

Quality	X2CrNiMo17-12-2	Austenitic	<i>Technical card</i>
Number	1.4404	Stainless Steel	<i>Lucefin 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	0,015	16,5-18,5	10,0-13,0	0,11	2,0-2,5	EN 10088-1: 2005
± 0.005	+ 0.05	± 0.04	+ 0.005	+ 0.003	± 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)	Stabilizing	Soft annealing	MMA welding – AWS electrodes <i>pre-heating</i> <i>post welding</i>
1400-1380	1200-900	1110-1040 water	885 calm air	not suitable	not required slow cooling
Sensitization	Quenching	Tempering	joint with steel carbon CrMo alloyed stainless		
sensitization test at 700-450	not suitable	not suitable	E309-E308	E309-E308	E308
			<i>cosmetic welding</i> E 316L		

Mechanical properties

Hot-formed EN 10088-3: 2005 in conditions 1C, 1E, 1D, 1X, 1G, 2D

size mm		Testing at room temperature						
from	to	R	Rp 0.2	A% (L)	A% (T)	Kv +20 °C (L)	Kv +20 °C (T)	HB ^{a)}
		N/mm ²	N/mm ² min	min		J min	J min	max
	160	500-700	200	40		100		215
160	250	500-700	200		30		60	215

^{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						
from	to	R	Rp 0.2	A% (L)	A% (T)	Kv +20 °C (L)	Kv +20 °C (T)	
		N/mm ²	N/mm ² min	min	min	J min	J min	
	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 mm		Testing at room temperature						
from	to	R	Rp 0.2	A%	A%	Kv +20 °C	Kv +20 °C	Kv -196 °C
		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	
	250	490-690	190	45	35	100	60	60

EN 10250-4: 2001

EN 10222-5: 2001

Work-hardened by cold-drawing EN 10088-3: 2005 in condition 2H (es. +AT+C)

size mm		Testing at room temperature			
from	to	R	Rp 0.2	A%	
		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	°C	R	Rp 0.2	A
Rp 0.2	N/mm ²	200	520	700	760	830		N/mm ²	N/mm ²	%
A	%	55	30	14	12	10	+24	520	220	45
Reduction	%	0	10	20	30	40	-80	840	275	40
							-196	1200	350	35

Minimum yield stress and tensile strength values at high temperatures on material +AT, EN 10088-3: 2005/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	$10^{-6} \cdot K^{-1}$	▶	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		$\Omega \cdot mm^2/m$	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. Corea
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

