product
Processing / Construction	from pipes, fittings, flanges (welded) from bar steel (turning, milling)
Fittings	welded elbows welded reductions Welded T-pieces seamless elbows seamless reductions seamless T-pieces Other Fittings a.o. Weldolets, Nipples
Flanges / Collars / Flared tube ends	various flanges (weld neck flange,blind flange etc.)

Pipes / Tubes	welded pipes/tubes seamless pipes/tubes
Bar steel	flat steel round bar steel
Equipment	screws, screw nuts, shims, straight turning parts, designed components

[Pipe/Tube/Fitting/Flange/Valve/Plate](#)

Stainless Steel/Nickel Alloy/Duplex

