



R860.13

EN: 1.4886

Type 330

R860.13 (Type 330) is an austenitic heat- and corrosion resistant grade with an exceptional combination of strength and resistance to carburization, oxidation and thermal shock. This grade has good strength and carburization and oxidation resistance to about 1200°C (2190°F). Remains austenitic at all temp. and is not subject to sigma phase formation. The grade can suffer from excessive grain growth. The high Ni- content makes this grade highly resistant to chloride stress corrosion cracking. Typical applications are wire for products for elevated temp. environments like heat-treating baskets, furnace fans, mufflers and shafts and conveyors.

CHEMICAL COMPOSITION (Nominal) %

C	Si	Mn	Cr	Ni	Mo	N		
<0.030	1.25	0.75	18.5	34.5	<0.50	<0.060		

PRE: 21 (PRE = Cr + 3.1 x Mo + 25 x N)

Comments:

PHYSICAL PROPERTIES

Condition: Annealed

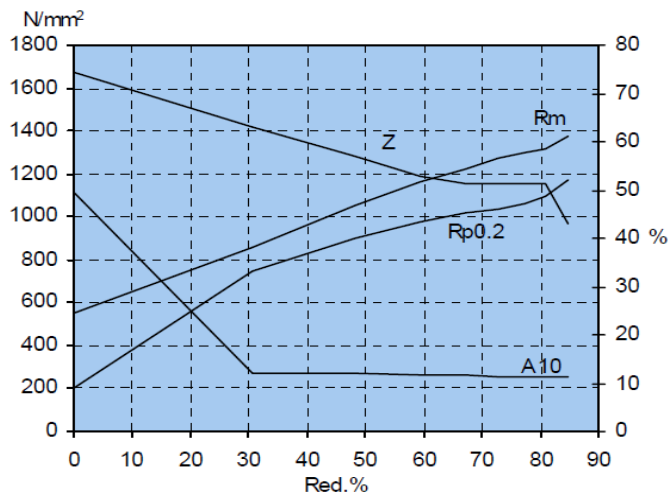
Density	8.0 g / cm ³
Modulus of elasticity, E	196 000 GPa
Specific heat 0-100°C	550 J / kg°C

TYPICAL MECHANICAL PROPERTIES

Condition: Annealed

Proof strength	Rp0.2	min. 180 N / mm ²
Tensile strength	Rm	520-600 N / mm ²
Elongation	A10	min. 40 %

DEFORMATION GRAPH



THERMAL TREATMENT

	°C	°F
Annealing temperature	1050-1100	1920-2010

MAX. OPERATING TEMPERATURE

	°C	°F
Oxidizing atm. intermitt. / cont.	1050-1150	1922-2102
Reducing and in air	1175	2150
Carburizing/carbonitriding atm.	870-950	1600-1740

THERMAL CONDUCTIVITY

20 °C	12.4 W / mK
400 °C	19.0 W / mK
650 °C	23.4 W / mK
750 °C	23.8 W / mK
870 °C	24.6 W / mK
1000 °C	26.2 W / mK

THERMAL EXPANSION

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

200 °C	15.0
400 °C	16.0
600 °C	17.0
800 °C	17.5
1000 °C	18.5

RESISTIVITY

20 °C	1020 μΩmm
400 °C	1110 μΩmm
650 °C	1130 μΩmm
750 °C	1200 μΩmm
870 °C	1240 μΩmm
1000 °C	1270 μΩmm