

ATOMET 4201 is a highly compressible, water-atomized low alloy steel powder containing 0.45% nickel and 0.60% molybdenum, designed for high performance, high strength powder metallurgy and powder forging applications.

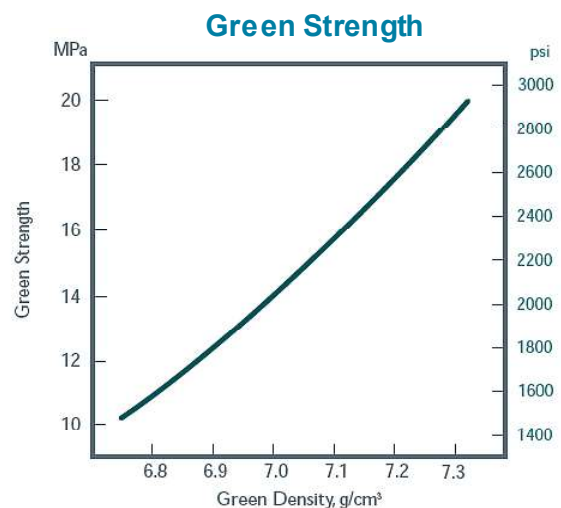
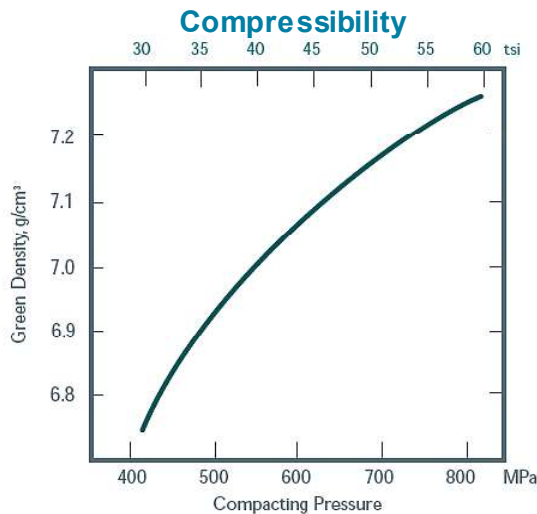
- **Hardenability - ATOMET 4201**, containing a precise level of manganese, nickel and molybdenum, is an ideal choice for powder metallurgy (PM) and powder forging (PF) applications that require consistent and superior heat-treated properties.
 - Improves hardness and tensile strength
- **Dimensional change - ATOMET 4201** can be used with existing tooling designed for conventional AISI 4200 prealloyed powders.
 - No need to retool
- **Consistency** - a stable ore base, modern steelmaking practices and statistically controlled powder manufacturing ensure lot-to-lot consistency. Being a homogeneous alloy, **ATOMET 4201** eliminates the detrimental effects of segregation and dusting normally associated with elemental blends.
 - Low variation of part properties
 - Compatible with work environment requirements
- **Compressibility** - the outstanding compressibility of **ATOMET 4201** extends the benefits of prealloyed powders to high density applications above 6.9 g/cm³.
 - Reduces tool stress
 - Improves strength
- **Purity and cleanliness** - state-of-the-art clean steel practice ensures low residuals and sets new standards for cleanliness.
 - Improves mechanical and dynamic properties

PHYSICAL AND CHEMICAL PROPERTIES

Chemistry, wt%						Particle Size Analysis, wt%				A.D.	Flow	Density*	
C	O	S	Mn	Mo	Ni	U.S. mesh	+60	+100	+325	-325	g/cm ³	s/50g	g/cm ³
0.004	0.10	0.009	0.28	0.60	0.45	µm	+250	+150	+45	-45	2.92	26	7.05
							Trace	10	65	25			*@43.5 tsi @600 MPa

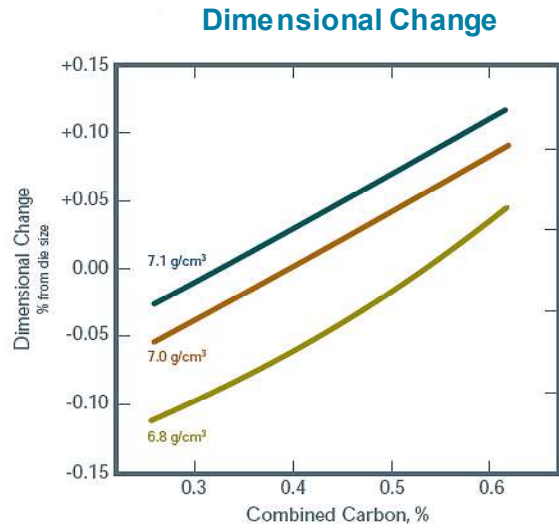
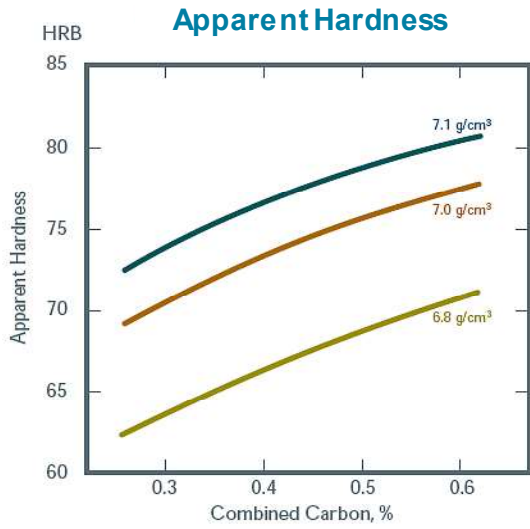
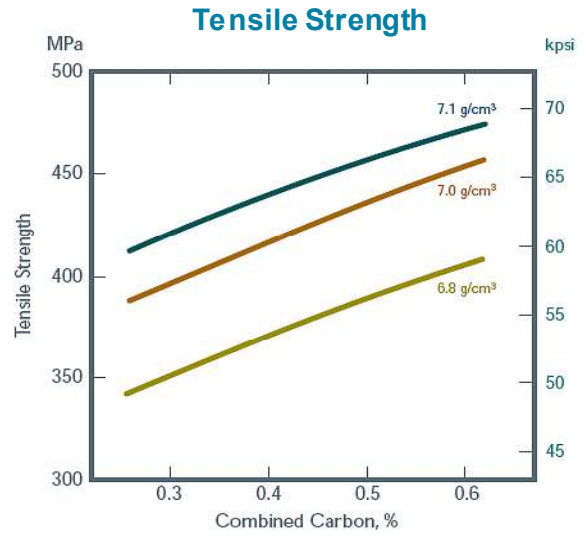
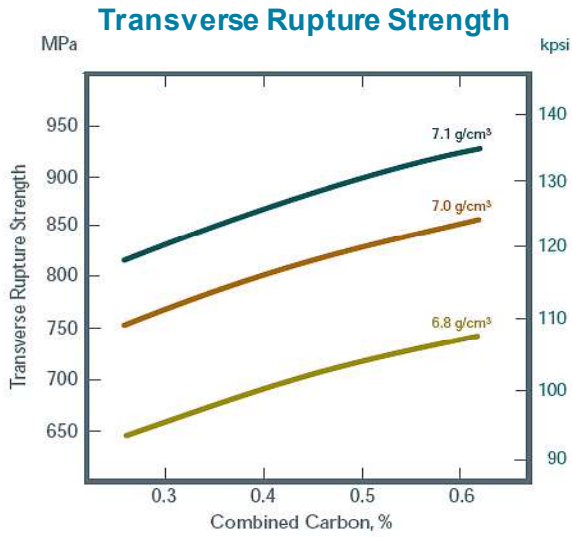
COMPACTING PROPERTIES

**ATOMET 4201 +
0.75% ZnSt**



SINTERED PROPERTIES - Carbon Steels

Composition: **ATOMET 4201** + graphite + 0.5% ZnSt
 Sintered in a rich endothermic atmosphere at 1120°C (2050°F) for 30 minutes.



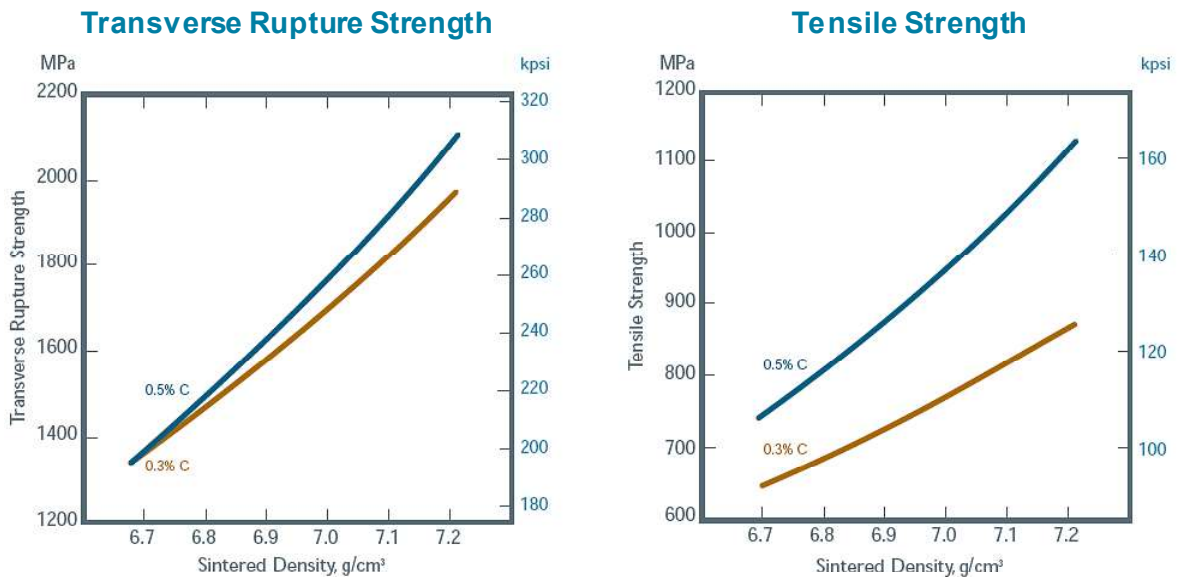
Material Designation Code	Green Density	Added Graphite	Combined Carbon Range	Transverse Rupture Strength		Apparent Hardness	Dimensional Change	Tensile Strength		Yield Strength		Elongation
				MPa	kpsi			MPa	kpsi	MPa	kpsi	
MPIF Std 35	g/cm ³	%	%	MPa	kpsi	HRC (HRB)	%	MPa	kpsi	MPa	kpsi	%
FL-4203	6.80	0.30	0.29-0.35	600	95	(63)	-0.10	370	53	290	42	3.4
	7.00	0.30	0.29-0.35	760	110	(70)	-0.05	410	60	320	47	3.6
	7.10	0.30	0.29-0.35	820	119	(73)	-0.02	430	63	340	49	3.7
FL-4205	6.80	0.50	0.46-0.52	720	104	(69)	-0.02	390	57	320	47	2.3
	7.00	0.50	0.46-0.52	830	120	(75)	0.04	440	64	360	52	2.5
	7.10	0.50	0.46-0.52	900	130	(79)	0.06	460	66	370	54	2.6
FL-4207	6.80	0.70	0.62-0.68	750	109	(72)	0.05	420	61	350	51	1.0
	7.00	0.70	0.62-0.68	870	126	(78)	0.09	460	67	390	56	1.3
	7.10	0.70	0.62-0.68	940	136	(81)	0.12	480	70	400	58	1.4
FL-4203-HT	6.80	0.30	0.29-0.35	1450	210	29	-	690	100	-	-	-
	7.00	0.30	0.29-0.35	1700	248	34	-	790	114	-	-	-
	7.10	0.30	0.29-0.35	1880	272	36	-	850	123	-	-	-
FL-4205-HT	6.80	0.50	0.46-0.52	1490	216	34	-	770	111	-	-	-
	7.00	0.50	0.46-0.52	1780	258	38	-	890	129	-	-	-
	7.10	0.50	0.46-0.52	1930	280	40	-	980	142	-	-	-

HEAT-TREATED PROPERTIES - Carbon Steels

Composition: **ATOMET 4201** + graphite + 0.5% ZnSt

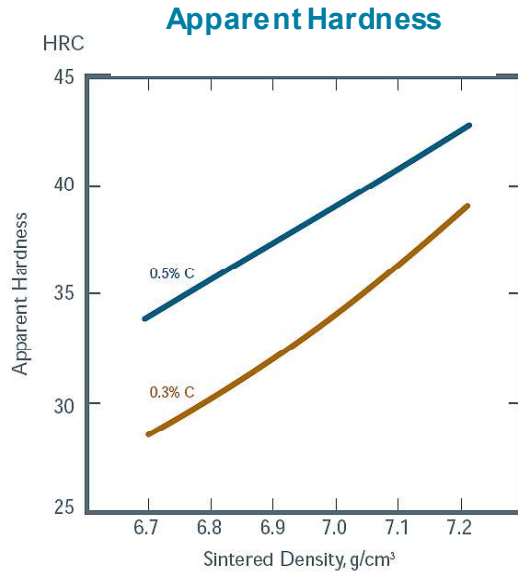
Sintered in a rich endothermic atmosphere at 1120°C (2050°F) for 30 minutes.

Heat-treated 15 minutes at 845°C (1550°F), atmosphere with 0.8% carbon potential, oil quenched 50°C, tempered 1 hour at 185°C (365°F).



HEAT-TREATED PROPERTIES (continued) - Carbon Steels

Composition: **ATOMET 4201** + graphite + 0.5% ZnSt
 Sintered in a rich endothermic atmosphere at 1120°C (2050°F) for 30 minutes.
 Heat-treated 15 minutes at 845°C (1550°F), atmosphere with 0.8% carbon potential.
 Oil quenched at 50°C (125°F), tempered 1 hour at 185°C (365°F).



METALLOGRAPHIC ANALYSIS

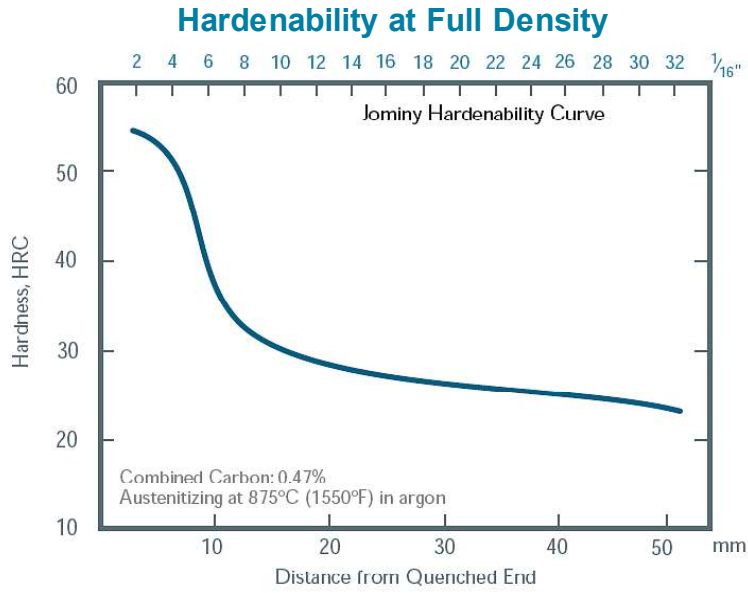
ATOMET 4201, with the lowest level of non-metallic inclusions, is an ideal choice for fully dense applications which demand exceptional mechanical and dynamic properties.

Cleanliness

- A) Total surface area of inclusions: **0.006%**
- B) Inclusions count:

Length µm	Number/ 100mm ²
30/50	4.0
50/100	0.7
100/150	0.1
>150	0.0

I. Unalloyed Iron: 0.5%



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