

R969.75

EN: 2.4669

UNS: N07750

Alloy X750



R969.75 Is a precipitation hardenable nickel chromium alloy used for its corrosion and oxidation resistance and high strength properties up to service temperatures of $\approx 700^{\circ}\text{C}$, heat treated material has useful strength up to 980°C . Common applications for this grade is springs and fasteners used in high demanding environments.

CHEMICAL COMPOSITION (Nominal) %

C	Cr	Ni	Fe	Ti	Al	Nb
0.05	14.5	74.0	7.0	2.5	0.7	0.9

THERMAL TREATMENT

Annealing temperature	1100-1150 $^{\circ}\text{C}$
	2012-2100 $^{\circ}\text{F}$

PHYSICAL PROPERTIES

Condition: Annealed

Density	8.28 g / cm^3
Modulus of elasticity, E	214 GPa
Specific heat 20°C	435 $\text{J} / \text{kg}^{\circ}\text{C}$

MAX. OPERATING TEMPERATURE

Operating temp. in air	980 $^{\circ}\text{C}$
	1796 $^{\circ}\text{F}$
Oxidation Resistance	982 $^{\circ}\text{C}$
	1800 $^{\circ}\text{F}$

TYPICAL MECHANICAL PROPERTIES

Condition: Annealed

Proof strength	Rp0.2	250 N / mm^2
Tensile strength	Rm	700 N / mm^2
Elongation	A10	70 %

THERMAL CONDUCTIVITY

25 $^{\circ}\text{C}$	11.4	$\text{W} / \text{m}^{\circ}\text{C}$
100 $^{\circ}\text{C}$	12.5	$\text{W} / \text{m}^{\circ}\text{C}$
200 $^{\circ}\text{C}$	14.0	$\text{W} / \text{m}^{\circ}\text{C}$
300 $^{\circ}\text{C}$	15.5	$\text{W} / \text{m}^{\circ}\text{C}$
400 $^{\circ}\text{C}$	17.0	$\text{W} / \text{m}^{\circ}\text{C}$
500 $^{\circ}\text{C}$	18.3	$\text{W} / \text{m}^{\circ}\text{C}$

THERMAL EXPANSION

100 $^{\circ}\text{C}$	12.8	$\mu\text{m} / \text{m}^{\circ}\text{C}$
200 $^{\circ}\text{C}$	13.2	$\mu\text{m} / \text{m}^{\circ}\text{C}$
300 $^{\circ}\text{C}$	13.6	$\mu\text{m} / \text{m}^{\circ}\text{C}$
400 $^{\circ}\text{C}$	14.0	$\mu\text{m} / \text{m}^{\circ}\text{C}$
500 $^{\circ}\text{C}$	14.4	$\mu\text{m} / \text{m}^{\circ}\text{C}$

RESISTIVITY

25 $^{\circ}\text{C}$	1.1	$\mu\Omega \cdot \text{m}$
100 $^{\circ}\text{C}$	1.3	$\mu\Omega \cdot \text{m}$
200 $^{\circ}\text{C}$	1.5	$\mu\Omega \cdot \text{m}$
300 $^{\circ}\text{C}$	1.7	$\mu\Omega \cdot \text{m}$
400 $^{\circ}\text{C}$	1.9	$\mu\Omega \cdot \text{m}$
500 $^{\circ}\text{C}$	2.1	$\mu\Omega \cdot \text{m}$