

<b>Quality</b>	<b>X8CrNiS18-9</b>	<b>Austenitic</b>	<i>Technical card 2018</i>
Number	<b>1.4305</b>	<b>Stainless Steel</b>	<i>Lucefin Group</i>

### Chemical composition

C%	Si%	Mn%	P%	S%	Cr%	Ni%	N%	Cu%	
max	max	max	max				max	max	
0,10	1,00	2,00	0,045	0,15-0,35	17,0-19,0	8,0-10,0	0,10	1,00	EN 10088-3: 2014
± 0.01	+ 0.05	± 0.04	+ 0.005	± 0.02	± 0.2	± 0.1	+ 0.01	+ 0.04	

Product deviations are allowed

### Temperature °C

Melting range	Hot-forming	Solution annealing (Solubilization) +AT	Stabilizing	MMA welding – AWS electrodes
1420-1400	1200-925	1150-1040 water / air	not necessary	<i>pre-heating</i> <i>post welding</i> not recommended
Sensitization	Quenching +Q	Tempering +T	Soft annealing +A	joint with steel
sensitization test at 800-450	not suitable	not suitable	not suitable	carbon butter E309 - E312, finish with E308      CrMo alloyed stainless E308 - E312 the same as carbon steels
				<i>cosmetic welding</i> E308 – E312

**Chemical treatment** - Passivation (20 - 50% HNO<sub>3</sub>) + (2 - 6% Na<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> • 2H<sub>2</sub>O) hot or cold

### Mechanical properties

**Heat-treated material** EN 10088-3: 2014 in conditions 1C, 1E, 1D, 1X, 1G, 2D

size	Testing at room temperature							
mm	R	Rp 0.2	A%	A%	Kv <sub>2</sub> +20 °C	Kv <sub>2</sub> +20 °C	HBW <sup>a)</sup>	
from to	N/mm <sup>2</sup>	N/mm <sup>2</sup> min	min (L)	min (T)	J min (L)	J min (T)	max	
160	500-750	190	35	-	-	-	230	+AT solubilization

<sup>a)</sup> for information only (L) = longitudinal (T) = transversal

**Bright bars of heat-treated material** EN 10088-3: 2014 in conditions 2H, 2B, 2G, 2P

size	Testing at room temperature							
mm	R	Rp 0.2	A%	A%	Kv <sub>2</sub> +20 °C	Kv <sub>2</sub> +20 °C		
from to	N/mm <sup>2</sup>	N/mm <sup>2</sup> min	min (L)	min (T)	J min (L)	J min (T)		
10 <sup>b)</sup>	600-950	400	15	-	-	-		
10	600-950	400	15	-	-	-		+AT solubilization
16	500-850	190	20	-	-	-		
40	500-850	190	20	-	-	-		
63	500-750	190	35	-	-	-		

<sup>b)</sup> 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 473-17a steel ASTM 303)

size	Testing at room temperature							
mm	R	Rp 0.2	A%	Z%	Kv +20 °C	Kv +20 °C		
from to	N/mm <sup>2</sup> min	N/mm <sup>2</sup> min	min (L)	min (L)	J min (L)	J min (T)		
	515	205	40	50	-	-		+AT solubilization

**Work-hardened by cold-drawing** EN 10088-3: 2014 in condition 2H (ex. +AT+C)

size	Testing at room temperature							
mm	R	Rp 0.2	A%					
from to	N/mm <sup>2</sup>	N/mm <sup>2</sup> 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

<b>R</b>	N/mm <sup>2</sup>	610	800	1000	1200	1320	1480	1600	1750
<b>Rp 0.2</b>	N/mm <sup>2</sup>	240	550	740	880	1020	1200	1320	1450
<b>A</b>	%	40	20	16	10	8	8	8	6
<b>permeability</b>	μr	1.005	1.06	1.64	3.44	-	-	-	-
Reduction	%	0	10	20	30	40	50	60	70

<b>Thermal expansion</b>	$10^{-6} \cdot K^{-1}$	►	16.0	16.5	17.0	17.5	
<b>Modulus of elasticity</b>	longitudinal GPa	200	194	186	179	172	127
<b>Poisson number</b>	$\nu$	0.24	0.256				
<b>Electrical resistivity</b>	$\Omega \cdot mm^2/m$	0.73		0.86		0.97	1.15
<b>Electrical conductivity</b>	Siemens•m/mm <sup>2</sup>	1.37					
<b>Specific heat</b>	J/(Kg•K)	500		510		550	585
<b>Density</b>	Kg/dm <sup>3</sup>	7.90					630
<b>Thermal conductivity</b>	W/(m•K)	15.3	16.3	17.5	19.9	21.5	25.1
<b>Relative magnetic permeability</b>	$\mu_r$	1.021					
<b>°C</b>		<b>20</b>	<b>100</b>	<b>200</b>	<b>300</b>	<b>400</b>	<b>600</b>

The symbol ► indicates temperatures between 20 °C and 100 °C, 20 °C and 200 °C .....

<b>Corrosion resistance</b>	Atmospheric		Chemical			x food and organic substances, 5% nitric acid
Fresh water	<i>industrial</i>	<i>marine</i>	<i>medium</i>	<i>oxidizing</i>	<i>reducing</i>	
x	x	x	x			

<b>Magnetic</b>	not
<b>Machinability</b>	high
<b>Hardening</b>	cold-drawn and other cold plastic deformation
<b>Service temperature in air</b>	continuous service up to 870 °C; intermittent service up to 760 °C

<b>Europe</b>	<b>USA</b>	<b>USA</b>	<b>China</b>	<b>Russia</b>	<b>Japan</b>	<b>India</b>	<b>Republic of Korea</b>
EN	UNS	ASTM	GB	GOST	JIS	IS	KS
X8CrNiS18-9	S30300	<b>303</b>	Y1Cr18Ni9	12Ch18N10E	SUS 303		STS 303

Tensile strength/corrosion resistance approximate scale

