INCONEL ALLOY X-750:

A nickel-chromium alloy made precipitation hardenable by additions of aluminum and titanium.

It has good resistance to corrosion and oxidation along with high tensile and creep-rupture properties at temperatures to 1300°F(700°C).

Its excellent relaxation resistance is useful for high-temperature springs and bolts.

In gas turbines, it is used for rotor blades and wheels, bolts, and other structural members.

INCONEL alloy X-750 is used extensively in rocket-engine thrust chambers.

Airframe applications include thrust reversers and hot-air ducting systems.

Large pressure vessels are formed from INCONEL alloy X-750. Other applications are heat-treating fixtures, forming tools, extrusion dies.

For springs and fasteners, INCONEL alloy X-750 is used from sub-zero to 1200°F.

Chemical properties(Limiting Chemical Composition%)

Ni	C	Mn	Fe	S	Si	Cu	Al	Ti	Cr	Nb +Ta	Co
70.00 min.	0.08 max.	1.00 max.	5.0-9.0	0.01 max.	0.50 max.	0.50 max	0.40-1.00	2.25-2.75	14.0-17.0	0.70-1.20	1.00 max

physical properties

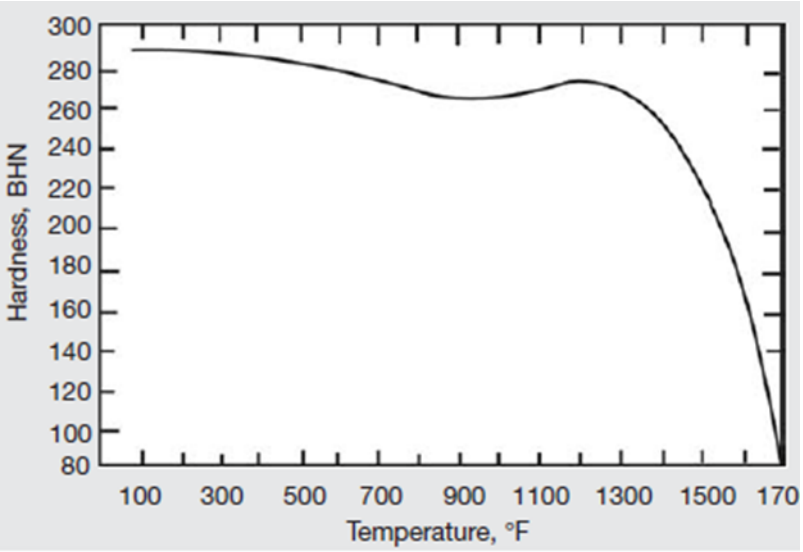
Density		Melting Range		Curie Temperature		Magnetic Permeability		Emissivity, oxidized surface		Linear Contraction during Precipitation Treatment		
g/cm³	lb/in³	°F	°C	As hot-rolled	Triple-heat-treated	As hot-rolled	Triple-heat-treated	600°F	2000° F	Hot-Rolled	20% Cold-Rolled	Annealed
8.28	0.299	2540-2600	1393-1427	-225	-193	1.0020	1.0035	0.895	0.925	0.00044	0.00052	0.00026

Mechanical properties

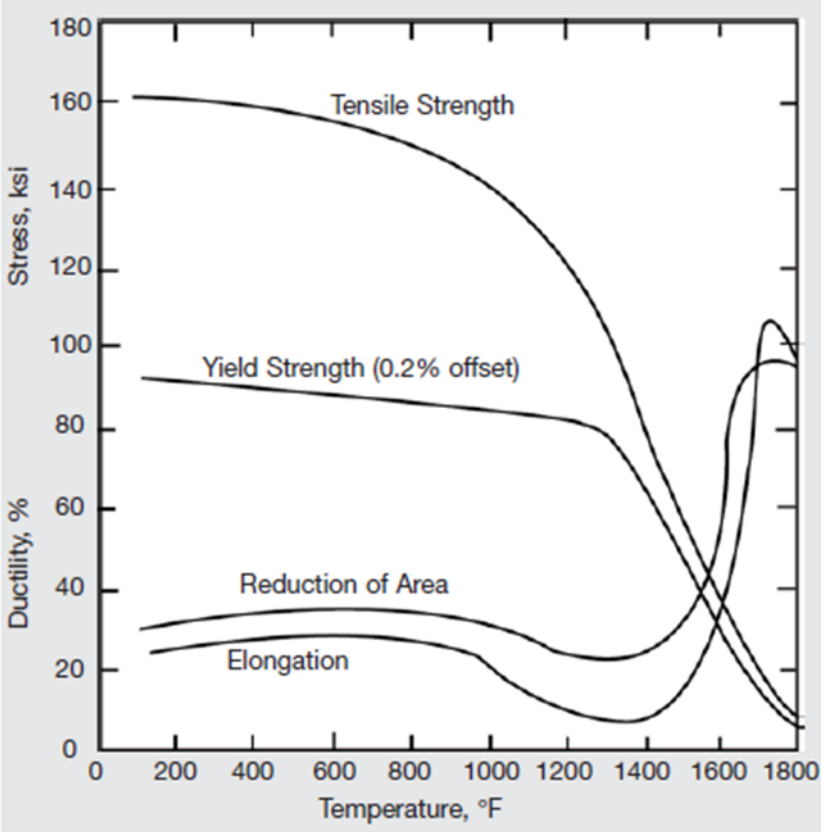
High-Temperature Properties of Hot-Rolled 1 3/16-in. Bar Equalized and Precipitation-Treated (1625°F/24 hr + 1300°F/20 hr).

Temperature, °F	Tensile Strength, ksi	Yield Strength (0.2% Offset), ksi	Elongation, %	Reduction of area, %	Modulus of of Elasticity in Tension, 10^3 ksi
85[a]	174.0	118.5	26.8	45.4	30.2
300[a]	168.3	113.3	26.0	44.1	31.3
400	165.5	111.5	26.0	42.7	29.1
800	156.0	107.5	26.5	44.8	25.9
1000	152.0	105.0	25.5	40.7	23.2
1100	153.5	105.5	19.0	22.0	26.4
1200	136.5	103.0	10.0	17.7	21.7

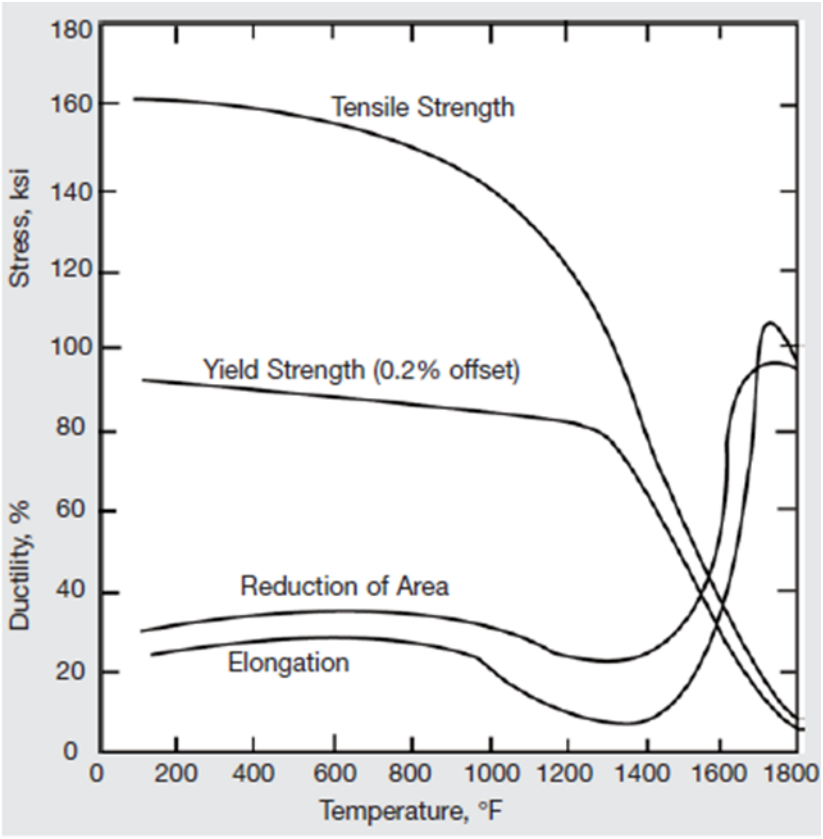
Mechanical properties diagram



High-temperature hardness of hot-rolled material triple-heat-treated (2100°F/4 hr + 1550°F/24 hr + 1300°F/20 hr.).



High-temperature tensile properties of bar triple-heat-treated (2100°F/2 hr, A.C., + 1550°F/24 hr, A.C., + 1300°F/20 hr, A.C.).



High-temperature tensile properties of bar triple-heat-treated (2100°F/2 hr, A.C., + 1550°F/24 hr, A.C., + 1300°F/20 hr, A.C.).