MARCEGAGLIA
FAGERSTA STAINLESS

EN 1.4845

Fagersta **R820.10, R820.90**
Type **310S**

EN 1.4845 is a heat resistant austenitic Cr-Ni-steel with excellent resistance to scaling in continuous service up to 1150°C (2100°F) and if used in intermittent heating and cooling up to 1095°C (2000°F). R820.10 has good resistance to both carburizing and reducing environments and has excellent resistance to oxidizing acids and most common corrosive agents. This grade has better resistance against sigma phase than R823.10/11 (type 314) mainly due to it having a much lower level of silicon content. R820.10 is very slightly sensitive to SO_2 and particularly gases containing H_2S at temp. over 650°C (1200°F). Typical applications are wire for furnace parts, annealing boxers, heat exchangers, chemical plant equipment and welding wire.

CHEMICAL COMPOSITION (Nominal) %

	C	Si	Mn	Cr	Ni	Mo	N	PRE
R820.10	0.045	0.65	1.50	24.7	19.4	0.60*	0.050	26
R820.90	0.045	0.55	1.50	24.5	19.4	0.60*	0.040	26

PRE: 26 (PRE = Cr + 3.1 x Mo + 25 x N)

Comments:

PHYSICAL PROPERTIES

Condition: Annealed

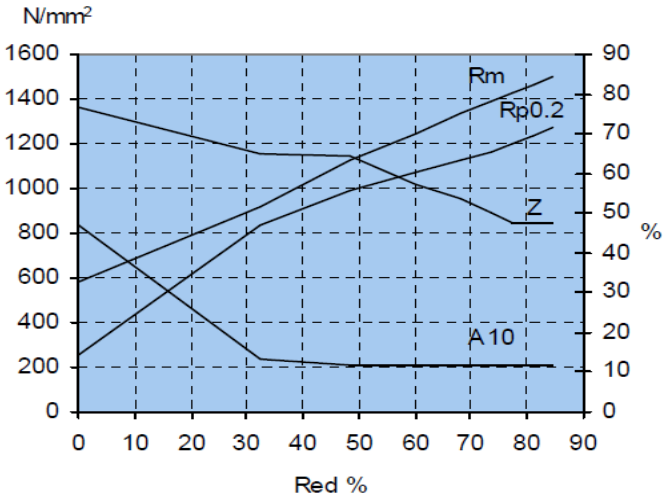
Density	7.9	g / cm^3
Moduls of elasticity, E	200 000	GPa
Specific heat 0-100°C	500	J / kg°C

TYPICAL MECHANICAL PROPERTIES

Condition: Annealed

Proof strength	**Rp0.2**	min. 180	N / mm^2
Tensile strength	**Rm**	500-600	N / mm^2
Elongation	**A10**	min. 40	%

DEFORMATION GRAPH



THERMAL TREATMENT

	°C	°F
Annealing temperature	1050-1150	1920-2100

MAX. OPERATING TEMPERATURE

	°C	°F
Scaling temp. in air	1150	2100
Oxidizing atm. intermitt. / cont.	1095-1150	2003-2102
Oxidizing sulphurous atm.	850-1000*	1562-1832*
Reducing sulphurous atm.	600-850*	1112-1562*

*) Max temp. depending on flue gas impurities (S, Na, V)

THERMAL CONDUCTIVITY

20 °C	12.0	W / mK
100 °C	13.5	W / mK
200 °C	14.5	W / mK
400 °C	17.0	W / mK
600 °C	19.0	W / mK
800 °C	22.0	W / mK

THERMAL EXPANSION

Thermal expansion per °C x 10-6 from 20°C to:

200 °C	15.5
400 °C	17.0
600 °C	17.5
800 °C	18.5
1000 °C	19.0

RESISTIVITY

20 °C	850	µΩmm
100 °C	930	µΩmm
200 °C	1030	µΩmm
400 °C	1220	µΩmm
600 °C	1370	µΩmm
800 °C	1430	µΩmm