

# Material Data Sheet



## Alloy X 750

Chemical Composition	Cr	Ni	Mo	Cu	Cb + Ta	Al	Ti	C	Fe	Co	Mn	Si	P	S
% Values (minimum)	14	70	-					-	5		-	-		-
% Values (Maximum)	17			0.50				0.08	9		1	0.50		0.01

### APPLICATION

Oil and gas production

Gas turbine engines

Nuclear engineering

### DESCRIPTION

Alloy X 750 is a nickel chromium alloy similar to Alloy 600 but made precipitation hardenable by additions of aluminium and titanium. It has good resistance to corrosion and oxidation along with high tensile and creep-rupture properties at temperatures to 704°C (1300°F). Its excellent relaxation resistance is useful for high temperature springs and bolts. Used in gas turbines, rocket engines, nuclear reactors, pressure vessels, tooling, and aircraft structures.

### CORROSION RESISTANCE

Alloy X 750 is resistant to a wide variety of industrial corrosives under both oxidizing and reducing conditions. It resists oxidation and attack by other high temperature corrosion mechanisms. In hot corrosion tests for automotive applications, weight loss after exposure for 100 hours in 90% Na<sub>2</sub>SO<sub>4</sub> + 10% NaCl mixture in air was about 5%. Samples pre-coated with sodium chloride (by dipping in a hot saturated salt solution), suspended in a furnace at 1700°F and exposed for 100 hr to a moving gas stream of air containing 1% SO<sub>2</sub> exhibited a corrosion penetration of approximately 0.007 in. An interesting feature of this alloy is its high resistance to chloride-ion stress-corrosion cracking even in the fully precipitation-hardened condition. Standard U-bend specimens of precipitation-hardened material (hardness, 33 Rc) showed no signs of cracking when exposed to boiling 42% magnesium chloride for 30 days.

