



## Technical Data Sheet

### ATI NiTiFe™ Alloy

#### INTRODUCTION

- Typically used in shape memory nickel titanium alloy coupling devices
- Transformation temperature: Martensite start ( $M_s$ ) temperature range  $<-100^{\circ}\text{C}$
- (Determined in the fully solution annealed condition by CLD testing at 40ksi load)

Table 1. Ingot Chemistry

Element	Typical maximum (unless noted otherwise) (weight %)
Nickel	50.0 to 56.0
Iron	2 to 5
Carbon	0.005
Cobalt	0.005
Copper	0.005
Chromium	0.005
Hydrogen	0.002
Niobium	0.025
Nitrogen + Oxygen	0.035
Titanium	Balance

Table 2. Physical Properties

Melting Point	1310°C (2390°F)
Density	6.45 g/cm <sup>3</sup> (0.234 lbs/in <sup>3</sup> )
Electrical Resistivity	Austenite phase: ~80-100 μΩ-cm Martensite phase: ~70-80 μΩ-cm
Thermal Conductivity	Austenite phase: 0.18 watt/cm-°C Martensite phase: 0.085 watt/cm-°C
Thermal Expansion	Austenite: $11 \times 10^{-6}/^{\circ}\text{C}$ Martensite: $\sim 6.6 \times 10^{-6}/^{\circ}\text{C}$

#### MECHANICAL PROPERTIES

Table 3. Mechanical Properties

Ultimate strength	>155 Ksi (1070 MPa)
Yield strength	> 50 ksi (345 MPa)
Elongation	≥15%

Can also be supplied in the cold worked and stress relieved condition that results in higher yield strength, cold work and stress relief anneal need to be determined based on yield strength and elongation needs.

#### PRODUCT FORMS AVAILABLE

- Plate: Nominal 0.126”T up to 0.250”T in widths up to 24” widths. Surface finish typically hot worked, blasted and pickled
- Rod: 0.1” to 2” diameters, amount of cold work, length and surface finish conditions vary depending on customer requirements
- Other forms and sizes available upon request

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