



Ancorsteel® FLD-49HP

Ancorsteel® FLD-49HP is a nickel-copper-molybdenum alloy steel powder developed for high performance sinter-hardening applications. This alloy conforms to MPIF Material Standard 35, designation FLDN4C2-4905. The nickel and copper are diffusion-alloyed to the molybdenum pre-alloyed powder during processing to maintain good compressibility while enabling high hardness and toughness in sinter-hardened parts.

Typical Analysis and Properties

Composition (weight %)(w/o)

C	Ni	Cu	Mn	Mo	Oxygen
<0.01	4.0	2.0	0.15	1.50	<0.15

Apparent Density

3.0 g/cm³

Flow

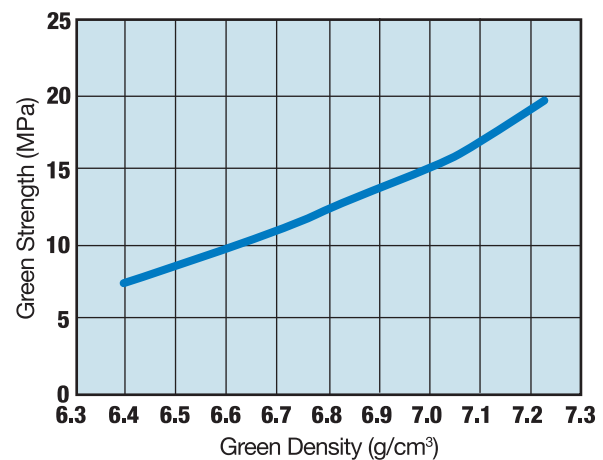
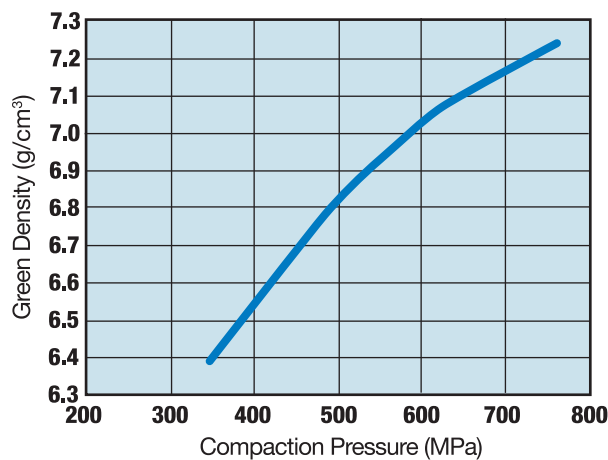
25 s/50 g

Sieve Distribution (weight %)

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

The Effects of Compaction Pressure on Green Properties

0.75% ethylene bis-stearamide (EBS)

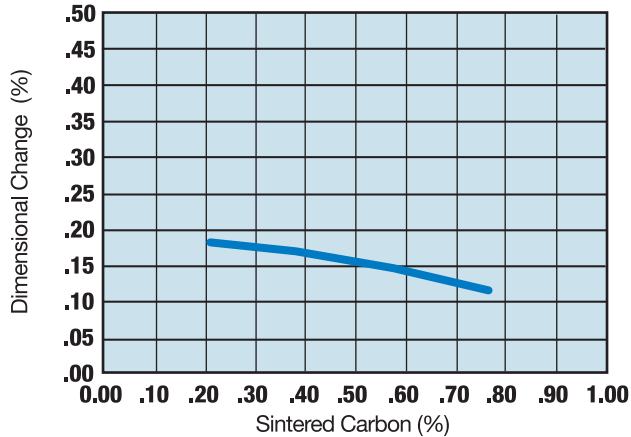


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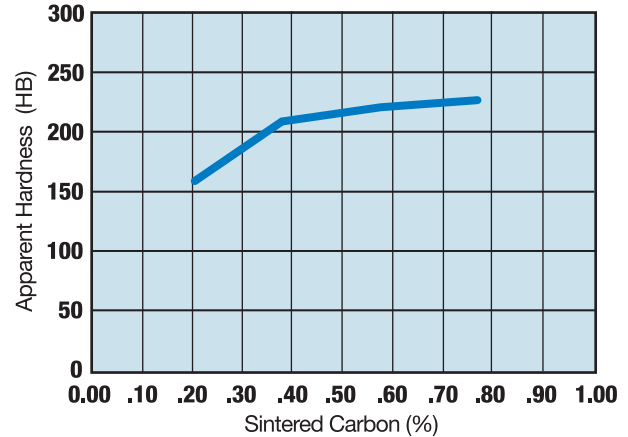
The Effects of Sintered Carbon Content with Conventional Cooling

Compacted with 0.75% ethylene bis-stearamide (EBS) to 7.0g/cm³ green density
Sintered under 90% Nitrogen - 10% Hydrogen at 1120 °C in a belt furnace

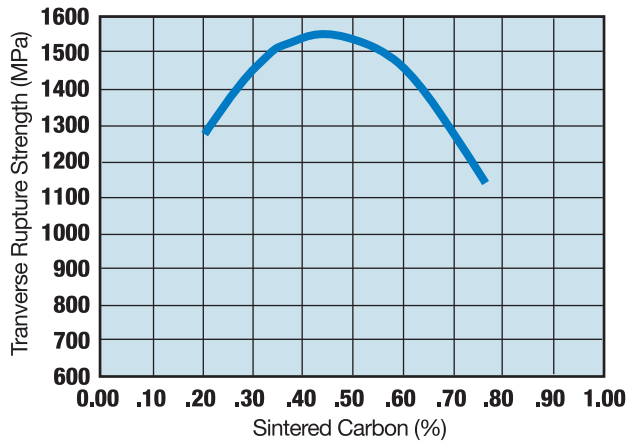
Dimensional Change



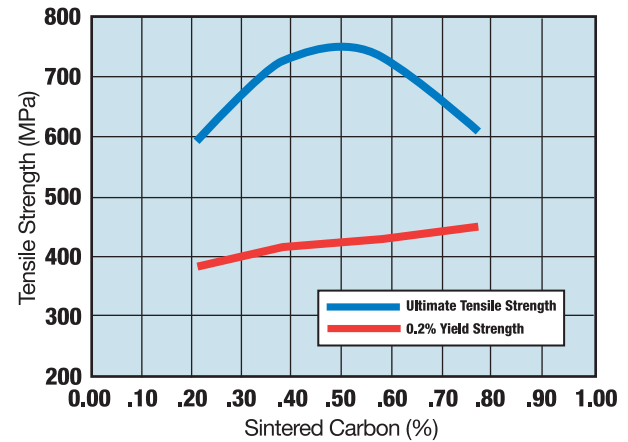
Hardness



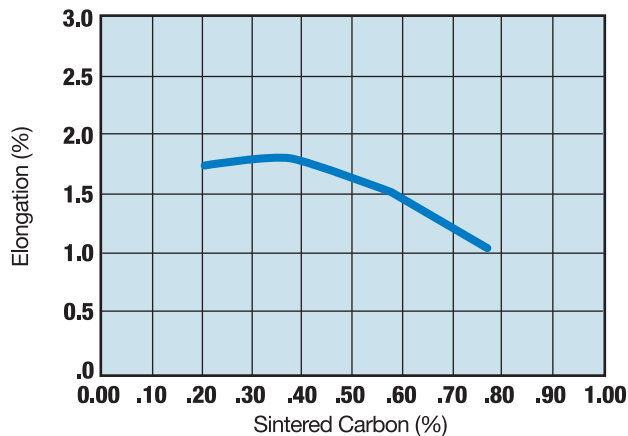
Transverse Rupture Strength



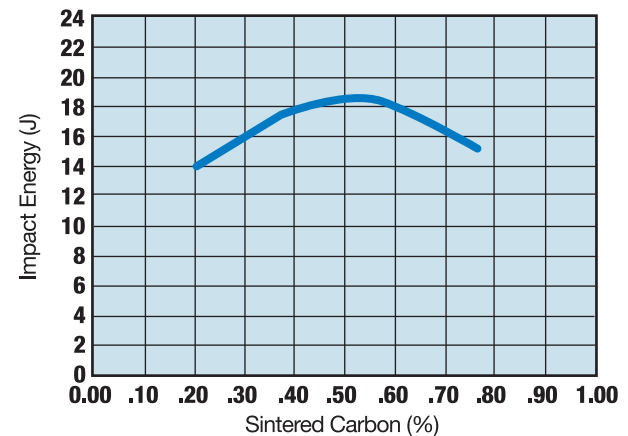
Tensile Strength



Elongation



Impact Energy

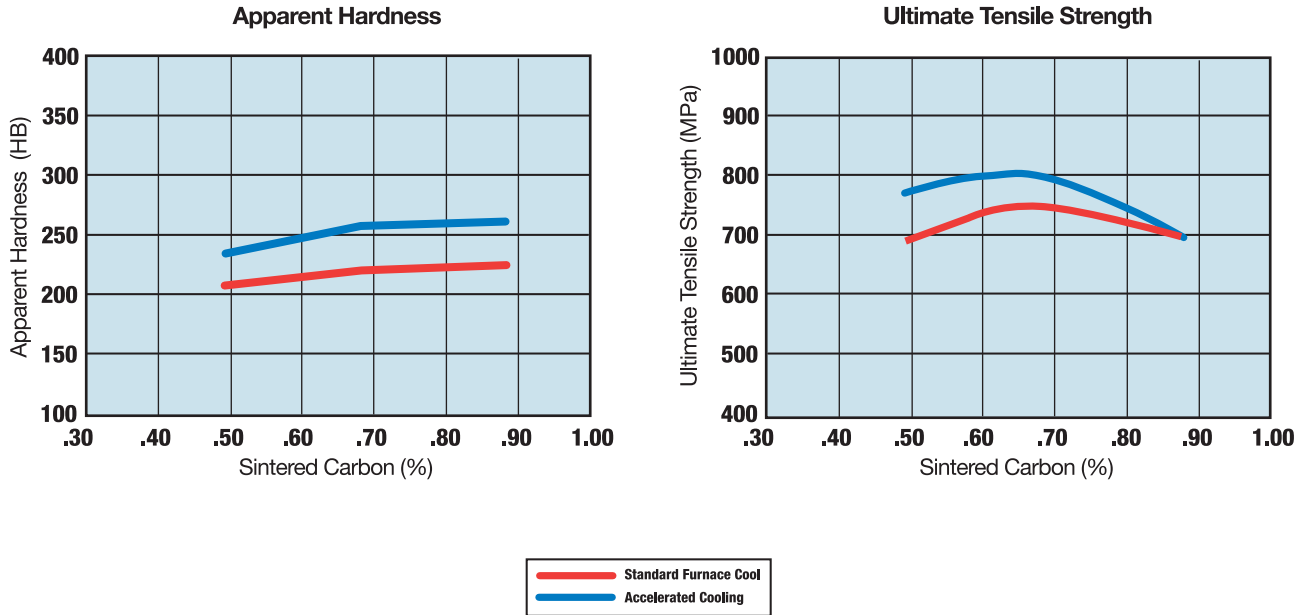


IMPORTANT NOTICE: The data shown are based on laboratory processing standard test specimens. Results may vary from those obtained in production processing.

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Sinter-Hardening Properties

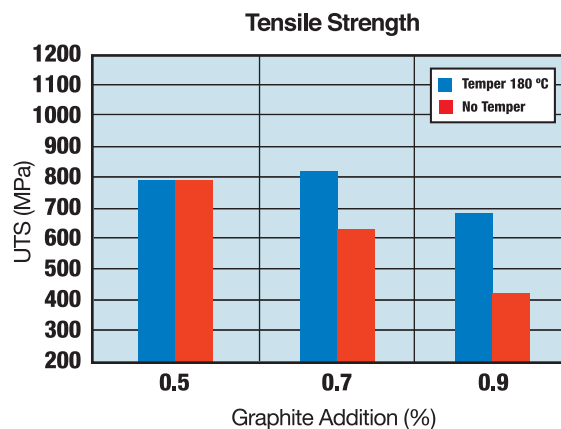
Compacted with 0.75% ethylene bis-stearamide (EBS) to 7.0g/cm³ green density
Sintered under 90% Nitrogen - 10% Hydrogen for 15 minutes at 1120 °C in a belt furnace
Tempered at 180 °C for one hour before testing. Fan speed was increased to increase cooling rate



The Effects of Tempering Sinter-Hardened Products

Compacted with 0.75% ethylene bis-stearamide (EBS) to 7.0g/cm³. Tempered at 180 °C.
Sintered under 90% Nitrogen - 10% Hydrogen at 1120 °C in a belt furnace.

Accelerated cooling rates produce high martensite contents, high hardness and high strength.
Sinter-hardened parts should be tempered to improve strength and avoid brittleness especially at high carbon contents.



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