



Quality	X2CrNiMoCuS17-10-2	Free machining Austenitic	<i>Technical card 2018</i>
Number	1.4598	Stainless Steel	<i>Lucefin Group</i>

Chemical composition

C%	Si%	Mn%	P%	S%	Cr%	Ni%	N%	Mo%	Cu%	
max	max	max	max				max			EN 10088-3: 2014
0,03	1,00	2,00	0,045	0,10-0,20	16,5-18,5	10,0-13,0	0,10	2,0-2,5	1,3-1,8	
+ 0.005	+ 0.05	± 0.04	+ 0.005	± 0.02	± 0.2	± 0.15	+ 0.01	± 0.1	± 0.1	

Product deviations are allowed

Temperature °C

Melting range	Hot-forming	Solution annealing (Solubilization) +AT	Stabilizing	Soft annealing +A	MMA welding – AWS electrodes
1420-1380	1180-980	1120-1020 water	not required	not suitable	<i>pre-heating pre-heating</i> given the high sulfur content is not recommended
Sensitization	Quenching +Q	Tempering +T	Stress-relieving +SR		<i>joint with steel</i> carbon carbon carbon
not required	not suitable	not suitable	450-230 air		<i>cosmetic welding</i>

Chemical treatment

▪ *Pickling* (10 - 15% HNO₃) + (0,5 – 1,5% HF) hot ▪ *Passivation* (12% HNO₃) + (4% di CuSO₄) hot 50-60 °C

Mechanical properties

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

size		Testing at room temperature							
mm		R	R _p 0.2	A%	A%	Kv ₂ +20 °C	Kv ₂ +20 °C	HBW ^{a)}	
from	to	N/mm ²	N/mm ² min	min (L)	min (T)	J min (L)	J min (T)	max	
	160	500-700	200	40	-	100	-	215 +AT solubilization	

^{a)} 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	R _p 0.2	A%	A%	Kv ₂ +20 °C	Kv ₂ +20 °C		
from	to	N/mm ²	N/mm ² min	min (L)	min (T)	J min (L)	J min (T)		
	10 ^{b)}	600-930	400	15	-	-	-		
10	16	600-900	400	20	-	-	-	+AT	
16	40	500-850	200	25	-	-	-	solubilization	
40	63	500-800	200	30	-	-	-		
63	160	500-700	200	40	-	-	-		

^{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

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

R	N/mm ²	600	640	720	800	900	940	1020	1100
R _p 0.2	N/mm ²	300	450	600	700	800	880	940	1000
Reduction %		0	10	20	30	40	50	60	70

Minimum 0.2% proof strength at high temperatures on material +AT EN 10088-3: 2014

R_p 0.2	N/mm ²	165	150	137	127	119	113	108	103	100	98
Test at	°C	100	150	200	250	300	350	400	450	500	550

Thermal expansion	10 ⁻⁶ • K ⁻¹	▶	16.5	17.3	17.7	18.1	18.4
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Modulus of elasticity	GPa	200	194	186	179	172	165
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Poisson number	ν	0.27-0.30
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Electrical resistivity	Ω • mm ² /m	0.75
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Electrical conductivity	Siemens•m/mm ²	1.33
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Specific heat	J/(Kg•K)	500
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Density	Kg/dm ³	8.00
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Thermal conductivity	W/(m•K)	14.5
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Relative magnetic permeability	μ _r	1.008					
°C		20	100	200	300	400	500

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

Corrosion resistance	Atmospheric		Chemical			x intergranular, different varieties of salts
Fresh water	<i>industrial</i>	<i>marine</i>	<i>medium</i>	<i>oxidizing</i>	<i>reducing</i>	
x	x	x	x	x	x	

Magnetic	no
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Machinability	high
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Hardening	cold-drawn and other cold plastic deformations
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Service temperature in air	continuous service up to 900 °C; intermittent service up to 860 °C
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Europe	USA	USA	China	Russia	Japan	India	R. Corea
EN	UNS	ASTM	GB	GOST	JIS	IS	KS

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