



Technical Data Sheet

ATI NiTi SMA 1™ Alloy

INTRODUCTION

- Typically used in shape memory nickel titanium alloy devices and actuators
- Applicable industry standards: ASTM F2005, ASTM F2004, ASTM F2082
- Transformation temperature: Austenite finish (A_f) temperature range 30°C to 75°C
- (Determined in the fully solution annealed condition by DSC testing)

Table 1. Ingot Chemistry

Element	Typical maximum (unless noted otherwise) (weight %)
Nickel	54.0 to 57.0
Carbon	0.005
Cobalt	0.005
Copper	0.005
Chromium	0.005
Hydrogen	0.002
Iron	0.005
Niobium	0.005
Nitrogen + Oxygen	0.025
Titanium	Balance

Table 2. Physical Properties

Melting Point	1310°C (2390°F)
Density	6.45 g/cm ³ (0.234 lbs/in ³)
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 x 10 ⁻⁶ /°C Martensite: ~6.6 x 10 ⁻⁶ /°C

Resource for additional physical properties:

- ASM Materials Properties Handbook: Titanium Alloys, ASM International Copy Right 1994

MECHANICAL PROPERTIES

Table 3. Mechanical Properties

Ultimate strength	>155 Ksi (1070 MPa)
Elongation	≥10%

(Yield strength and modulus depend on final product condition and testing conditions)

PRODUCT FORMS AVAILABLE

- Sheet: Nominal 0.020" to 0.125"T in widths up to 24" widths. Surface finish typically hot worked, blasted and pickled
- Plate: Nominal 0.126"T up to 0.250"T in widths up to 24" widths. Surface finish typically hot worked, blasted and pickled

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- Rod: 0.1" to 2" diameters, amount of cold work, length and surface finish conditions vary depending on customer requirements
- Wire: 0.010" to 0.099" diameters, coil sizes, amount of cold work, and surface finish conditions vary depending on customer requirements
- Other forms and sizes available upon request