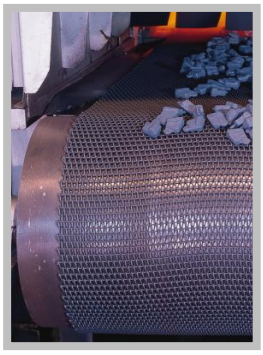
FAGERSTA Stainless



# R868.11

**EN:** **1.4887***
**Type:** **330Cb***

*) Cr and Nb not according to norm

R868.11 (330 Cb) is similar to R860.13 (Type 330) with Colombium added as a stabilizing agent to prevent precipitation of carbides and with improved mechanical properties. A higher Silicon content also improves its resistance to oxidation and carburization. This grade is recommended for products extended exposure in the 650-930°C (1200-1700°F) range where the maximum temperature does not exceed 1120°C (2050°F). It has good resistance to carburizing and carbonitriding at temperatures up to 980°C (1800°F). Like R860.13 can suffer from excessice grain growth. Typical applications are wire for heat-treating baskets, furnace fans and shafts, conveyors and for gas turbine parts.

## CHEMICAL COMPOSITION (Nominal) %

| C | Si | Mn | Cr | Ni | Mo | N | Nb | |
|---|---|---|---|---|---|---|---|---|
| <0.030 | 1.85 | 0.50 | 19.5 | 34.5 | <0.30 | 0.060 | 0.85 | |

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

Comments:

## PHYSICAL PROPERTIES

Condition: Annealed

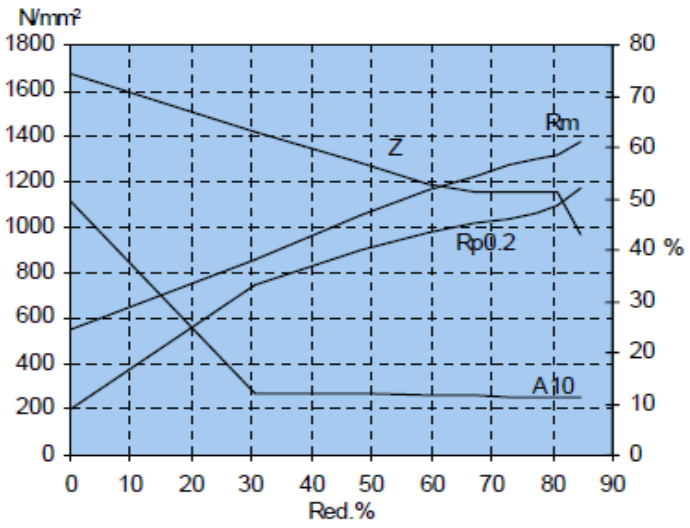
| | | |
|---|---|---|
| **Density** | 8.0 | g / cm$^3$ |
| **Moduls of elasticity, E** | 196 | GPa |
| **Specific heat 0-100°C** | 460 | J / kg°C |

## TYPICAL MECHANICAL PROPERTIES

Condition: Annealed

| | | | |
|---|---|---|---|
| **Proof strength** | **Rp0.2** | min 180 | N / mm$^2$ |
| **Tensile strength** | **Rm** | 500-620 | 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.** | 1070 / 1150 | 1958 / 2102 |
| **Oxidizing sulphurous atm.** | 930 | 1700 |
| **Reducing sulphurous atm.** | 930 | 1700 |
| **Carburizing/carbonitriding atm.** | 980 | 1800 |
| **Diss. ammonia and hydrogen at.** | 1095 | 2000 |

## 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** | 15.5 |
| **400 °C** | 16.0 |
| **600 °C** | 17.0 |
| **800 °C** | 17.7 |
| **1000 °C** | 18.0 |
| | |

## RESISTIVITY

| | |
|---|---|
| **20 °C** | 1200 µΩmm |
| **400 °C** | 1110 µΩmm |
| **650 °C** | 1130 µΩmm |
| **750 °C** | 1200 µΩmm |
| **870 °C** | 1240 µΩmm |
| **1000 °C** | 1270 µΩmm |