



## Technical Data Sheet

## ATI NiTi SEA 1™ Alloy

## INTRODUCTION

- Typically used in superelastic nickel titanium alloy medical devices
- Applicable industry standards: ASTM F2063, ASTM F2005, ASTM F2004, ASTM F2082
- Transformation temperature: Austenite finish ( $A_f$ ) temperature range  $-30^{\circ}\text{C}$  to  $0^{\circ}\text{C}$
- (Determined in the fully solution annealed condition by DSC testing)

Table 1. Ingot Chemistry

Element	Typical maximum (weight %)	ASTM F2063 limits (weight %)
Nickel	56.0	54.5 to 57.0
Carbon	0.005	0.050
Cobalt	0.005	0.050
Copper	0.005	0.010
Chromium	0.005	0.010
Hydrogen	0.002	0.005
Iron	0.005	0.050
Niobium	0.005	0.025
Nitrogen + Oxygen	0.025	0.050
Titanium	Balance	Balance

Table 2. Microcleanliness (Non-metallic inclusions/porosity)

	Typical maximum	ASTM F2063 Limits
Area fraction (%)	1.5	$\leq 2.8$
Size( $\mu\text{m}$ )	35.0	$\leq 39.0$

Table 3. 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 $\mu\Omega\text{-cm}$ Martensite phase: ~70-80 $\mu\Omega\text{-cm}$
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: $\sim 6.6 \times 10^{-6}/^{\circ}\text{C}$

Resource for additional physical properties:

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



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### MECHANICAL PROPERTIES

Table 4. 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
- 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