

Quality		X8CrNiS18-9				Austenitic Stainless Steel			Technical card			
Number		1.4305							Lucefin Group			
Chemical composition												
C% max	Si% max	Mn% max	P% max	S%	Cr%	Ni%	N% max	Cu% max	EN 10088-1: 2005			
0,10	1,00	2,00	0,045	0,15-0,35	17,0-19,0	8,0-10,0	0,11	1,00				
± 0.01	+ 0.05	± 0.04	+ 0.005	± 0.02	± 0.2	± 0.1	± 0.01	± 0.07				
Product deviations are allowed												
Temperature °C												
Melting range		Hot-forming	Solution annealing (Solubilization)		Stabilizing		MMA welding – AWS electrodes					
1420-1400		1200-900	1150-1040 water / air		not necessary		pre-heating not recommended joint with steel post welding					
Sensitization		Quenching	Tempering		Soft annealing		carbon butter E309 - E312, finish with E308 CrMo alloyed stainless the same as E308 - E312 carbon steels					
sensitization test at 800-450		not suitable	not suitable		not suitable		cosmetic welding E308 – E312					
Mechanical properties												
Hot-formed EN 10088-3: 2005 in conditions 1C, 1E, 1D, 1X, 1G, 2D												
size mm		Testing at room temperature										
		R	Rp 0.2	A% (L)	A% (T)	Kv +20 °C (L)	Kv +20 °C (T)	HB a)				
from	to	N/mm²	N/mm² min	min		J min	J min	max				
	160	500-750	190	35				230 +AT solubilization				
a) for information only (L) = longitudinal (T) = transversal												
Cold-processed EN 10088-3: 2005 in conditions 2H, 2B, 2G, 2P												
size mm		Testing at room temperature										
		R	Rp 0.2	A% (L)	A% (T)	Kv +20 °C (L)	Kv +20 °C (T)					
from	to	N/mm²	N/mm² min	min	min	J min	J min					
	10 b)	600-950	400	15				+AT solubilization				
10	16	600-950	400	15								
16	40	600-850	190	20		100						
40	63	500-850	190	20		100						
63	160	500-750	190	35		100						
b) in the range of 1 mm ≤ d < 5 mm, values are valid only for rounds – the mechanical properties of non round bars of < 5 mm of thickness have to be agreed at the time of request and order (L) = longitudinal (T) = transversal												
Forged (ASTM A 473-99 steel ASTM 303)												
size mm		Testing at room temperature										
		R	Rp 0.2	A% (L)	C%	Kv +20 °C (L)	Kv +20 °C (T)					
from	to	N/mm² min	N/mm² min	min	min	J min	J min					
		515	205	40	50			+AT solubilization				
Work-hardened by cold-drawing EN 10088-3: 2005 in condition 2H (ex. +AT+C)												
size mm		Testing at room temperature										
		R	Rp 0.2	A%								
from	to	N/mm²	N/mm² min	min								
	35	700-850	350	20	+AT+C700 cold-drawn material							
	25	800-1000	500	12	+AT+C800 cold-drawn material							
Transition curve determined by Kv impacts. Material solubilized at 1050 °C												
Average	J	212	222	230	238	244	250	258				
Test at	°C	-160	-120	-80	-40	0	+40	+80				
Effect of cold-working (hot-rolled +AT+C). Approximate values												
R	N/mm²	610	660	670	695	745	765	795	815	855	895	940
Rp 0.2	N/mm²	240	400	450	470	520	540	560	580	630	650	720
A	%	40	22	20	20	18	16	16	14	14	12	12
Reduction	%	0	5	6	8	10	12	14	16	18	20	24

Thermal expansion	$10^{-6} \cdot K^{-1}$	►	10.5	11.0	11.5	12.0	18.8
Modulus of elasticity	longitudinal GPa	200	194	186	179	172	127
Poisson number	ν	0.240	0.256				
Electrical resistivity	$\Omega \cdot mm^2/m$	0.73		0.86		0.97	1.15
Electrical conductivity	Siemens·m/mm ²	1.37					
Specific heat	J/(Kg·K)	500		510		550	585
Density	Kg/dm ³	7.84					630
Thermal conductivity	W/(m·K)	15.3	16.3	17.5	19.9	21.5	25.1
Relative magnetic permeability	μ_r	1.021					
Temperature	°C	20	100	200	300	400	600
The symbol ► indicates temperatures between 20 °C and 100 °C, 20 °C and 200 °C							

Corrosion resistance	Atmospheric		Chemical			x food and organic substances, 5% nitric acid
Fresh water	industrial	marine	medium	oxidizing	reducing	
x	x	x	x			
Magnetic	not					
Machinability	high					
Hardening	cold-drawn and other cold plastic deformation					
Service temperature in air	continuous service up to 870 °C; intermittent service up to 760 °C					

Europe	USA	USA	China	Russia	Japan	India	Republic of Korea
EN	UNS	ASTM	GB	GOST	JIS	IS	KS
X8CrNiS18-9	S30300	303	Y1R18Ni9	12Ch18N10E	SUS 303		STS 303

Tensile strength/corrosion resistance approximate scale

