

R565.10

EN: 1.4542
Type: 630
17-4 PH

R565.10 (17-4 PH) is a martensitic precipitation-hardening steel used for applications requiring high strength and a moderate level of corrosion resistance. This grade is martensitic in annealed condition and is after cold working further strengthened (see graph below) by a low temp. treatment, which precipitates a copper-containing phase that can only be seen i SEM-microscope. The precipitation conducted at a temp. of 480-630°C (900-1150°F) depending on the desired combination of strength and toughness, gives a limited effect on the surface properties. Typical applications are wire for bolts and fasteners, pump shafts and gears for chemical and petrochemical industry and welding wire.

CHEMICAL COMPOSITION (Nominal) %

C	Si	Mn	Cr	Ni	Mo	Cu	Nb/Cb	
0.025	0.40	0.70	15.9	4.85	<0.50	3.5	0.30	

PRE: 17 (PRE = Cr + 3.1 x Mo + 25 x N)

Comments:

PHYSICAL PROPERTIES

Condition: Annealed

Density	7.8 g / cm ³
Modulus of elasticity, E	200 000 GPa
Specific heat 0-100°C	460 J / kg°C

TYPICAL MECHANICAL PROPERTIES

Condition: Annealed + precipitation hardened

Proof strength	Rp0.2	min. 600 N / mm ²
Tensile strength	Rm	850-950 N / mm ²
Elongation	A10	min. 15 %

THERMAL TREATMENT

Annealing temperature	1030-1070 °C
	1890-1960 °F
Age hardening temperature	480-620 *) °C
	900-1150 °F

*) Depends on combination of strength and toughness desired

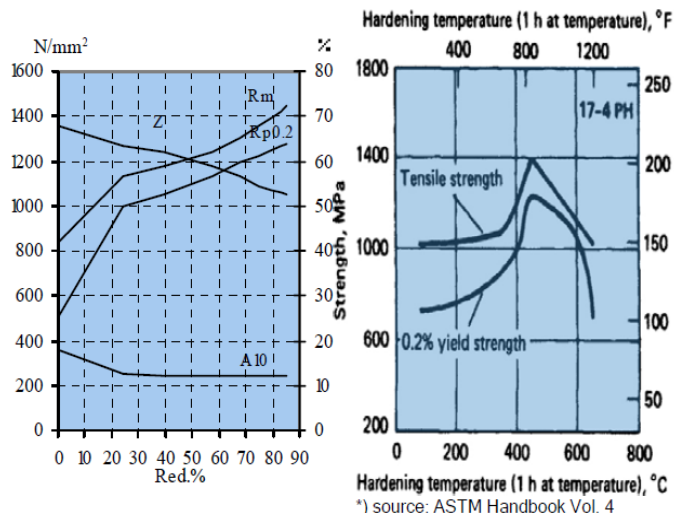
MAX. OPERATING TEMPERATURE

Operating temp. in air	320 °C
	610 °F
Scaling temp. in air	1000 °C
	1830 °F

THERMAL CONDUCTIVITY

100 °C	18.4 W / mK
500 °C	22.7 W / mK

DEFORMATION GRAPH



THERMAL EXPANSION

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

100 °C	10.9
300 °C	11.1
430 °C	11.3

RESISTIVITY

20 °C	800 μΩmm