HOEGANAES

Ancorsteel® FLD-49DH

Ancorsteel® FLD-49DH *is a nickel free copper-molybdenum alloy steel powder developed for sinter-hardening applications. The copper is diffusion-alloyed to the molybdenum pre-alloyed powder during processing to maintain the compressibility of the base powder while enabling small and medium size parts to be sinter-hardened efficiently.*

Typical Analysis and Properties

Composition (weight %)(w/o)

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

Apparent Density	Flow
3.0 g/cm^3	25 s/50 g

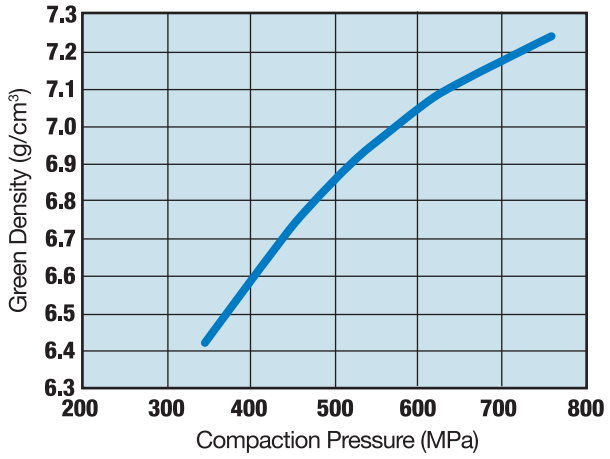
Sieve Distribution (weight %)

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

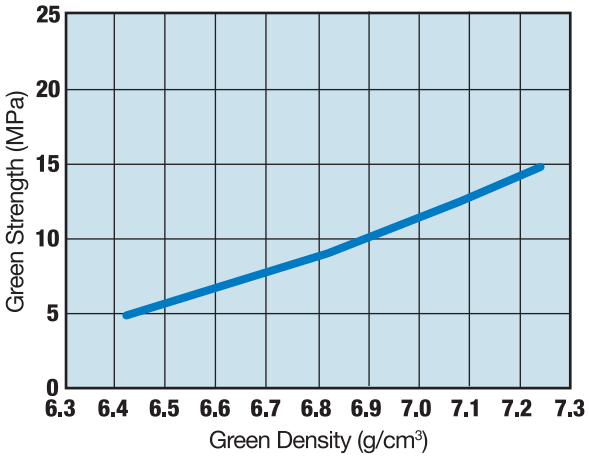
The Effects of Compaction Pressure on Green Properties

0.75% ethylene bis-stearamide (EBS)

Compressibility



Green Strength



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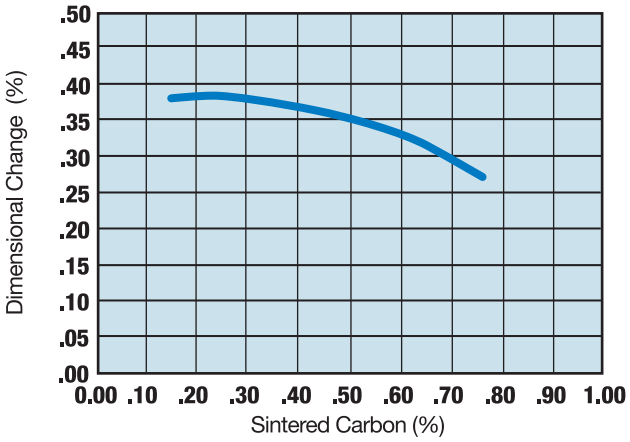
Ancorsteel® FLD-49DH

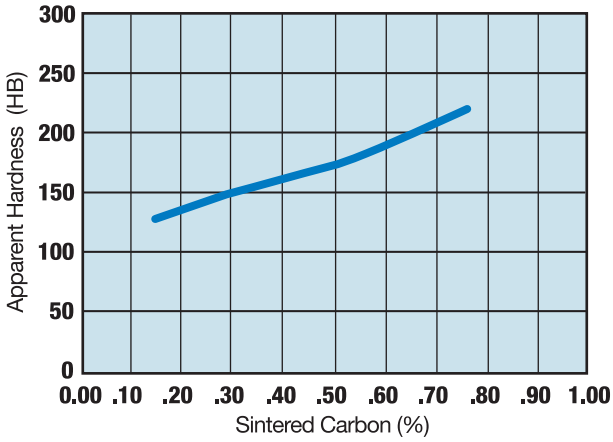
The Effects of Sintered Carbon Content of Properties of FLD-49DH with Conventional Cooling

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

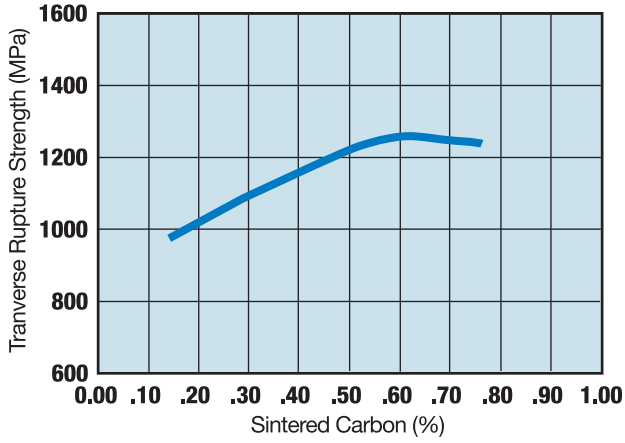
Dimensional Change of FLD-49DH



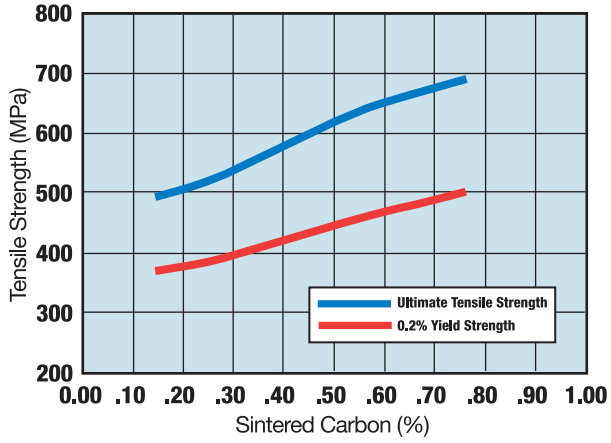
Hardness of FLD-49DH



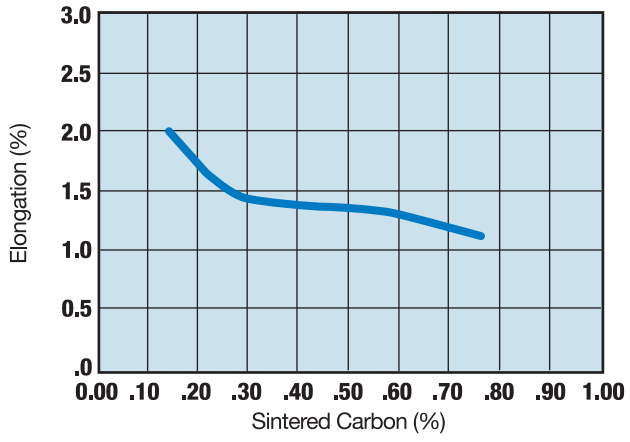
Transverse Rupture Strength of FLD-49DH



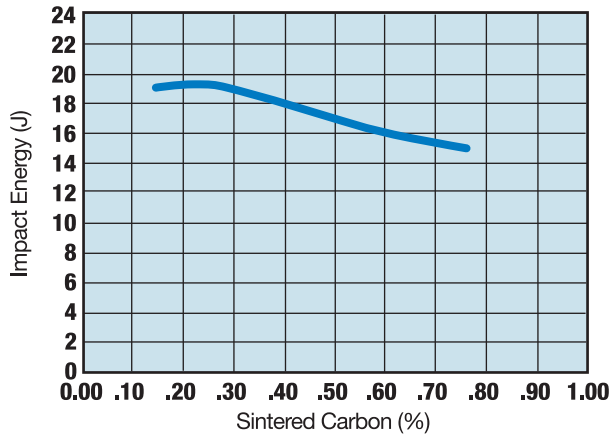
Tensile Strength of FLD-49DH



Elongation of FLD-49DH



Impact Energy of FLD-49DH



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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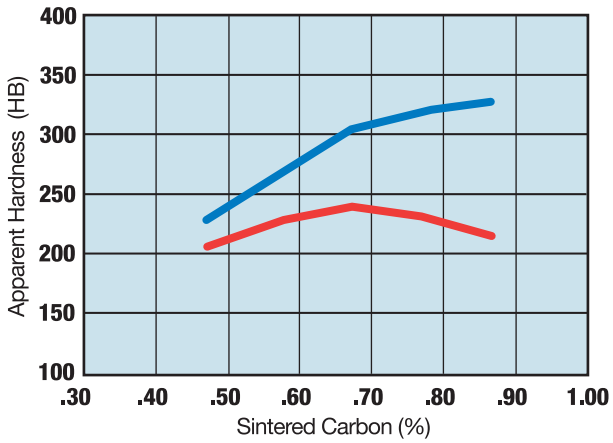
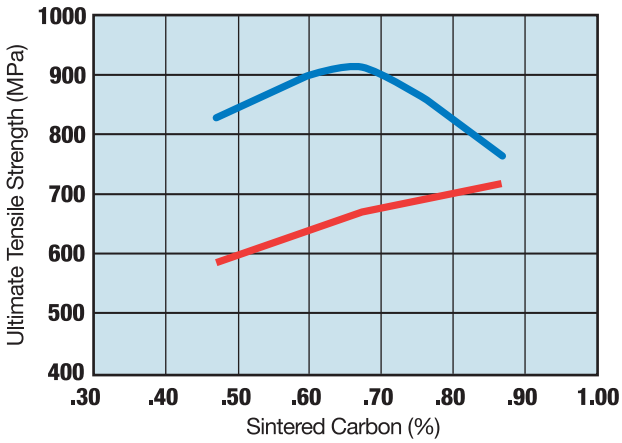
Sinter-Hardening of Ancorsteel FLD-49DH

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

Apparent Hardness of Sintered-Hardened FLD-49DH



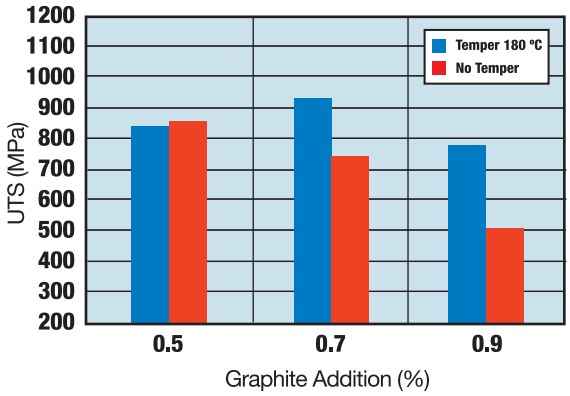
Ultimate Tensile Strength of Sintered-Hardened FLD-49DH



The Effects of Tempering Sinter-Hardened Ancorsteel FLD-49DH

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 Abbott 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.

Effect of Tempering on UTS of Ancorsteel FLD-49DH



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