

Quality	X2CrNiN23-4	Austenitic-Ferritic	<i>Technical card 2018</i>
Number	1.4362	Stainless Steel (Duplex)	Lucefin Group

Chemical composition

C%	Si%	Mn%	P%	S%	Cr%	Ni%	N%	Cu%	Mo%	
max	max	max	max	max						
0,03	1,00	2,00	0,035	0,015	22,0-24,5	3,5-5,5	0,05-0,20	0,10-0,60	0,10-0,60	EN 10088-3: 2014
+ 0.005	+ 0.05	+ 0.04	+ 0.005	+ 0.003	± 0.25	± 0.07	± 0.02	+ 0.04	+ 0.03	

Product deviations are allowed

Temperature °C

Melting range	Hot-forming	Solution annealing (Solubilization) +AT	Stabilizing	Soft annealing +A	MMA welding – AWS electrodes
1480-1460	1150-1000	1100-1020 water	not required	not suitable	<i>preheating</i> not necessary <i>post welding</i> solubilization <i>oint with steel</i>
Sensitization	Quenching +Q	Tempering +T	Stress-relieving +SR short stay	Recrystallization +RA	carbon E2209 <i>cosmetic welding</i> AWS A 5.9
not suitable	not suitable	not suitable	600-550 air	1050-950 quick cooling	CrMo alloyed E309L stainless E309LMo

Chemical treatment - Pickling (52% HNO₃) + (65% HF) hot - Passivation 20 - 45% HNO₃ cold

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 ₂ +20 °C	Kv ₂ +20 °C	HBW ^{a)}
		N/mm ²	N/mm ² min	min (L)	min (T)	J min (L)	J min ^{b)} (L)	max
160	600-830	400	25	-	100	40	260	+AT solubilization

^{a)} for information only (L) = longitudinal (T) = transversal ^{b)} EN 10272 : 2003

Forged +AT solubilization UNI EN 10250-4: 2001

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)
160	600-830	400	25	20	100	60	-	

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

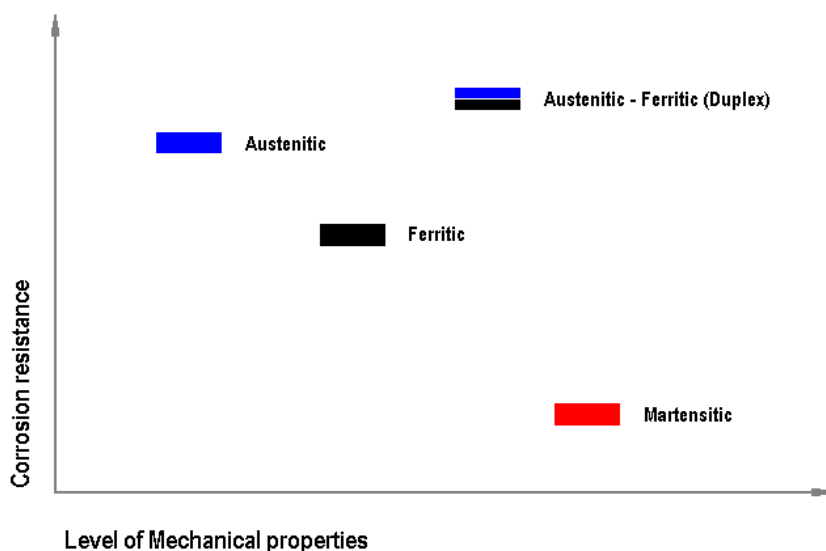
R	N/mm ²	740	780	830	880	910	950
Rp 0.2	N/mm ²	520	690	720	800	840	870
A	%	40	38	34	28	25	16
Reduction %		0	5	10	15	20	30

Minimum yield stress and tensile strength values at high temperatures on material +AT EN 10028-7: 2007

Rp 0.2	N/mm ²	374 ^{a)}	330	300	280	265
R	N/mm ²	577 ^{a)}	540	520	500	490
Test at °C		50	100	150	200	250

^{a)} determined by linear interpolatio

Indicative scale of corrosion resistance/mechanical properties (G. Di Caprio, Gli acciai inossidabili. Biblioteca Hoepli)



X2CrNiN23-4 nr° 1.4362 austenitic-ferritic stainless steel (Duplex)

Thermal expansion	$10^{-6} \cdot K^{-1}$	►	13.0	13.5	14.0	
Modulus of elasticity	longitudinal	GPa	200	194	186	180
Poisson number	ν		0.33			
Electrical resistivity	$\Omega \cdot mm^2/m$		0.80			
Electrical conductivity	Siemens	m/mm^2	1.25			
Specific heat	J/(Kg•K)		482			
Density	Kg/dm ³		7.80			
Thermal conductivity	W/(m•K)		15.0			
Relative magnetic permeability	μ_r		magnetizable			
°C			20	100	200	300

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

Corrosion resistance	Atmospheric		Chemical			x intercrystalline, stress corrosion, pitting
Fresh water	<i>industrial</i>	<i>marine</i>	<i>medium</i>	<i>oxidizing</i>	<i>reducing</i>	
x	x	x	x	x		
Magnetic	yes					
Machinability	difficult					
Hardening	cold-drawn and other cold plastic deformations					
Service temperature	do not protractedly expose to temperatures over 300 ° C; results in a reducing in impact strength					

Europe	USA	USA	China	Russia	Japan	India	R. Corea
EN	UNS	ASTM	GB	GOST	JIS	IS	KS
X2CrNiN23-4	S32304	Type 2304	022Cr23Ni5Mo3N	03Ch23N6			

Mechanical properties of weld metal according to EN 1597-1: 1997 standard

Minimum values at room temperature after welding and solubilization

R	Rp 0.2	A	Kv
N/mm ²	N/mm ²	%	J
700	510	25	70

Approximate comparison between pitting resistance of duplex steels and austenitic steels

