



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

Chemical composition

C%	Si%	Mn%	P%	S% a)	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

a) 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% HNO₃) + (0.5 - 8% HF) hot - Passivation 20 - 50% HNO₃ hot

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 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
160	250	500-700	200	-	30	-	60	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	Rp 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	25	-	-	-	
10	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	

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 +AT solubilization

size		Testing at room temperature						
mm		R	Rp 0.2	A%	A%	Kv +20 °C	Kv +20 °C	Kv -196 °C
from	to	N/mm ²	N/mm ² 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		Testing at room temperature						
mm		R	Rp 0.2	A%				
from	to	N/mm ²	N/mm ² 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 ²	500	650	790	850	940	1030	1100	1200	°C	R	Rp 0.2	A
Rp 0.2	N/mm ²	200	520	700	760	830	920	1000	1080		N/mm ²	N/mm ²	%
A	%	55	30	14	12	10	9	8	8	+24	520	220	45
Reduction	%	0	10	20	30	40	50	60	70	-80	840	275	40
										-196	1200	350	35

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

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

Thermal expansion		10 ⁻⁶ · K ⁻¹	▶	16.0	16.5	17.0	17.5			
Modulus of elasticity	longitudinal	GPa		200	194	186	179	172		127
Poisson number		ν		0.256	0.280					
Electrical resistivity		Ω · mm ² /m		0.75						
Electrical conductivity		Siemens·m/mm ²		1.33						
Specific heat		J/(Kg·K)		500						
Density		Kg/dm ³		8.00						
Thermal conductivity		W/(m·K)		15.0						
Relative magnetic permeability		μ _r		1.02						
Temperature		°C		20	100	200	300	400	600	800

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

Corrosion resistance	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>		
x	x	x	x	x	x		
Magnetic	no						
Machinability	high						
Hardening	cold-drawn and other cold plastic deformations						
Service temperature in air	continuous service up to 850 °C; intermittent service up to 800 °C						
Europe	USA	USA	China	Russia	Japan	India	R. Korea
EN	UNS	ASTM	GB	GOST	JIS	IS	KS
X2CrNiMo17-12-2	S31603	316L	022Cr17Ni12Mo2	03Ch17N13M2	SUS 316L	X02Cr17Ni12Mo2	STS 316L

Stainless steel wire mesh - AISI 316L steel

