

## NTINOL HCF-SE SUPERELASTIC TUBING ASTM F 2633 MATERIAL DATA

All values are typical, at room temperature. Nitinol HCF-SE is a generation 3 binary alloy suitable for super-elastic applications at room and/or body temperature.

### ALLOY COMPOSITION ACC. ASTM F 2063 (INGOT)

Nickel (nominal)	54,5 - 57 wt.-%
Titanium	balance
Oxygen	max. 0,004 wt.-%
Carbon	max. 0,002 wt.-%

### PHYSICAL PROPERTIES (INGOT)

Melting Point	1310° C
Density	6,5 g/cm <sup>3</sup>
Electrical Resistivity	82 $\mu$ Ohm x cm
Coefficient of Thermal Expansion	11 x 10 <sup>-6</sup> /° C
Modulus of Elasticity	41 - 75 x 10 <sup>3</sup> MPa

### MICROCLEANLESS (INGOT)

Porosity and non-metallic inclusions	max. 10 $\mu$ m
Area fraction of porosity and non-metallic inclusions	max. 0,7%

### MECHANICAL PROPERTIES (TUBING)

Ultimate Tensile Strength (UTS)	min. 1000 MPa
Total Elongation	min. 10%

### SUPERELASTIC PROPERTIES (TUBING)

Loading Plateau Stress (at 3% strain)	min. 380 MPa
Permanent Set (after 6% strain)	max. 0,3%
Transformation Temperature A <sub>f</sub>	max. 15° C

### COMMENTS

These values should only be used as guidelines for developing material specifications. Properties of Nitinol are strongly dependent on processing history and ambient temperature. The mechanical and superelastic properties shown here are typical for standard superelastic straight tubes at room temperature tested in uniaxial tension. Bending properties differ, and depend on specific geometries and applications. Modulus is dependent on temperature and strain. Larger tubes (> 3,9 mm OD) may require custom specifications.

