



# R560.21

**EN:** 1.4568  
**Type:** 631  
17-7 PH



R560.21 (17-7PH) is a semi-austenitic precipitation-hardening steel used for applications requiring high strength, excellent relaxation- and fatigue properties and a moderate level of corrosion resistance. This grade is easily formed in annealed condition and then after cold working, hardened to high-strength level by a heat treatment at 480°C (900°F). Typical applications are products for aerospace components and wire for springs, bent and formed parts.

### CHEMICAL COMPOSITION (Nominal) %

C	Si	Mn	Cr	Ni	Mo	N	Al	
0.080	0.40	0.70	16.5	7.6	<0.50	<0.030	1.00	

PRE: 18 (PRE = Cr + 3.1 x Mo + 25 x N)

Comments:

### PHYSICAL PROPERTIES

Condition: Annealed

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

### TYPICAL MECHANICAL PROPERTIES

Condition: D-cooled

Proof strength	Rp0.2	min. 220 N / mm <sup>2</sup>
Tensile strength	Rm	700-800 N / mm <sup>2</sup>
Elongation	A10	min. 35 %

### THERMAL TREATMENT

Annealing temperature	1030-1070 °C
	1890-1960 °F
Age hardening temperature	480 °C
	900 °F

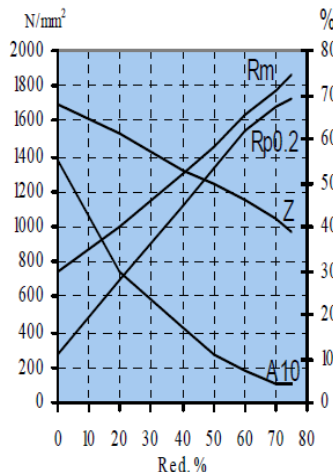
### MAX. OPERATING TEMPERATURE

Operating temp. in air	350 °C
	660 °F
Scaling temp. in air	850 °C
	1560 °F

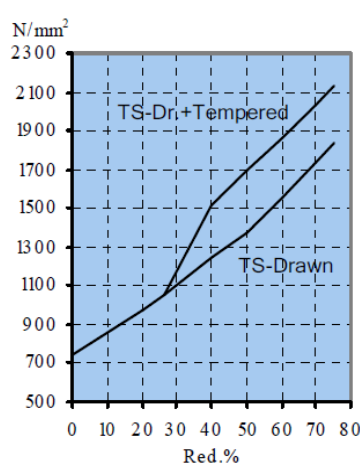
### THERMAL CONDUCTIVITY

20 °C	15.0 W / mK
100 °C	15.5 W / mK
200 °C	17.5 W / mK
300 °C	19.5 W / mK
600 °C	22.5 W / mK
800 °C	25.5 W / mK

### DEFORMATION GRAPH



### Tempering effect (480°C/1h) vs area reduction



### 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	900 μΩmm
100 °C	950 μΩmm
200 °C	1000 μΩmm
400 °C	1050 μΩmm