HOEGANAES

Ancorsteel® 85 HP

Ancorsteel 85 HP *is a water atomized, prealloyed low-alloy steel powder for high performance applications. The prealloyed 0.85 w/o molybdenum addition allows exceptionally high compressibility and provides good response to heat treatment.*
Ancorsteel 85 HP is a good base powder for a wide range of hybrid alloy systems.

Typical Analysis and Properties

Composition (weight %) (w/o)

C	Mn	Mo	O
<0.01	0.12	0.86	0.08

Apparent Density

2.97 g/cm^3

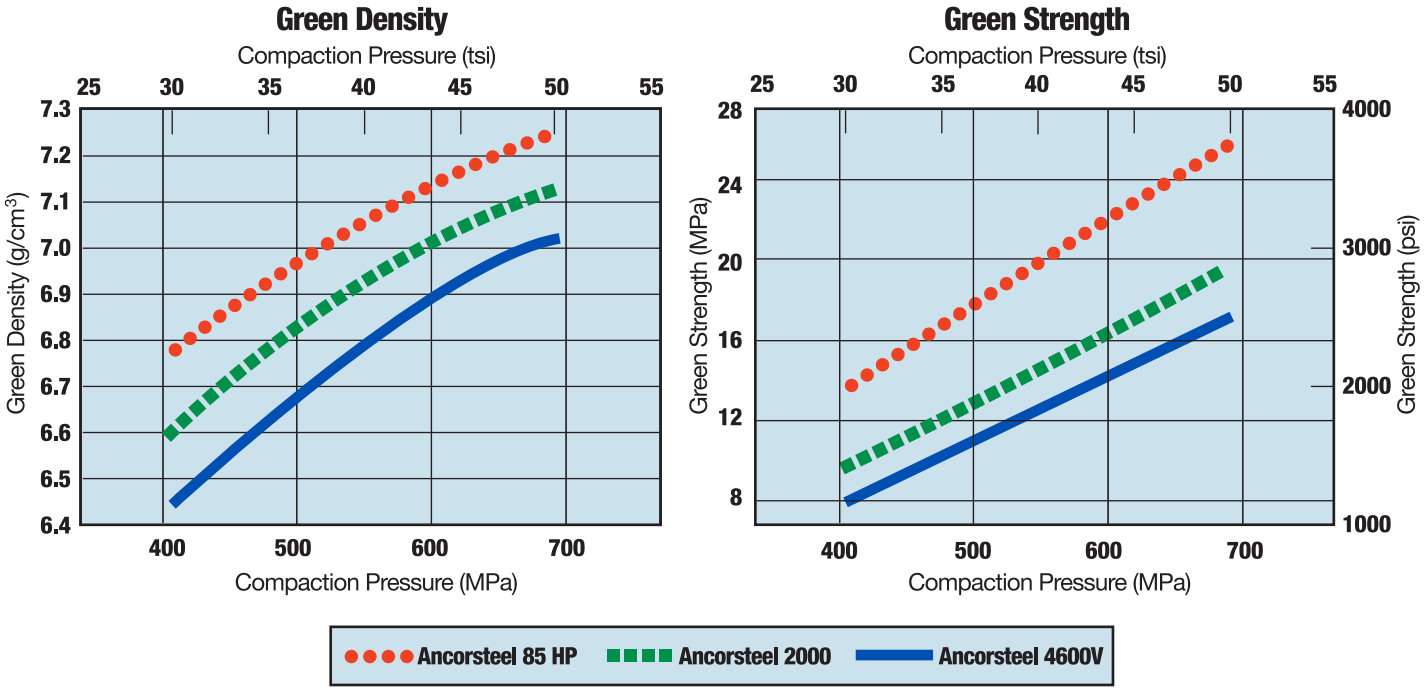
Flow Rate

25 s/50g

Sieve Distribution (w/o)

Micrometers	+250	-250 /+150	-150 /+45	-45
U.S. Standard Mesh	(+60)	(-60 +100)	(-100 /+325)	(-325)
	Trace	10	70	20

The Effect of Compaction Pressure on Ancorsteel 85 HP with 0.5 w/o Zinc Stearate



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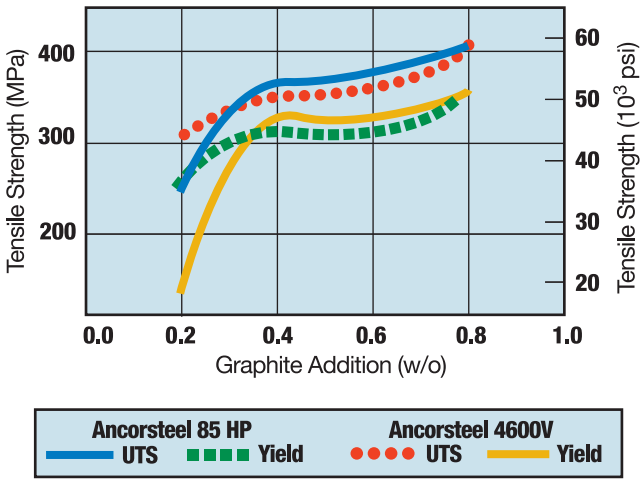
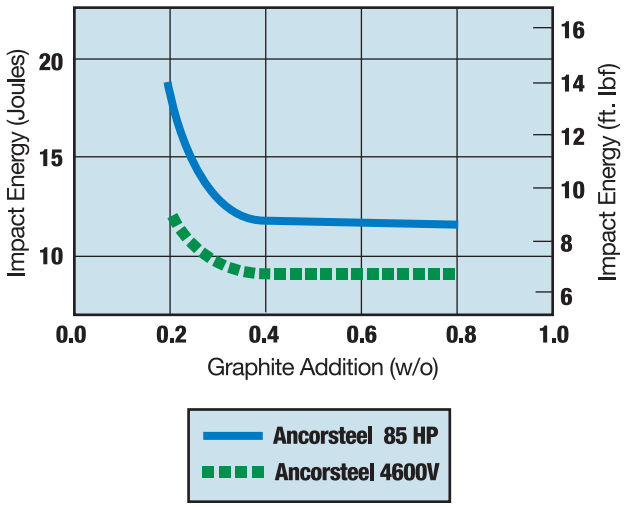
Ancorsteel® 85 HP

Properties of Heat Treated Compacts of Ancorsteel 85 HP

Tensile Strength



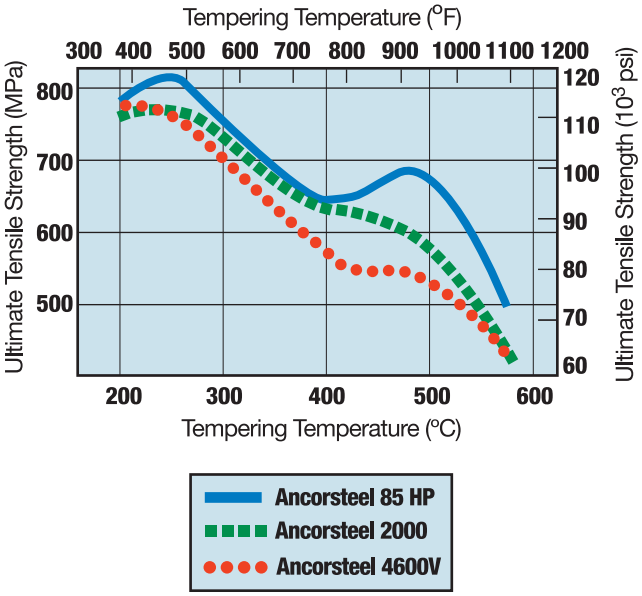
Impact Energy



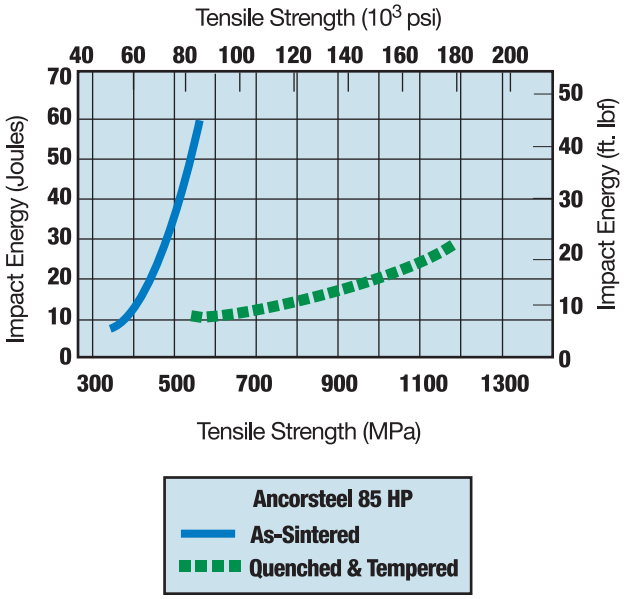
All specimens were compacted at a pressure of 550 MPa (40 tsi).

Response to Heat Treatment

Ultimate Tensile Strength



Impact Energy



Powders with a 0.6 w/o graphite addition were compacted at a pressure of 550 MPa (40 tsi).
Heat treatment was performed at 900°C (1650°F) for 30 minutes in dissociated ammonia followed by quenching in oil preheated to 60°C (150°F). Tempering was performed for 60 minutes in argon to prevent decarburization.

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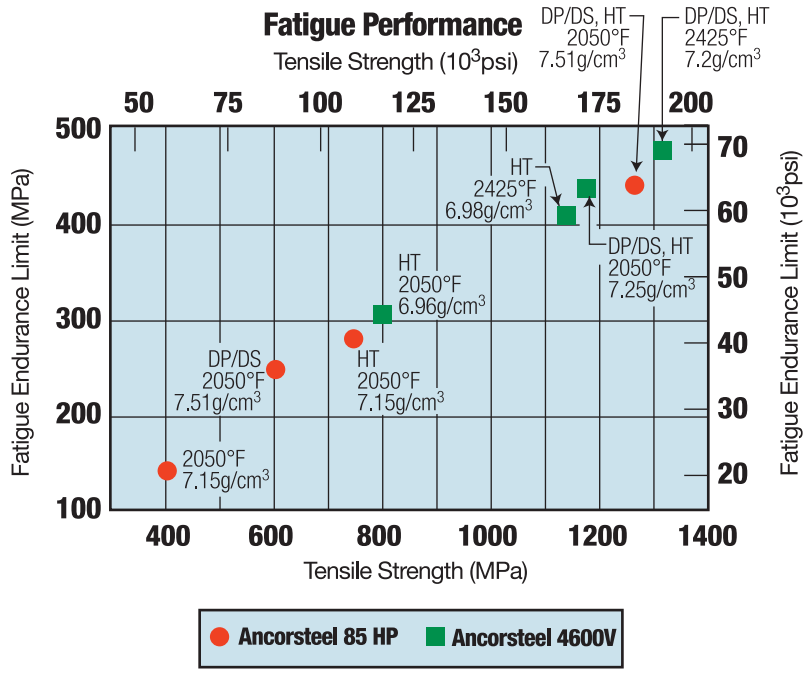
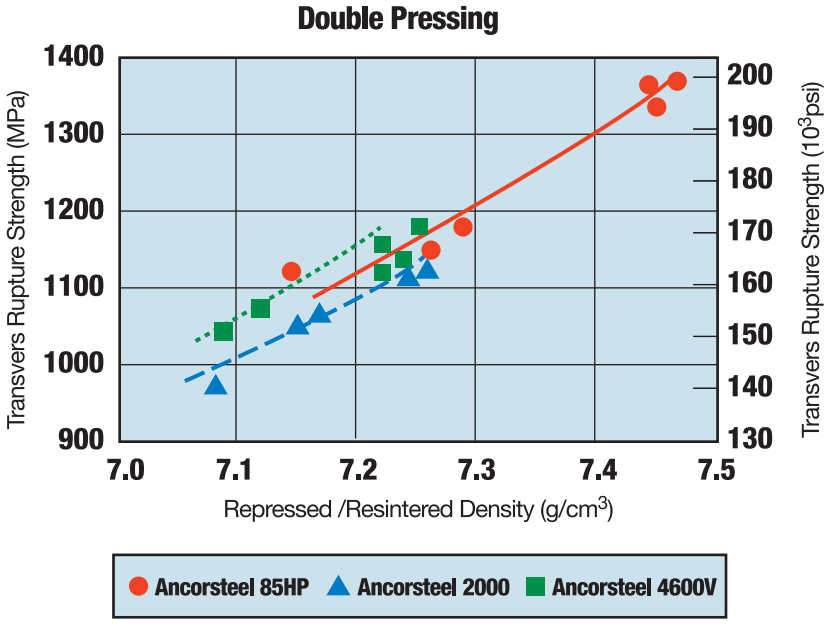
Properties of Heat Treated Compacts of Ancorsteel 85 HP



All compacts were prepared with a 0.6 w/o graphite addition. Processing conditions are shown for each data point.

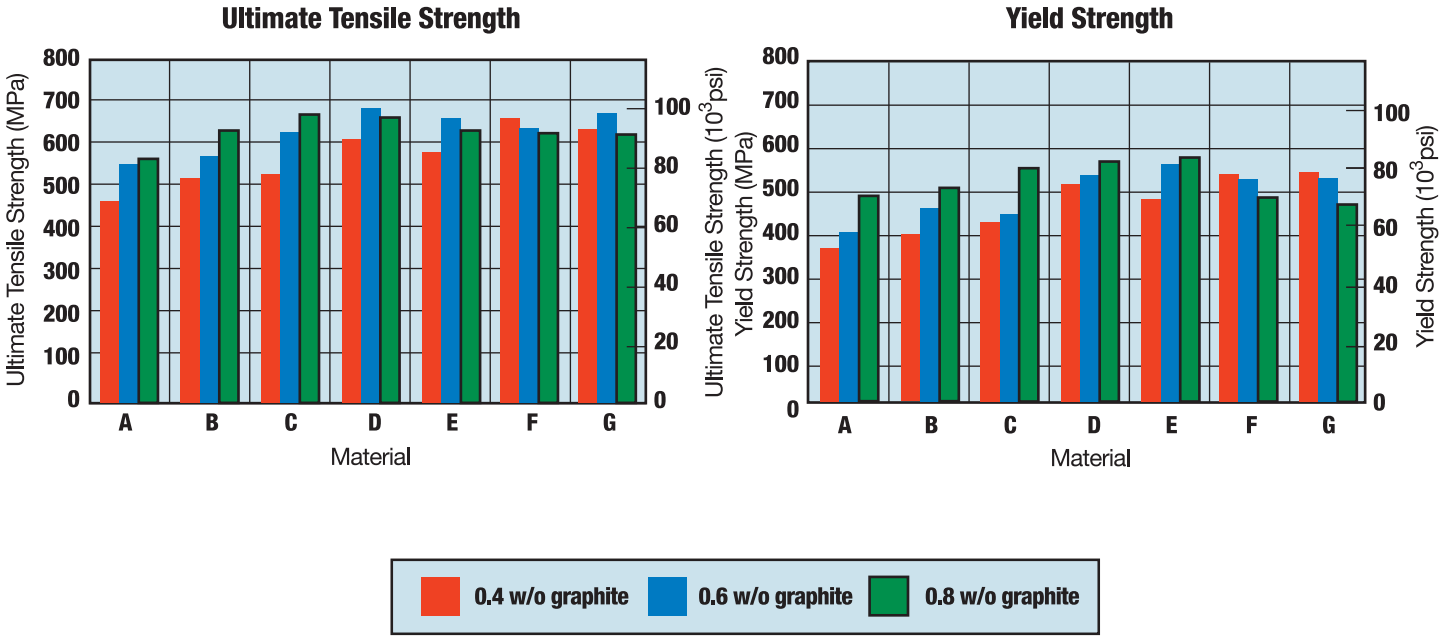


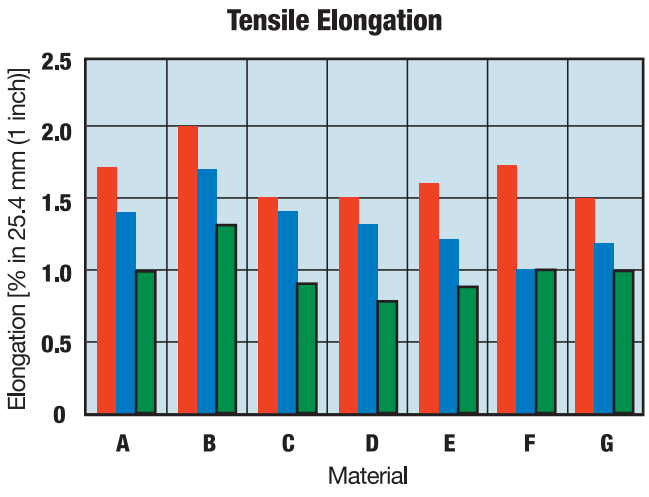
Powders with a 0.6 w/o graphite addition were compacted initially at 620 MPa (45 tsi) followed by presintering at a range of temperature from 590–870ºC (1100–1600ºF) The specimens were repressed at 620 MPa (45 tsi) and sintered at 1120ºC (2050ºF) for 30 minutes in dissociated ammonia.

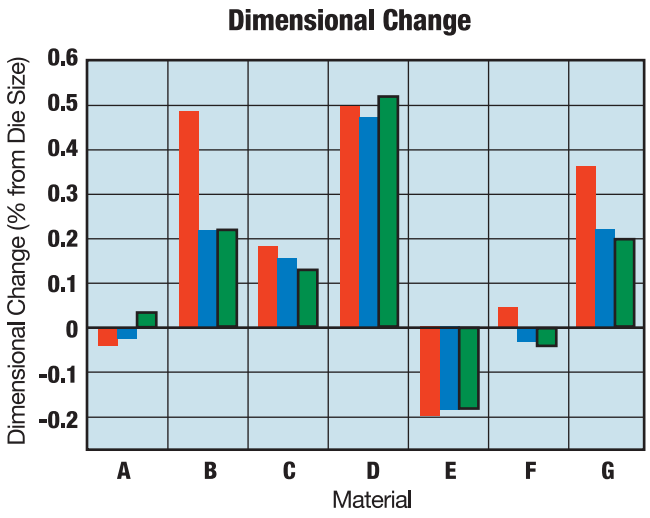
Ancorsteel® 85 HP

As-sintered Properties of Compacts of Ancorsteel 85 HP at a 7.0g/cm^3 Density

Material	A	B	C	D	E	F	G
Nickel (w/o)	2	0	2	2	4	4	4
Copper (w/o)	0	2	1	2	0	1	2







All specimens were sintered at 1120ºC (2050ºF) for 30 minutes in dissociated ammonia.

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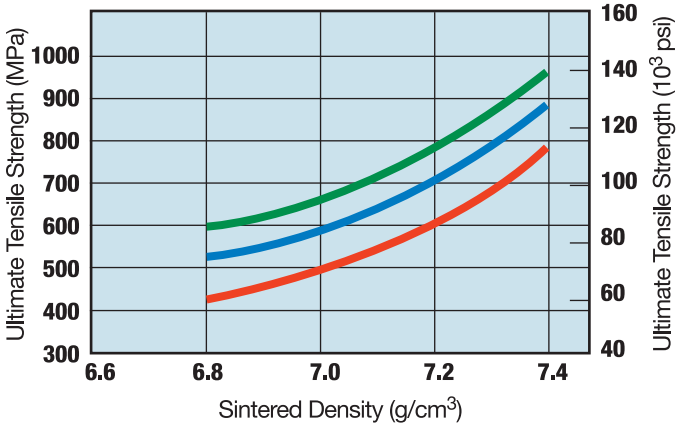
Ancorsteel® 85 HP

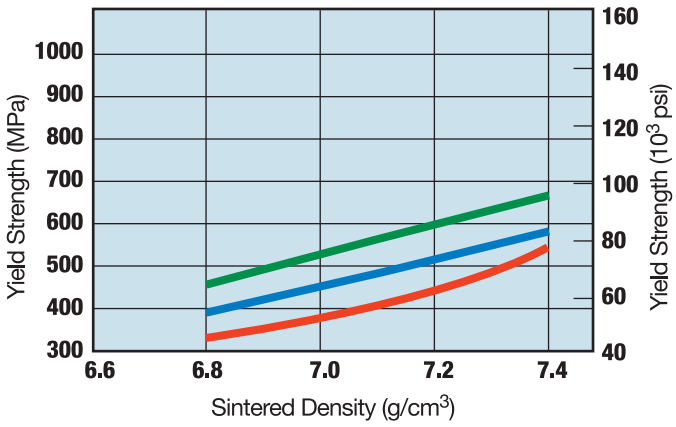
The Effect of Density on Properties of Sintered Compacts of Ancorsteel 85 HP

Material	A	C	F
Nickel (w/o)	2	2	4
Copper (w/o)	0	1	1
Graphite (w/o)	0.6	0.6	0.4
Color Legend			

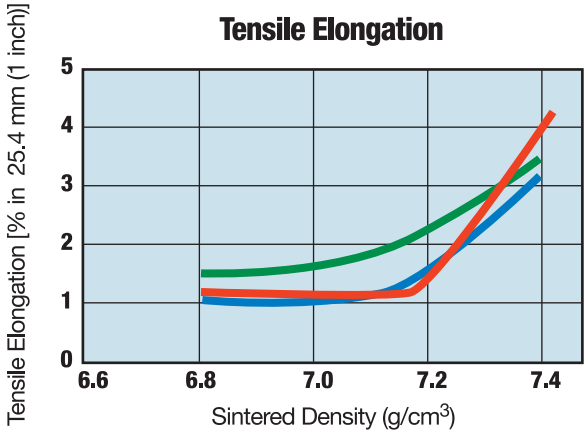
Ultimate Tensile Strength



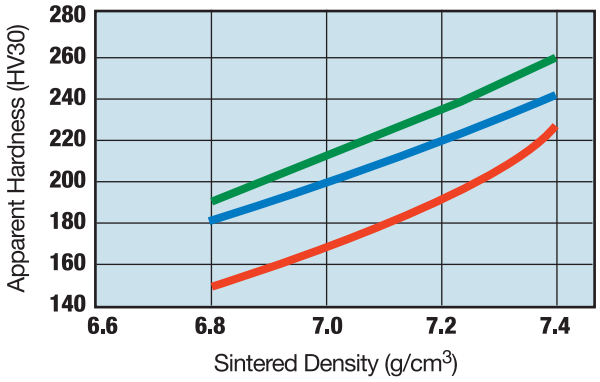
Yield Strength



Tensile Elongation



Apparent Hardness



All specimens were sintered at 1120ºC (2050ºF) for 30 minutes in dissociated ammonia. [For sintered densities greater than 7.2 g/cm³, initial compaction was performed at 620 MPa (45 tsi) followed by presintering at 760ºC (1400ºF). The specimens were repressed at 620 MPa (45 tsi) and sintered at 1120ºC (2050ºF) for 30 minutes in dissociated ammonia].

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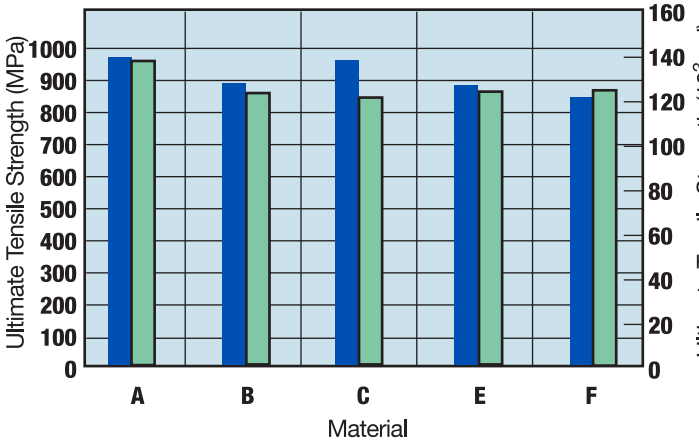
Ancorsteel® 85 HP

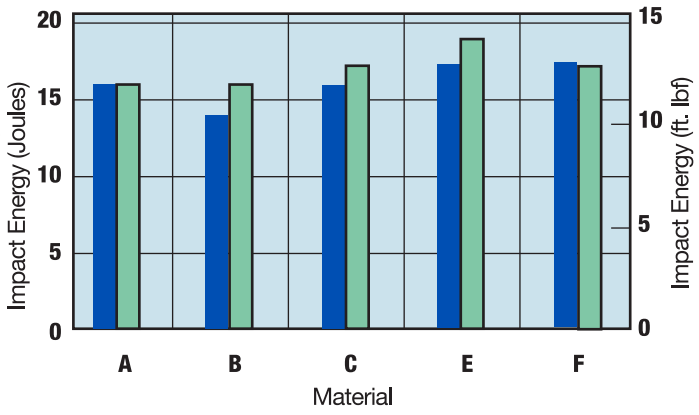
Properties of Heat Treated Compacts of Ancorsteel 85 HP

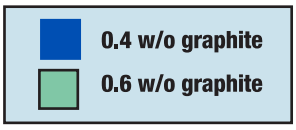
Material	A	B	C	E	F
Nickel (w/o)	2	0	2	4	4
Copper (w/o)	0	2	1	0	1

Ultimate Tensile Strength

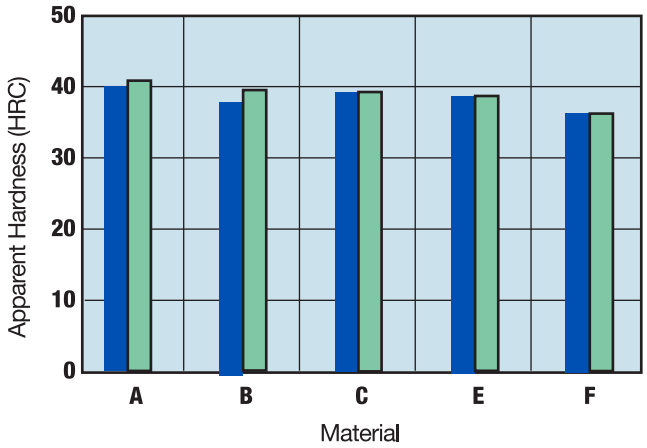


Impact Energy

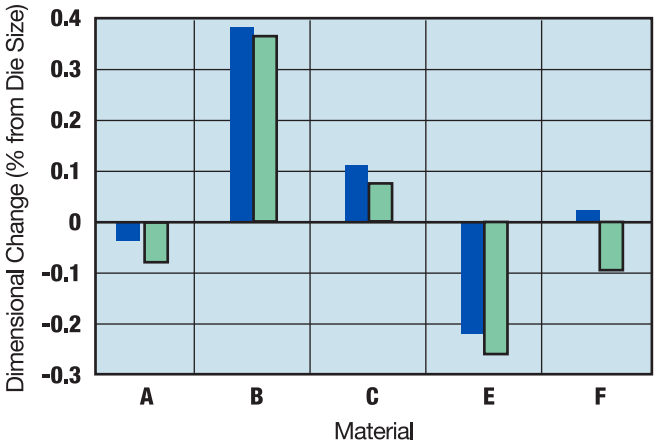




Apparent Hardness



Dimensional Change



All specimens were compacted at 620 MPa (45 tsi) and sintered for 30 minutes in dissociated ammonia. Heat treatment was performed in a production furnace at 840ºC (1550ºF) in an endothermic gas atmosphere followed by quenching in oil preheated to 60ºC (140ºF). Tempering was carried out at 200ºC (400ºF) in air.

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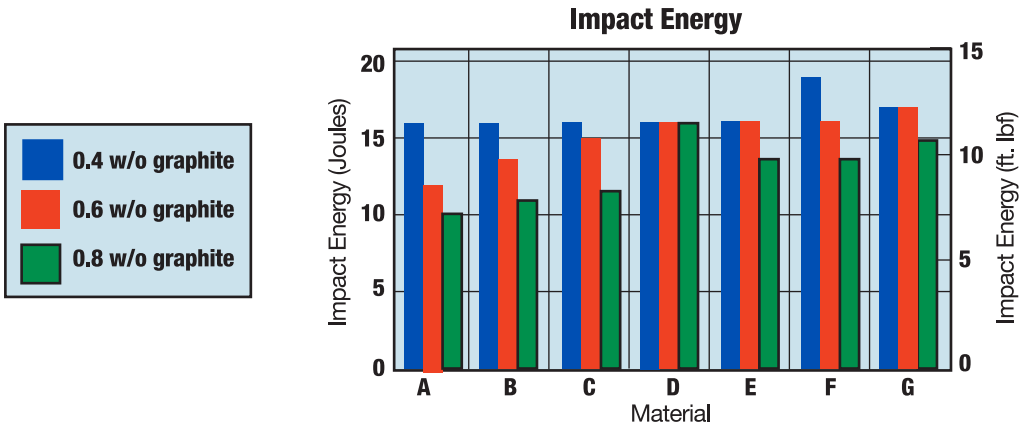
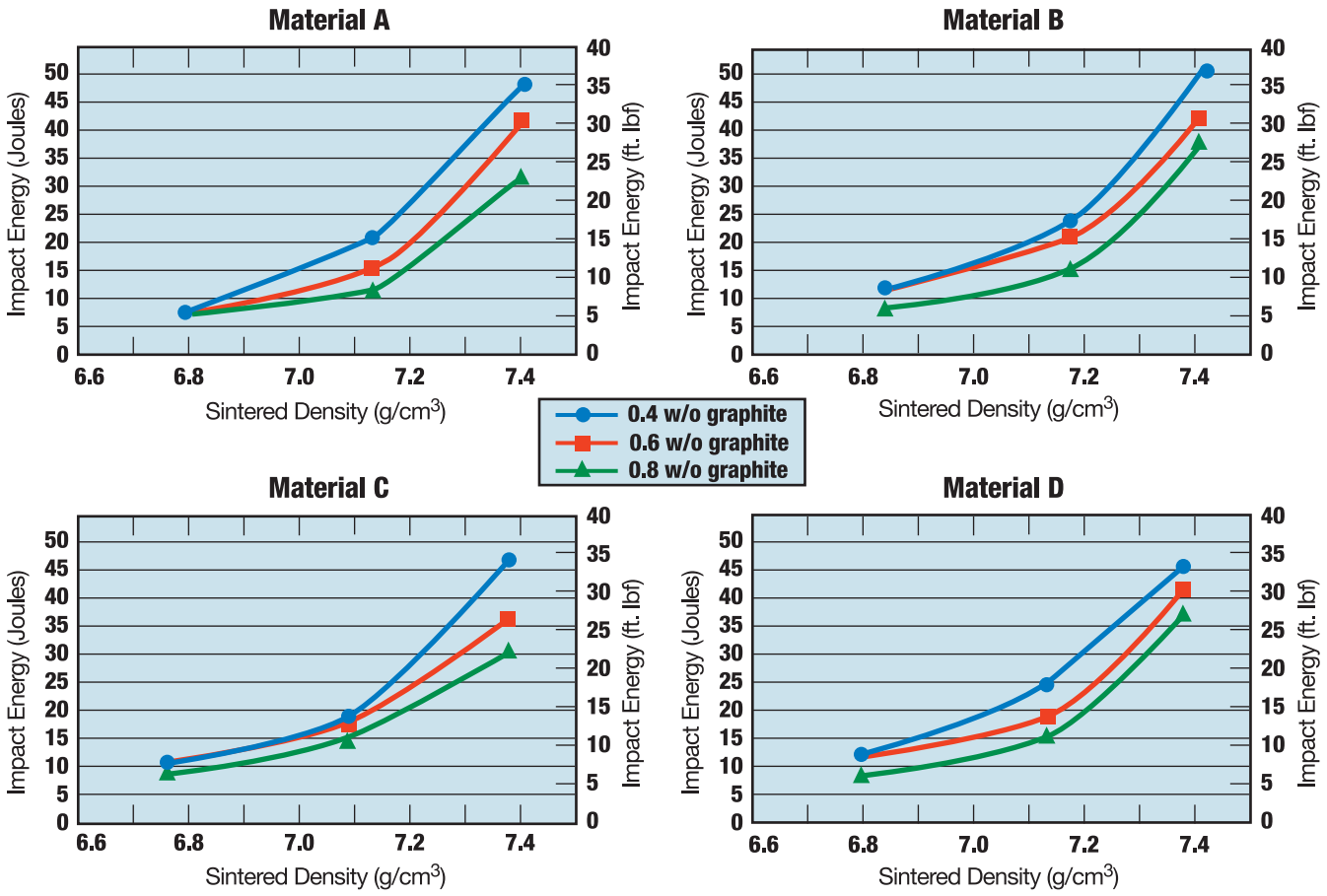
Properties of Sintered Compacts of Ancorsteel 85 HP at a Density of 7.0 g/cm³

Material	A	B	C	D	E	F	G
Nickel (w/o)	2	0	2	2	4	4	4
Copper (w/o)	0	2	1	2	0	1	2



The Effect of Sintered Density on Impact Properties



All specimens were sintered at 1120ºC (2050ºF) for 30 minutes in dissociated ammonia. [For sintered densities greater than 7.2 g/cm³, initial compaction was performed at 620 MPa (45 tsi) followed by presintering at 760ºC (1400ºF). The specimens were repressed at 620 MPa (45 tsi) and sintered at 1120ºC (2050ºF) for 30 minutes in dissociated ammonia].

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

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