Quality	**X8CrNi25-21**	**Austenitic Stainless Steel** (refractory steel)
Number	**1.4845**	

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GRUPPO LUCEFIN Lovin' Steel

Chemical composition

C% max	**Si%** max	**Mn%** max	**P%** max	**S%** max	**Cr%**	**Mo%**	**Ni%**	**N%** max	
0,10	1,50	2,00	0,045	0,015	24,0-26,0		19,0-22,0	0,11	EN 10088-1: 2005
± 0.01	± 0.10	± 0.10	+ 0.005	+ 0.003	± 0.25		± 0.15	± 0.01	

Product deviations are allowed

Temperature °C

Melting range	**Hot-forming**	**Solution annealing +AT**	**Soft annealing +A**	**Stabilizing**
1450-1400	1160-990 water	1150-1040 water	not suitable	not necessary
Sensitization	**Quenching +Q**	**Tempering +T**	**Stress relieving +SR**	
avoid slow heating in the range of 600 and 900	not suitable	not suitable	after hard-drawn 1080-1050 water 400-200 air	

MMA **welding –** AWS electrodes

pre-heating not necessary

post weldin solution annealing

joint with steel

carbon	CrMo alloyed	stainless
ENiCrFe-3	ENiCrFe-3	E310Nb

cosmetic welding E310

Mechanical properties

Products obtained with plastic deformation EN 10095: 2001

flat size mm		Testing at room temperature						
		R	**Rp** 0.2	**A%**	**C%**	**Kv** +20 °C	**HB**	
from	to	N/mm² min	N/mm² min	min	min	J min	max	
	75	500-700	210	35			192	+AT solution annealing
	35	500-900	210	20			292	+AT+C

Hot-finished (Hot-rolled) ASTM A 276-04

size		Testing at room temperature						
mm		**R**	**Rp** 0.2	**A%** (L)	**C%** (L)	**Kv** +20 °C (L)	**Kv** +20 °C (T)	
from	to	N/mm² min	N/mm² min	min	min	J min	J min	
all		515	205	40	50			+AT solubilized material

Forged +AT solubilized material ASTM A 473-99

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 min	N/mm² min	min (L)	min (T)	J min (L)	J min (T)	J min (T)	
		515	205	40	50				

Hard-drawn ASTM A 276-04 (es. +AT+C)

size		Testing at room temperature				
mm		**R**	**Rp** 0.2	**A%**	**C%**	
from	to	N/mm² min	N/mm² min	min	min	
	12.7	620	310	30	40	
12.7		515	205	30	40	

Creep properties EN 10095 : 2001. Estimated average value of the strength for 1% ($Rp_{1,0}$) elongation and estimated average value of the strength for rupture (Rm) at elevated temperature for 1 000 h, 10 000 h and 100 000 h.

Test temperature	Strength elongation **Rp** 1.0 N/mm²			Strength rupture **R** N/mm²		
°C	1000 hours	10.000 h.	100.000 h.	1000 h.	10.000 h.	100.000 h.
600	100	90		170	130	80
700	45	30		80	40	18
800	18	10		35	18	7
900	10	4		15	8.5	3

X8CrNi25-21 **n° 1.4845** austenitic

Mechanical indicative values at various temperatures

°C	R N/mm²	Rp 0.2 N/mm²	A%	C%
+24	658	310	60	65
-195	1085	585	54	54
-254	1223	796	52	50

Average **J**	50	62	84	106	130	150	170	
Test at **°C**	**-160**	**-120**	**-80**	**-40**	**0**	**40**	**80**	

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

R	N/mm²	600	760	880	990	1080	1150	1220	1260
Rp 0.2	N/mm²	310	460	690	880	990	1040	1080	1100
A	%	42	30	18	8	6	6	5	5
Reduct.	**%**	**0**	**10**	**20**	**30**	**40**	**50**	**60**	**70**

Approximate values of relative **magnetic permeability** as a function of magnetic field intensity and reduction.

Reduction	Magnetic field intensity **μr**	
%	4000 A/m	16000 A/m
0	10018	1.0035
14.7	1.0016	1.0041
26.8	1.0018	1.0043
64.2	1.0019	1.0041

Approximate values at high temperatures. Material +AT solubilized at 1050 °C

R	N/mm²	620	600	580	550	520	440	380	240
Rp 0.2	N/mm²	280	230	200	190	180	170	160	150
A	%	44	42	40	40	40	38	28	20
C	%	70	68	66	62	58	40	28	38
Test at	**°C**	**100**	**200**	**300**	**400**	**500**	**600**	**700**	**800**

Thermal expansion	$10^{-6} \cdot K^{-1}$	►		15.5		17.0		17.5	18.5	19.0
Modulus of elasticity	longitudinal GPa	200	190	185	180	170	158	150	130	120
Modulus of elasticity	tangential GPa	86								
Poisson number	*v*	0.29 ~								
Electrical resistivity	Ω • mm²/m	0.85								
Electrical conductiv.	Siemens•m/mm²	1.18								
Specific heat	J/(Kg•K)	500								
Density	Kg/dm³	7.90								
Thermal conductivity	W/(m•K)	15					19			
Relative magnetic permeability	μr max	1.008 ~								
°C		**20**	**100**	**200**	**300**	**400**	**500**	**600**	**800**	**1000**

The symbol ► indicates temperature between 20 °C and 200 °C, 20 °C and 400 °C .....

Corrosion resistance	Atmospheric		Chemical			**x**oil pumping station, hig-heat salt bath, hot gases> 550 °C
Fresh water	*industrial*	*marine*	*medium*	*oxidizing*	*reducing*	
x	**x**	**x**	**x**	**x**		

Magnetic	no
Machinability	high
Hardening	by cold-drawn and and other cold plastic deformations
Service temperature in air	continuous service up to 1050 °C; intermittent service up to 1000 °C

Europe EN	**USA** UNS	**USA** ASTM	**China** GB	**Russia** GOST	**Japan** JIS	**India** IS	**R. of Korea** KS
X8CrNi25-21	S31000	**310**	0Cr25Ni20	10Ch23N18	SUH 310	10Cr25Ni18 ~	STS 310S

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