

Publication number SMC-017

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Data are typical but not suitable for design or specifications unless quoted as limiting. Properties will vary with form, size and thermo-mechanical history.

Special Metals Corporation is one of the world's leading producers of a series of 'Nitinol' and other shape memory alloys used for a range of applications from precision engineering to the latest medical technology. The outline information in this publication can be developed for specific applications in consultation with the Shape Memory Alloys Department at New Hartford, NY. Phone +1 315 798-2900, Fax +1 315 798-6860

Superelastic Ni-Ti Alloy

Chemistry, %/wt.

Ni	55.8 ± 0.5	O	0.05 max.
Ti	Balance	Fe	0.05 max.
C	0.05 max.		

Density

0.235 lb/in³ (6.5 g/cm³)

Melting Point

1300°C (2372°F)

A_s (austenite start temperature), fully annealed, measured by DSC = - 10°C ± 5°C.

A_f (austenite finish temperature), fully annealed, measured by DSC = + 5°C ± 5°C.

Typical tensile properties of cold-drawn and tempered material

Upper superelastic plateau stress, 55 ksi (379 MPa)

Lower superelastic plateau stress, 20 ksi (138 MPa)

Permanent set after 6% strain, 0.1%

Yield strength of the martensite after transition, 118 ksi (814 MPa)

Ultimate tensile strength, 155 ksi (1068 MPa)

Elongation to failure, 17.5%

Maximum strain recovery, 8%

High-Strength Superelastic Ni-Ti Alloy

Chemistry, %/wt.

Ni	55.9 ± 0.5	O	0.05 max.
Ti	Balance	Fe	0.05 max.
C	0.05 max.		

Density

0.235 lb/in³ (6.5 g/cm³)

Melting Point

1300°C (2372°F)

A_s (austenite start temperature), fully annealed, measured by DSC = - 20°C ± 5°C.

A_f (austenite finish temperature), fully annealed, measured by DSC = - 5°C ± 5°C.

Typical tensile properties of cold-drawn and tempered material

Upper superelastic plateau stress, 70 ksi (482 MPa)

Lower superelastic plateau stress, 30 ksi (207 MPa)

Permanent set after 6% strain, 0.1%

Yield strength of the martensite after transition, 185 ksi (1275 MPa)

Ultimate tensile strength, 210 ksi (1448 MPa)

Elongation to failure, 12.5%

Maximum strain recovery, 8%

High-Temperature Shape Memory Ni-Ti Alloy Ribbon

Chemistry, %/wt.

Ni	55.5 ± 0.5	O	0.05 max.
Ti	Balance	Fe	0.05 max.
C	0.05 max.	Other trace elements	< 0.01
H	0.005 max.		

Density

0.235 lb/in³ (6.5 g/cm³)

Melting Point

1300°C (2372°F)

A_s (austenite start temperature), fully annealed, measured by DSC = 60 to 70°C ± 5°C.

A_f (austenite finish temperature), fully annealed, as measured by DSC = 80 to 90°C ± 5°C.

Typical tensile properties of cold-rolled, 20% min. cold-worked material

Ultimate tensile strength, 175 ksi (1210 MPa) min.

Elongation to failure, 5% min.

High-Temperature Shape Memory Ni-Ti Alloy

Chemistry, %/wt.

Ni	55.5 ± 0.5	H	0.005 max.
Ti	Balance	Fe	0.05 max.
C	0.05 max.	Other trace elements	< 0.01
O	0.05 max.		

Density

0.235 lb/in³ (6.5 g/cm³)

Melting Point

1300°C (2372°F)

A_s (austenite start temperature), fully annealed, measured by DSC = 95°C ± 5°C.

A_f (austenite finish temperature), fully annealed, as measured by DSC = 115°C ± 5°C.

Typical tensile properties of cold-drawn and tempered material

Ultimate tensile strength, 180 ksi (1237 MPa) min.

Elongation to failure, 12% min.

Maximum strain recovery, 8%

Body-Temperature Ni-Ti Alloy

Chemistry, %/wt.

Ni	55.5 ± 0.5	H	0.005 max.
Ti	Balance	Fe	0.05 max.
C	0.05 max.	Other trace elements	< 0.01
O	0.05 max.		

Density

0.235 lb/in³ (6.5 g/cm³)

Melting Point

1300°C (2372°F)

A_s (austenite start temperature), fully annealed, measured by DSC = 15°C ± 5°C.

A_f (austenite finish temperature), fully annealed, as measured by DSC = 35°C ± 5°C.

Typical tensile properties of cold-drawn and tempered material at 37°C ± 1°C

Upper superelastic plateau stress, 50 ksi (344 MPa) min.

Lower superelastic plateau stress, 2 ksi (14 MPa) min.

Permanent set after 6% strain, 0.5%

Ultimate tensile strength, 180 ksi (1237 MPa) min.

Elongation to failure, 12% min.

Maximum strain recovery, 8%

Chrome-Doped Superelastic Ni-Ti Alloy

Chemistry, %/wt.

Ni	55.8 ± 0.5	H	0.005 max.
Ti	Balance	Fe	0.05 max.
Cr	0.2 – 0.3	Other trace elements	< 0.01
C	0.05 max.		
O	0.05 max.		

Density

0.235 lb/in³ (6.5 g/cm³)

Melting Point

1300°C (2372°F)

A_s (austenite start temperature), fully annealed, measured by DSC = -30°C ± 5°C.

A_f (austenite finish temperature), fully annealed, as measured by DSC = -10°C ± 5°C.

Typical tensile properties of cold-drawn and tempered material

Upper superelastic plateau stress, 80 ksi (550 MPa) min.

Lower superelastic plateau stress, 35 ksi (240 MPa) min.

Permanent set after 6% strain, 0.1%

Ultimate tensile strength, 225 ksi (1547 MPa) min.

Elongation to failure, 10% min.

Maximum strain recovery, 8%

High-Temperature Superelastic Ni-Ti-Fe Alloy

Chemistry, %/wt.

Ni	53.5 ± 1.0	H	0.005 max.
Ti	Balance	Fe	1.0 – 2.0
C	0.05 max.	Other trace elements	< 0.01
O	0.05 max.		

Density

0.235 lb/in³ (6.5 g/cm³)

Melting Point

1300°C (2372°F)

A_s (austenite start temperature), fully annealed, measured by DSC = -10°C ± 5°C.

A_f (austenite finish temperature), fully annealed, as measured by DSC = 10°C ± 5°C.

Typical tensile properties of cold-drawn and tempered material

Upper superelastic plateau stress, 100 ksi (688 MPa)

Lower superelastic plateau stress, 65 ksi (447 MPa)

Permanent set after 6% strain, 0.5%

Ultimate tensile strength, 210 ksi (1443 MPa)

Elongation to failure, 10%

Maximum strain recovery, 8%

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