Material Data Sheet

Superelastic Nitinol Alloys*

	SE508ELI	SE508	SE506	SE510
PHYSICAL PROPERTIES				
Melting Point:	1310℃	1310℃	1310℃	1310℃
Density:	6.5 g/cm^3	6.5 g/cm^3	6.5 g/cm^3	6.5 g/cm^3
Electrical Resistivity:	82 μohm-cm	82 μohm-cm	82 μohm-cm	82 μohm-cm
Modulus of Elasticity:	41 – 75 GPa	41 – 75 GPa	41 – 75 GPa	41 – 75 GPa
Coefficient of Thermal Expansion:	11 x 10^{-6} / ℃	11 x 10^{-6} / ℃	11 x 10^{-6} / ℃	11 x 10^{-6} / ℃
MECHANICAL PROPERTIES				
Ultimate Tensile Strength:	≥ 1070 MPa	≥ 1070 MPa	≥ 1070 MPa	≥ 1070 MPa
Total Elongation:	≥ 10%	≥ 10%	≥ 10%	≥ 10%
SUPERELASTIC PROPERTIES				
Loading Plateau Stress @ 3%	≥ 380 MPa	≥ 380 MPa	~25% lower than SE508	~25% higher than SE508
Permanent Set (after 6% strain)	≤ 0.3%	≤ 0.3%	≤ 0.3%	≤ 0.3%
TRANSFORMATION TEMPERATURE				
Ingot Austenite Finish (A_f)	-25 to 5℃	-25 to 5℃	5℃ to 25℃	-65 to -25℃
Finished Product A_f	-25 to 30℃	-25 to 30℃	10℃ to 45℃	-65 to 10℃
COMPOSITION (Meets ASTM F2063 requirements)				
Nickel (nominal):	55.8 wt.%	55.8 wt.%	55.6 wt.%	56.0 wt.%
Titanium:	Balance	Balance	Balance	Balance
Oxygen:	≤ 0.01 wt.%	≤ 0.05 wt.%	≤ 0.05 wt.%	≤ 0.05 wt.%
Carbon:	≤ 0.005 wt.%	≤ 0.02 wt.%	≤ 0.02 wt.%	≤ 0.02 wt.%
Inclusion Area Fraction:	≤ 1.0%	≤ 2.8%	≤ 2.8%	≤ 2.8%
APPLICATIONS				
	SE508ELI is our ultrapure material for your most safety-critical applications. ELI has the fewest and smallest inclusions of any commercial Nitinol material.	SE508 is our flagship material with over two decades of proven success as the world's most implanted Nitinol material.	SE506 has a higher transformation temperature that results in a softer feel compared to SE508. Typical application is orthodontic archwires for a mild chronic force.	SE510 has a lower transformation temperature that results in a stiffer feel compared to SE508. Typical application is guidewires with enhanced kink resistance.

* These values should only be used as guidelines for developing material specifications. Properties of Nitinol Alloys are strongly dependent on processing history and ambient temperature. The mechanical and superelastic properties shown here are typical for standard superelastic straight Nitinol at room temperature tested in uniaxial tension. Bending properties differ, and depend on specific geometries and applications. Modulus is dependent on temperature and strain. Certain shapes or product configurations may require custom specifications. Materials are also available in the cold-worked or annealed conditions.

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