

# Technical Data Sheet

ATI 75™ Alloy



## General Information

The ATI 75™ alloy (UNS N06075) is a nickel-chromium alloy with controlled additions of titanium and carbon, which derives its high temperature strength essentially from solid solution strengthening. This alloy is used in applications requiring oxidation and scaling resistance combined with moderate strength at high operating temperatures. Some typical applications include components for industrial and aircraft gas turbines (e.g., casings, combustion chambers, and ducting), and structural components for industrial furnaces.

## Forms and Conditions Available

The ATI 75™ alloy (UNS N06075) is available in sheet and strip product forms. It is normally provided in the solution annealed condition.

Limiting Chemical Composition of ATI 75™ Alloy

Element	Weight Percent
Nickel	Balance
Chromium	18.0 - 21.0
Titanium	0.20 - 0.60
Carbon	0.08 - 0.15
Iron	5.0 max
Cobalt	5.0 max
Silicon	1.0 max
Manganese	1.0 max
Copper	0.5 max

## Physical Properties

Density	0.302 lb/in <sup>3</sup> (8.37 g/cm <sup>3</sup> )
Melting Range	2445 - 2515 °F (1340 - 1380 °C)
Electrical Resistivity	655 Ω·circ·mil/ft (109 μΩ·cm)
Thermal Conductivity	84 Btu·in/ft <sup>2</sup> ·h·°F (12.1 W/m·K)
Specific Heat	0.110 Btu/lb·°F (461 J/kg·°C)
Coefficient of Thermal Expansion, RT - 200°F	6.0 × 10 <sup>-6</sup> in/in·°F (11.0 μm/m·°C)

*Typical physical properties at room temperature*

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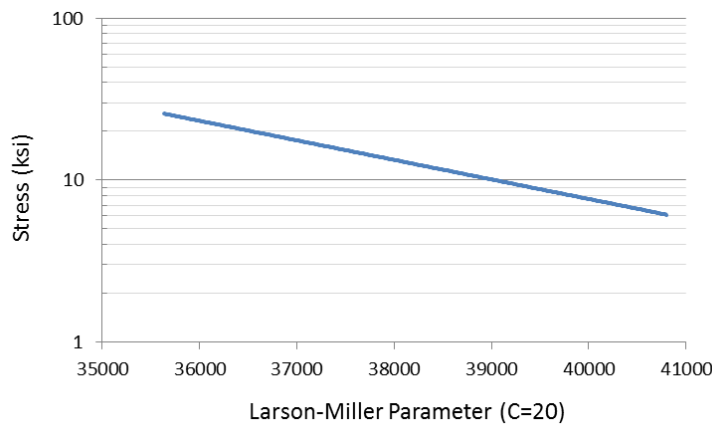


## Mechanical Properties

Typical room temperature mechanical properties of annealed ATI 75™ alloy are listed in the table below.

Tensile Strength		0.2 % Yield Strength		Elongation in 2 in. or 50 mm
ksi	MPa	ksi	MPa	%
118	813	65	448	32

The stress rupture properties for ATI 75™ alloy sheet are shown as a function of Larson-Miller parameter. For the purpose here,  $LMP = T * [\log(t_r) + C]$ , where T is the Rankine temperature,  $t_r$  is the time to rupture, and C is a constant equal to 20.



## Fabrication

### Forming / Welding / Joining

The ATI 75™ alloy is readily fabricated, formed, and welded using conventional industrial techniques. This alloy has a higher work-hardening rate than austenitic stainless steel, and the forming equipment must be designed accordingly.

### Heat Treatment

The ATI 75™ alloy is normally solution annealed in the range of 1000-1100°C (1832-2012°F) for a time commensurate with coil thickness, and then air-cooled. Rapid cooling is desirable for maximum creep resistance.