LJ Metal
Stockist | Manufacturing | Sourcing

Shanghai LJ Metal Industrial Co.Ltd

Your Reliable & Professional Partner of stainless steel and high alloy

MATERIAL NO.: AISI316/ S31600/ 1.4401

DESCRIPTION

EN symbol (short)	X5CrNiMo17-12-2	**Density kg/dm³**	7,98
AISI	AISI 316	**Hardness HB Rockwell Hardness Number max.**	160-190 B 90 (TP316 ASTM A 249)
UNS	S 31600 Grade TP 316	**Composition**	chromium nickel molybdenum steels
AFNOR	NF (EN 10088-1(06/2005) (FR)	**Category**	Stainless steels steel, resistant to rust and acids
BS	B.S.EN 10088-1 (06/2005) (GB)	**Structure**	austenitic
		Corrosion	good resistance to tensile corrosion good resistance to intergranular corrosion to ca. 572° F (ca 300°C) up until 0.2"
		Additional characteristics	resistant to carbonization

CHEMICAL COMPOSITION

		C	Mn	P	S	Cr	Mo	Si	N	Ni
1.4401	**Min %**					16,50	2,00			10,00
	Max %	0,07	2,00	0,045	0,015	18,50	2,50	1,00	0,110	13,00
(Key to steel 2010) DIN-Norms may deviate in some aspects due to different product types										
AISI 316	**Min %**					16,0	2,00			10,0
	Max %	0,08	2,00	0,040	0,03	18,0	3,00	0,75		14,0
ASTM A 249 (TP316)										
S 31600	**Min %**					16,0	2,00			11,0
	Max %	0,08	2,00	0,045	0,03	18,0	3,00	1,00		14,0
ASTM A 312 (TP 316)										

Reference:

PHYSICAL PROPERTIES

Property	Value

Density: kg/dm^3	7,98
Hardness: HB **Rockwell Hardness Number max.**	160-190 B 90 (TP316 ASTM A 249)
polishable	good
hardenable	non
magnetizable	non

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 (--)	15(--)	0,75 (--)	200 (29)	
100 / (212)					16,5 (--)
200 / (392)					17,5 (--)
300 / (572)					17,5 (--)
400 / (752)					18,5 (--)
500 / (932)					18,5 (--)
.					

temperature	**1% Yield strength in high temperatures**	**0.2%Yield strength in high temperatures**	**tensile strength in high temperatures**
°C / °F	**Rp 1,0**	**Rp 0,2**	**Rm**
	N/mm^2 /ksi	**N/mm^2 /ksi**	**N/mm^2 /ksi**
50 / 122	230 / 33,35	196 / 28,40	486 / 70,50
100 / 212	211 / 30,60	177 / 25,67	430 / 62,40
200 / 392	177 / 25,67	147 / 21,30	390 / 56,60
300 / 572	156 / 22,60	127 / 18,40	380 / 55,10
400 / 752	144 / 20,90	115 / 16,70	
500 / 932	139 /20,16	110 / 15,90	
ksi value calculated			

MECHANICAL PROPERTIES (20°C / 68°F)

1 %Yield strength Rp 1,0 **Yield strength (ksi)/ Mpa**	260Mpa 30 / 205	TP 316 (ASTM A 249)
0,2 %Yield strength Rp 0,2	205 MPa	
Tensile strength Rm (N/mm^2)	410-710	

Tensile strength min. ksi (Mpa)	75 (515)		TP 316 (ASTM A 249)
elongation A5 (%) **Elongation %**	45 35	 in 2 in.or 50mm	 TP 316 (ASTM A 249)
impact work KV **(ISO-V/Chirpy-V)**	>100J />60J		lengthwise / transverse

Temperature information

Application area		
Operation temperature	-166 ºF to 1022 ºF	in strain situation III (to -454°F)
Solution heat treatment		
Working temperature	1868 ºF to 2012 ºF	
Processing information	Cool down: air (<2mm) ;water (>2mm)	
Solution heat treatment		
Working temperature	2102 ºF to 1382 ºF	read AD data sheet HP 7/3
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 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 312	Standard Specification for Seamless and welded austenitic stainless steel pipes
ASTM A 403	Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings
DIN EN 10028-7 (02/2008)	flat products made from steel for pressure tanks Part 7: Stainless steel
DIN EN 10088-1 (09/2005)	Stainless steels Part 1: List of stainless steels
DIN EN 10088-2 (09/2005)	stainless steel; sheet metal and ribbons out of corrosion resistant steel for general purposes
DIN EN 10216-5 (11/2004+B1)	Seamless steel tubes under compression load Stainless steel tubes
DIN EN 10217-7 (05/2005)	Welded steel tubes under compression load. Stainless steel tubes
DIN EN 10296-2 (02/2006)	welded circular steel pipes for machine construction and general technical applications, stainless steel
DIN EN 10297-2 (02/2006)	seamless circular steel pipes for machine construction and general technical applications, stainless steel

PROCESS INFORMATION

Cold forming	Generally no heat treatment required after cold processing, except when in danger of cold cracking.
Welding	
- Material classification acc. CEN ISO/TR 15608	**8.1**
- Type	well weldable manual arc welding (E) resistance welding Electrode Welding wire
- Add. material	1.4303;1.4430,1.4576 ,1.4428
- Hints	special post heat treating not required

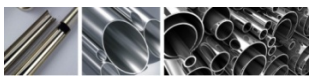
MAIN FIELDS OF APPLICATION

Details of application	-Steel, not hardenable -polishable -for applications in industrial climates and coastal areas -thin pieces also weldable on construction sites
Certifications	Certified for purchase obligating pressure containers in accordance to AD-information sheet W2
Chemical Industry	chlorination plants transport unit for choric medium
crude oil	various plant parts
cellulose/paper industry	
Environmental technology	clarification plants
textile industry	various containers and plant components
building industry	
food processing industry	grounds for creamery grounds for brewery

RANGE OF PRODUCTS

Product type	Product
Plates / Sheets	plates/sheets plate/sheet cuts
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	flared tube end collars various flanges (weld neck flange,blind flange etc.)
Bumped boiler ends / caps / round blanks	from sheets from bar steel
Pipes / Tubes	welded pipes/tubes seamless pipes/tubes
Bar steel	section steel round bar steel hexagon steel



Shanghai LJ Metal Industrial Co Ltd - No.1999 Guangtai Road Shanghai 201400 China | Tel: +86 (21) 62501821 | www.ljstainless.com – export@ljstainless.com