



R647.21

EN: 1.4462
SAF2205



R647.21 (SAF 2205) is a duplex steel, which has an excellent resistance to pitting, crevice corrosion and chloride stress corrosion as well as high resistance to general corrosion. The duplex structure results in the grade having high mechanical properties, low thermal expansion and high thermal conductivity. This grade is delivered mainly in D-cooled or DST-Annealed condition giving it slightly higher mechanical properties, with a fine uniform grain size (10-13 ASTM) and minimized precipitation of carbides and sigma phase. Typical applications are wire for wire lines, springs and general use under severely corrosive environments.

CHEMICAL COMPOSITION (Nominal) %

C	Si	Mn	Cr	Ni	Mo	N		
0.020	0.55	0.87	22.1	5.5	3.2	0.180		

PRE: 36 (PRE = Cr + 3.3 x Mo + 16 x N)

Comments:

THERMAL TREATMENT

Annealing temperature	1040-1100 °C
	1900-2010 °F

PHYSICAL PROPERTIES

Condition: Annealed

Density	7.8 g / cm ³
Modulus of elasticity, E	200 000 GPa
Specific heat 0-100°C	500 J / kg°C

MAX. OPERATING TEMPERATURE

Operating temp. in air	300 °C
	570 °F
Scaling temp. in air	1000 °C
	1830 °F

TYPICAL MECHANICAL PROPERTIES

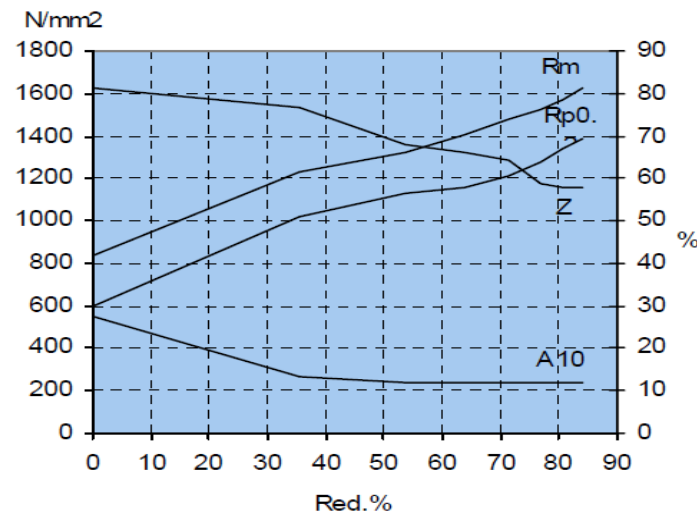
Condition: D-cooled

Proof strength	Rp0.2	min. 520 N / mm ²
Tensile strength	Rm	750-850 N / mm ²
Elongation	A10	min. 25 %

THERMAL CONDUCTIVITY

20 °C	19.0 W / mK
100 °C	19.0 W / mK
200 °C	21.0 W / mK
400 °C	23.0 W / mK

DEFORMATION GRAPH



THERMAL EXPANSION

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

100 °C	13.0
200 °C	13.5
300 °C	14.0

RESISTIVITY

20 °C	850 μΩmm
100 °C	900 μΩmm
200 °C	950 μΩmm
400 °C	1050 μΩmm