

<b>Quality</b>	<b>X2CrNiMo17-12-2</b>	<b>Austenitic</b>	<i>Technical card 2018</i>
Number	<b>1.4404</b>	<b>Stainless Steel</b>	<i>Lucefin Group</i>

### Chemical composition

C%	Si%	Mn%	P%	S% <sup>a)</sup>	Cr%	Ni%	N%	Mo%	
max	max	max	max	max			max		
0,03	1,00	2,00	0,045	0,030	16,5-18,5	10,0-13,0	0,10	2,0-2,5	EN 10088-3: 2014
± 0.005	+ 0.05	+ 0.04	+ 0.005	± 0.005	± 0.2	± 0.15	+ 0.01	± 0.1	

Product deviations are allowed

<sup>a)</sup> for improving machinability, it is allowed a controlled sulphur content of 0,015 % - 0,030 %; for polishability, it is suggested a controlled sulphur content of max 0,015 %

### Temperature °C

Melting range	Hot-forming	Solution annealing (Solubilization) +AT	Stabilizing	Soft annealing +A	MMA welding – AWS electrodes
1400-1380	1200-925	1110-1040 water	885 calm air	not suitable	<i>pre-heating</i> not necessary <i>post welding</i> slow cooling
Sensitization	Quenching +Q	Tempering +T	Stress-relieving +SR		<i>joint with steel</i>
sensitization test at 700-450	not suitable	not suitable	450-200 furnace		carbon CrMo alloyed stainless E309-E308 E309-E308 E308 <i>cosmetic welding</i> E 316L

**Chemical treatment** ▪ *Pickling* (6 - 25% HNO<sub>3</sub>) + (0.5 - 8% HF) hot ▪ *Passivation* 20 - 50% HNO<sub>3</sub> hot

### Mechanical properties

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

size mm	Testing at room temperature							
from to	R	Rp 0.2	A%	A%	Kv <sub>2</sub> +20 °C	Kv <sub>2</sub> +20 °C	HBW <sup>a)</sup>	
	N/mm <sup>2</sup>	N/mm <sup>2</sup> min	min (L)	min (T)	J min (L)	J min (T)	max	
160	500-700	200	40	-	100	-	215	+AT solubilization
160 250	500-700	200	-	30	-	60	215	+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 mm	Testing at room temperature							
from to	R	Rp 0.2	A%	A%	Kv <sub>2</sub> +20 °C	Kv <sub>2</sub> +20 °C		
	N/mm <sup>2</sup>	N/mm <sup>2</sup> min	min (L)	min (T)	J min (L)	J min (T)		
10 16	600-930	400	25	-	-	-		
16 16	580-930	380	25	-	-	-		+AT solubilization
16 40	500-830	200	30	-	100	-		
40 63	500-830	200	30	-	100	-		
63 160	500-700	200	40	-	100	-		
160 250	500-700	200	-	30	-	60		

<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 +AT solubilization

size mm	Testing at room temperature							
from to	R	Rp 0.2	A%	A%	Kv +20 °C	Kv +20 °C	Kv -196 °C	
	N/mm <sup>2</sup>	N/mm <sup>2</sup> min	min (L)	min (T)	J min (L)	J min (T)	J min (T)	
250	500-700	200	-	30	100	60	-	UNI EN 10250-4:01
250	490-690	190	45	35	100	60	60	UNI EN 10222-5:01

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

size mm	Testing at room temperature							
from to	R	Rp 0.2	A%					
	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		

Effect of **cold-working** (hot-rolled +AT+C). Approximate values

Effect of cold-working (hot-rolled +AT+C). Approximate values										+AT material – Approximate values			
R	N/mm <sup>2</sup>	500	650	790	850	940	1030	1100	1200	°C	R	Rp 0.2	A
Rp 0.2	N/mm <sup>2</sup>	200	520	700	760	830	920	1000	1080		N/mm <sup>2</sup>	N/mm <sup>2</sup>	%
A	%	55	30	14	12	10	9	8	8	<b>+24</b>	520	220	45
Reduction	%	<b>0</b>	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>-80</b>	840	275	40
										<b>-196</b>	1200	350	35

**Minimum yield stress and tensile strength values at high temperatures** on material +AT, EN 10088-3: 2014/EN 10269: 2001

<b>R<sub>p0.2</sub></b>	N/mm <sup>2</sup>	165	150	137	127	119	113	108	103	100	99
<b>R</b>	N/mm <sup>2</sup>	430	410	390	385	380	380	380	375	360	335
Test at	°C	<b>100</b>	<b>150</b>	<b>200</b>	<b>250</b>	<b>300</b>	<b>350</b>	<b>400</b>	<b>450</b>	<b>500</b>	<b>550</b>

<b>Thermal expansion</b>		10 <sup>-6</sup> · K <sup>-1</sup>	▶	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>		ν		0.256	0.280						
<b>Electrical resistivity</b>		Ω · mm <sup>2</sup> /m		0.75							
<b>Electrical conductivity</b>		Siemens·m/mm <sup>2</sup>		1.33							
<b>Specific heat</b>		J/(Kg·K)		500							
<b>Density</b>		Kg/dm <sup>3</sup>		8.00							
<b>Thermal conductivity</b>		W/(m·K)		15.0							
<b>Relative magnetic permeability</b>		μ <sub>r</sub>		1.02							
<b>Temperature</b>		°C		<b>20</b>	<b>100</b>	<b>200</b>	<b>300</b>	<b>400</b>	<b>600</b>	<b>800</b>	

The symbol ▶ indicates temperature between 20 °C and 100 °C, 20 °C and 200 °C .....

<b>Corrosion resistance</b>	Atmospheric		Chemical			x intercrystalline c. pitting from chlorides, salts, organic acids	
Fresh water	<i>industrial</i>	<i>marine</i>	<i>medium</i>	<i>oxidizing</i>	<i>reducing</i>		
<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>		
<b>Magnetic</b>	no						
<b>Machinability</b>	high						
<b>Hardening</b>	cold-drawn and other cold plastic deformations						
<b>Service temperature in air</b>	continuous service up to 850 °C; intermittent service up to 800 °C						
<b>Europe</b>	<b>USA</b>	<b>USA</b>	<b>China</b>	<b>Russia</b>	<b>Japan</b>	<b>India</b>	<b>R. Corea</b>
EN	UNS	ASTM	GB	GOST	JIS	IS	KS
X2CrNiMo17-12-2	S31603	<b>316L</b>	022Cr17Ni12Mo2	03Ch17N13M2	SUS 316L	X02Cr17Ni12Mo2	STS 316L

Stainless steel wire mesh - AISI 316L steel

