Quality	**X1NiCrMoCuN25-20-7**	**Austenitic Stainless Steel** (Superaustenitic)	*Technical card rev. 2018*
Number	**1.4529**		***Lucefin Group***

Chemical composition

C% max	**Si%** max	**Mn%** max	**P%** max	**S%** max	**Cr%**	**Ni%**	**N%**	**Mo%**	**Cu%**	EN 10088-3: 2014
0,02	0,50	1,00	0,030	0,010	19,0-21,0	24,0-26,0	0,15-0,25	6,0-7,0	0,50-1,50	
+ 0.005	+ 0.05	+ 0.03	+ 0.005	+ 0.003	± 0.20	± 0.20	± 0.02	± 0.10	± 0.10	

Product deviations are allowed

Temperature °C

Melting range	**Hot-forming**	**Solution annealing** (Solubilization) **+AT**
1420-1360	1200-950	1180-1120 water, forced air

Soft annealing +A	**Stress relieving +SR**
not suitable	450-230 air

MMA **welding –** AWS electrodes

inter-pass 150 max — *post welding*

joint with steel

carbon	CrMo alloy.	stainless
E Ni 6625	E Ni 6625	E NiCrMo-13

cosmetic welding
E NiCrMo-13

Chemical treatment ▪ *Pickling* (6 - 25% HNO_3) + (0.5 - 8% HF) hot ▪ *Passivation* 20 - 50% HNO_3 hot

Mechanical properties

Heat-treated material (+AT solubilization) EN 10088-3: 2014 in condition 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	**Kv**$_2$ -196 °C [b]	**HBW** [a]
from	to	N/mm²	N/mm² min	min (L)	min (T)	J min (L)	J min (T)	J min (T)	max
	160	650-850	300	40	-	100	-	40	250
160	250	650-850	300	-	35	-	60	40	

[a] for information only (L) = longitudinal (T) = transversal [b] EN 10272 -2008

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	
from	to	N/mm² min	N/mm² min	min (L)	min (T)	J min (L)	
	10 [b]	700-1150	550	15	-	-	
10	16	700-1150	550	15	-	-	
16	40	650-1050	300	30	-	100	+AT
40	63	650-900	300	30	-	100	solubilization
63	160	650-850	300	40	-	100	

[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 UNI EN 10250-4: 2001

size		Testing at room temperature						
mm		**R**	**Rp** 0.2	**A**%	**A**%	**Kv** +20 °C	**Kv** +20 °C	
from	to	N/mm²	N/mm² min	min (L)	min ((T)	J min (L)	J min (T)	
	250	650-850	300	-	35	100	60	+AT solubilization

Hot-rolled plate +AT solubilization EN 10028-7: 2007

size		Testing at room temperature						
mm		**R**	**Rp** 0.2	**A**%	**A**%	**Kv** +20 °C	**Kv** +20 °C	**Kv** -196 °C
from	to	N/mm²	N/mm² min	min (L)	min (T)	J min (L)	J min (T)	J min (T)
	75	650-850	300	-	40	100	60	60

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

R	N/mm²	675	740	870	990	1080	1240	1290	1350	1450
Reduction	**%**	**0**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**

After cold deformation with a reduction higher than 15%, it i recommended solution annealing

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Minimum yield stress and tensile strength values at high temperatures on material +AT - EN 10088-3: 2014 / EN 10272: 2007

Rp 0.2	N/mm²	230	210	190	180	170	165	160
R	N/mm²	610	585	560	540	525	515	510
Test at	**°C**	**100**	**150**	**200**	**250**	**300**	**350**	**400**

Thermal expansion	$10^{-6} \bullet K^{-1}$	►	15.8	16.1	16.5	16.9	17.3	
Modulus of elasticity	longitudinal GPa	195	190	182	174	166	158	
Poisson number	*v*	0.33						
Electrical resistivity	Ω • mm²/m	1.00						
Electrical conduc.	Siemens•m/mm²	1.00						
Specific heat	J/(Kg•K)	450						
Density	Kg/dm³	8.1						
Thermal conductivity	W/(m•K)	12.0	12.9	14.4	16.5	18.5	20.1	21.6
Relative magnetic permeability	μr	1.01						
°C		**20**	**100**	**200**	**300**	**400**	**500**	**600**

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

Corrosion resistance	Atmospheric		Chemical			**x** chlorides, sulphuric, phosphoric, halides, intercrystalline
Brackish water	*industrial*	*marine*	*medium*	*oxidizing*	*reducing*	
x	**x**	**x**	**x**	**x**	**x**	

Magnetic	no
Machinability	mean (to use low cutting speed and reduced depth of cut)
Hardening	cold-drawn and other cold plastic deformations
Service temperature	-196 °C / +400 °C. Avoid heating for long time in thr range of 600 and 1000 °C

Europe EN	**USA** UNS	**USA** ASTM	**China** GB	**Russia** GOST	**Japan** JIS	**India** IS	**R. Corea** KS
X1NiCrMoCuN22-20-7	N08925						

Pitting Resistance Equivalen (Hebsleb 1982. Truman 1987)
Super-austenitic steels, ferritic and duplex have good resistance to pitting when PRE is between 40 and 60
Formulae : Cr% + (3,3 x Mo%) + (30 x N%)
Steel 1.4529 Cr% = 20 - Mo% = 6,5 - N% = 0,20 **PRE = 47**