



Ancorsteel® 50 HP

Ancorsteel 50 HP is a new water atomized, prealloyed low-alloy steel powder for high performance applications. The prealloyed 0.50 weight % (w/o) molybdenum addition results in high compressibility and provides good response to heat treatment.

Ancorsteel 50 HP complements other prealloyed powders in which molybdenum is used as the principal alloying addition; Ancorsteel 85 HP (0.85 w/o Mo) and Ancorsteel 150 HP (1.5 w/o Mo). Ancorsteel 50 HP is an ideal base powder for a wide range of nickel-copper and chromium-manganese hybrid alloy systems.

Typical Analysis and Properties

Composition (weight %) (w/o)

C	Mn	Mo	O
<0.01	0.18	0.50	0.09

Apparent Density

2.97 g/cm³

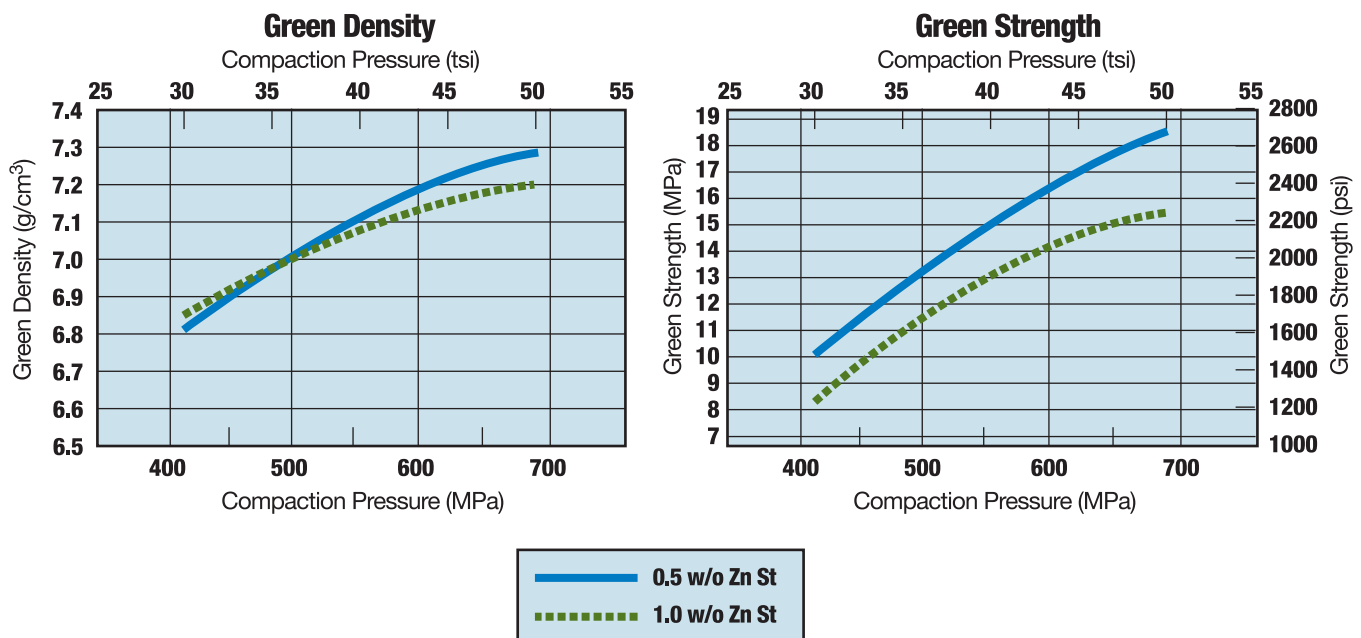
Flow

24 s/50 g

Sieve Distribution (w/o)

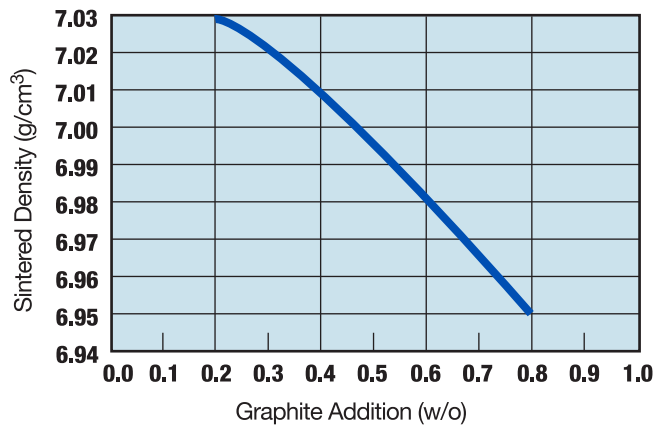
Micrometers	+250	-250 / +150	-150 / +45	-45
U.S. Standard Mesh	(+60)	(-60 / +100)	(-100 / +325)	(-325)
	Trace	11	66	23

The Effects of Compaction Pressure on Green Properties

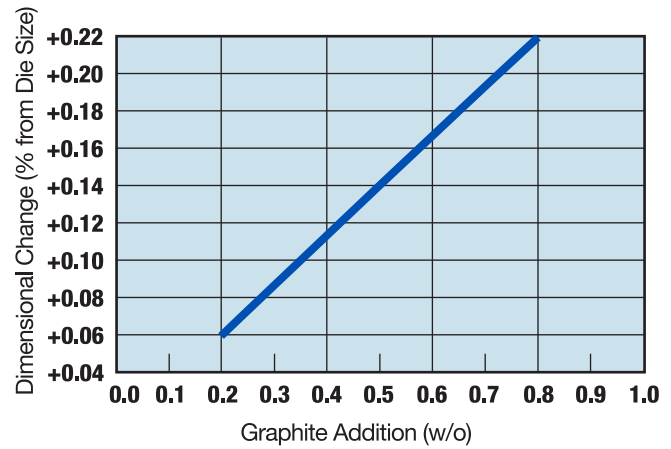


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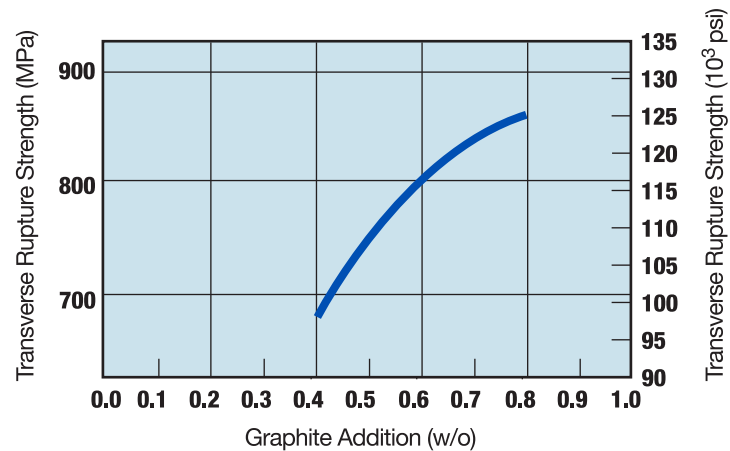
Sintered Density



Dimensional Change



Transverse Rupture Strength

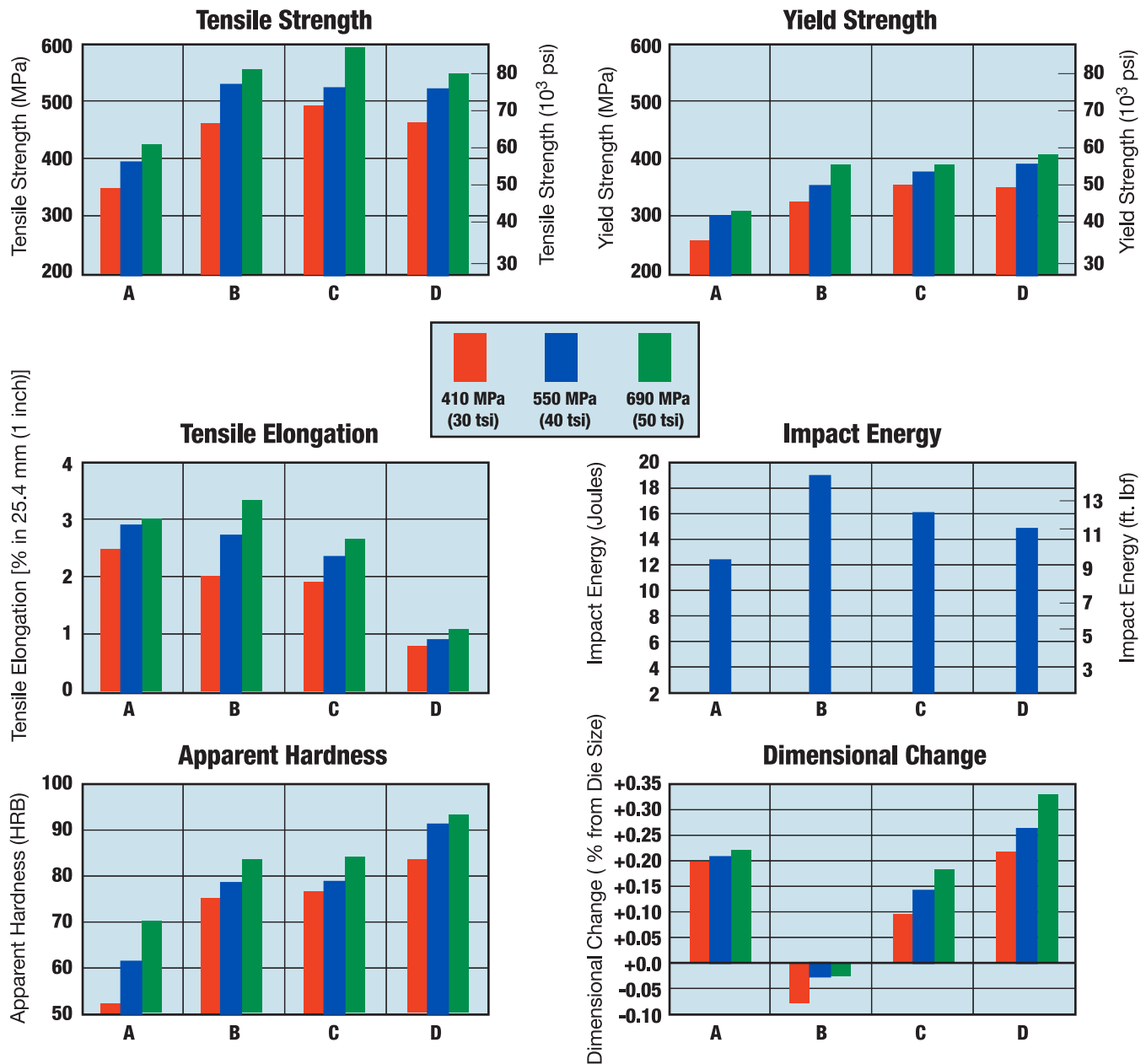


All test specimens were compacted at 550 MPa (40 tsi) and sintered at 1120°C (2050°F) for 30 minutes at temperature in a 75 v/o Nitrogen/ 25 v/o Hydrogen furnace atmosphere.

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The Effects of Compaction Pressure on the Mechanical Properties

	A	B	C	D
Nickel (w/o)	—	2.0	2.0	2.0
Copper (w/o)	—	—	1.0	—
FeMn (w/o)	—	—	—	1.3
Graphite (w/o)	0.60	0.60	0.60	0.55
Acrawax	0.75	0.75	0.75	0.75

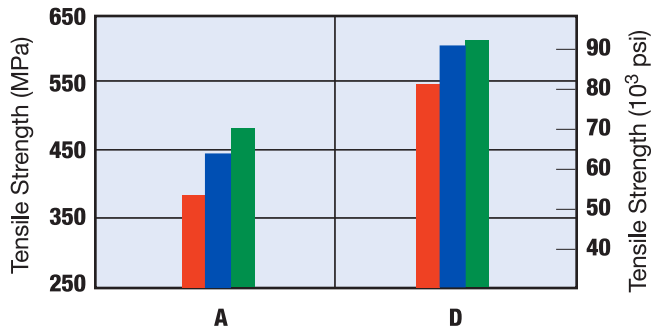


All test specimens were sintered at 1120°C (2050°F) for 30 minutes at temperature in a 75 v/o Nitrogen/ 25 v/o Hydrogen furnace atmosphere

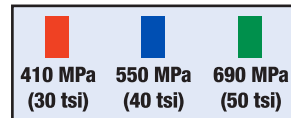
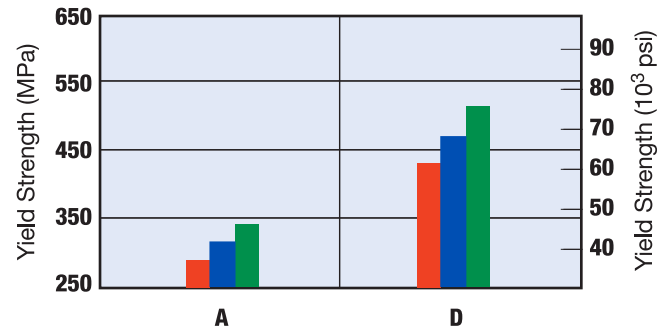
Ancorsteel® 50 HP

	A	D
Nickel (w/o)	—	2.0
FeMn (w/o)	—	1.3
Graphite (w/o)	0.60	0.55
Acrawax	0.75	0.75

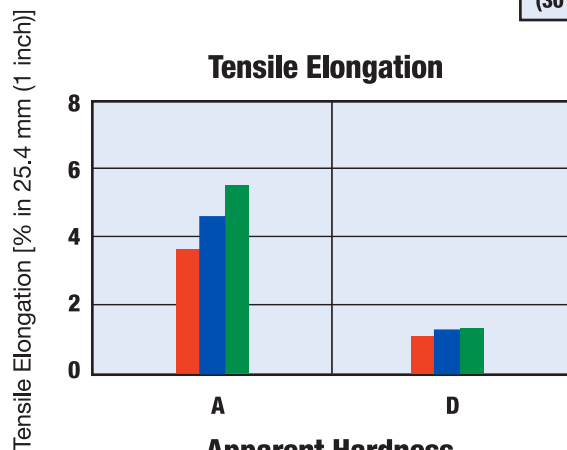
Tensile Strength



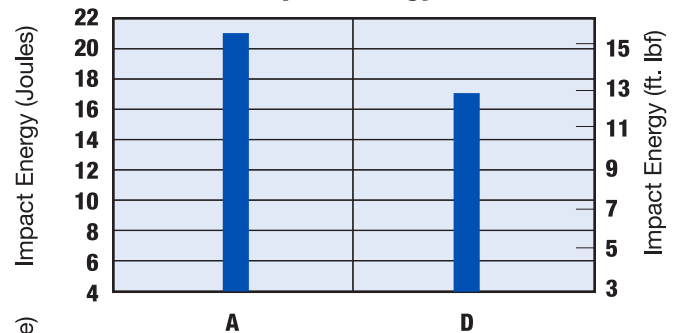
Yield Strength



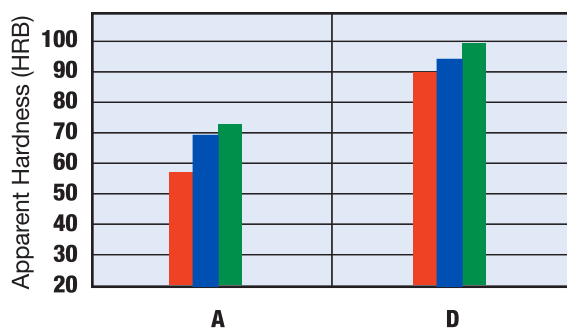
Tensile Elongation



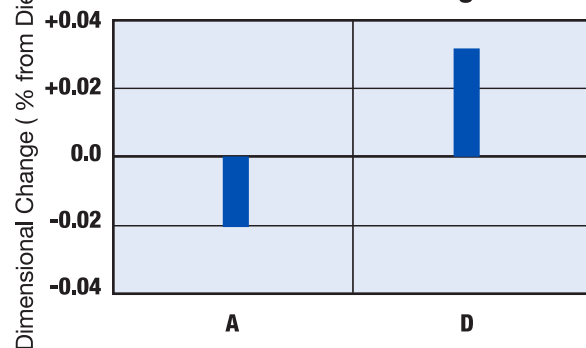
Impact Energy



Apparent Hardness



Dimensional Change

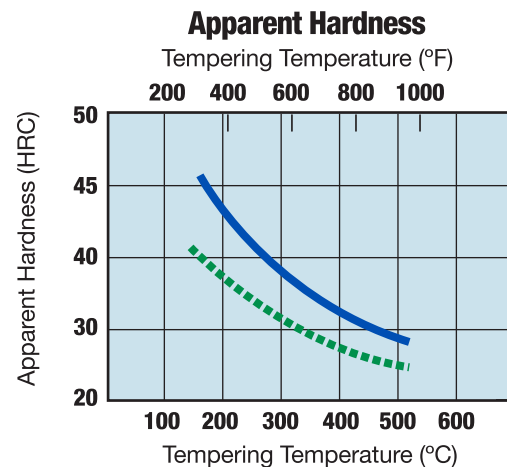
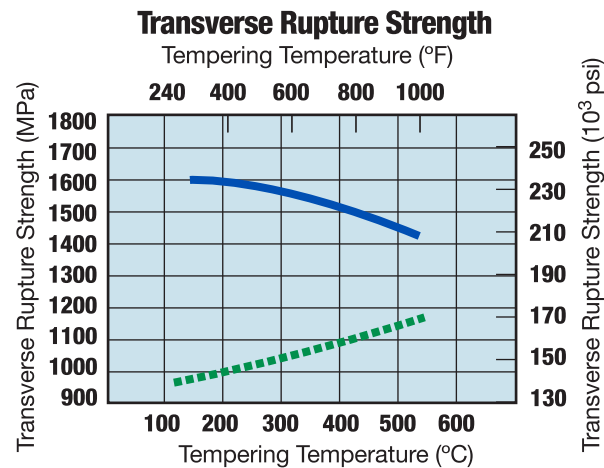


All test specimens were sintered at 1290°C (2350°F) for 30 minutes at temperature in a 75 v/o Nitrogen/ 25 v/o Hydrogen furnace atmosphere.

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Heat Treated Properties

	C	D
Nickel (w/o)	2.0	2.0
Copper (w/o)	1.0	—
FeMn (w/o)	—	1.3
Graphite (w/o)	0.60	0.55
Acrawax	0.75	0.75



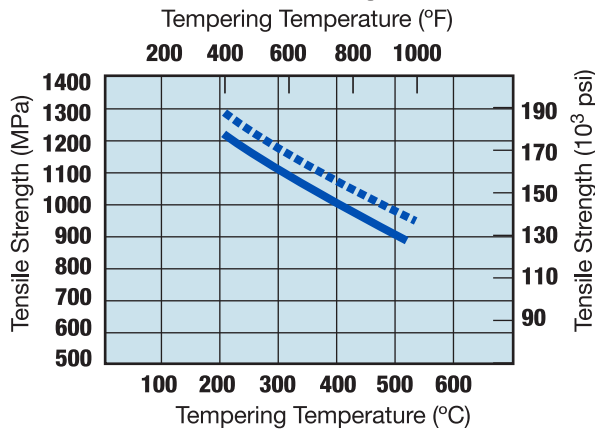
All test specimens were compacted at 550 MPa (40 tsi) and sintered at 1120°C (2050°F) for 30 minutes at temperature in a 75 v/o Nitrogen/ 25 v/o Hydrogen furnace atmosphere. Specimens were then austenitized at 900°C (1650°F) for 30 minutes at temperature with a carbon potential of 0.6 w/o, followed by a quenching in oil at 60–70°C (140–160°F).

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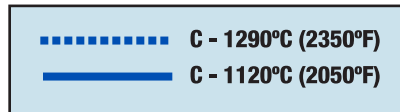
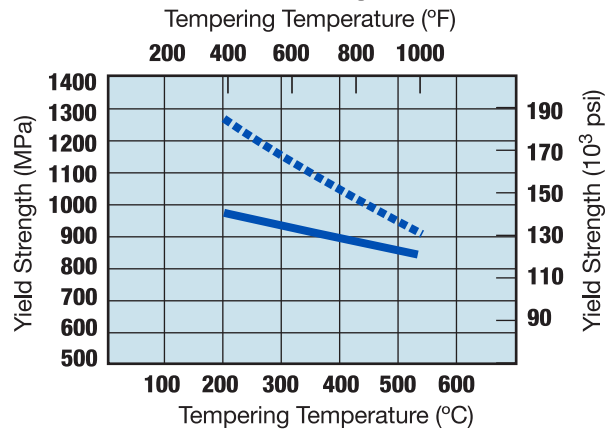
Heat Treated Properties

	C	D
Nickel (w/o)	2.0	2.0
Copper (w/o)	1.0	—
FeMn (w/o)	—	1.3
Graphite (w/o)	0.60	0.55
Acrawax	0.75	0.75

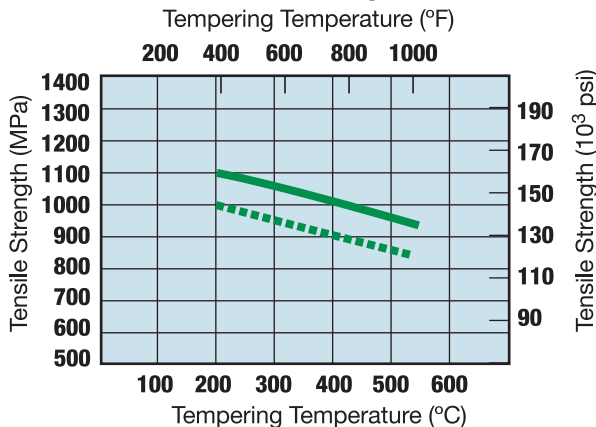
Tensile Strength



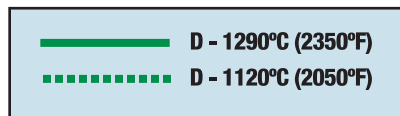
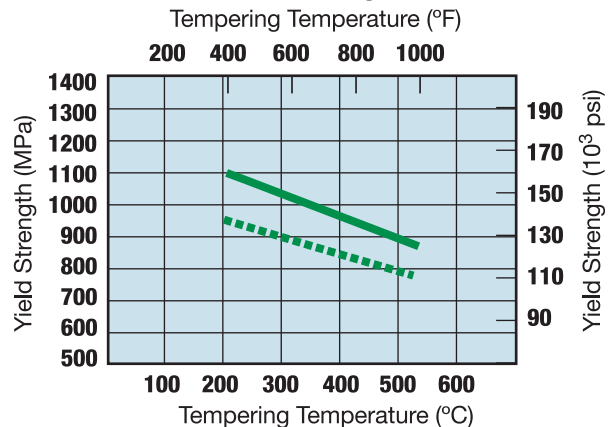
Yield Strength



Tensile Strength



Yield Strength



All test specimens were compacted at 550 MPa (40 tsi) and sintered at 1120°C (2050°F) or 1290°C (2350°F) and quenched and tempered.

IMPORTANT NOTICE: The data shown are based on laboratory processing standard test specimens. Results may vary from that obtained in production processing.