

**ATOMET 24** is a very high green strength compressible iron powder specifically manufactured for low to medium density P/M applications.

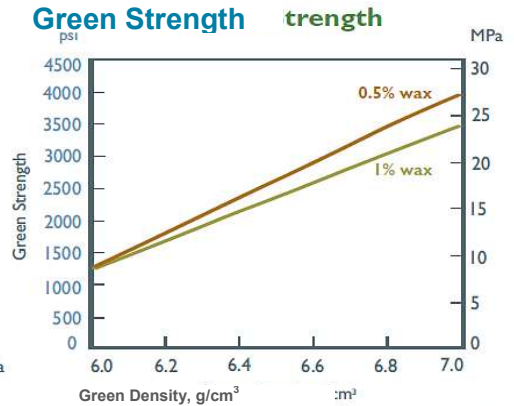
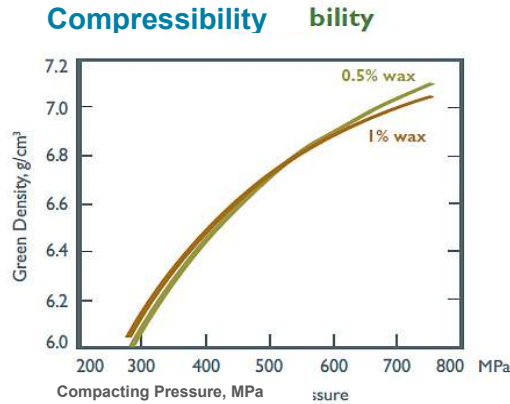
- **High green strength** - surface morphology assures powder compacts of good structural integrity, improving thin section reliability and facilitating green part handling.
- **Low growth characteristics** - the high purity and large specific surface area of **ATOMET 24** allow for rapid sintering and high dimensional control. This allows close-to-die-size part design, reduces sintered dimensional variation and improves dimensional control of infiltrated parts.
- **Consistency** - a stable ore base and statistically controlled manufacturing process assure lot-to-lot consistency and reduced part-to-part variation. Increased productivity and reduced processing cost are the result.
- **High purity** - **ATOMET 24** is produced from ore, not scrap, assuring a consistently pure product. Consistency of premix chemistry and improved compressibility are benefits that help extend tool life and promote rapid sintering.

## PHYSICAL AND CHEMICAL PROPERTIES

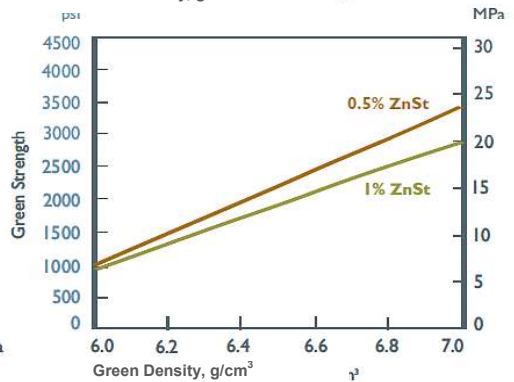
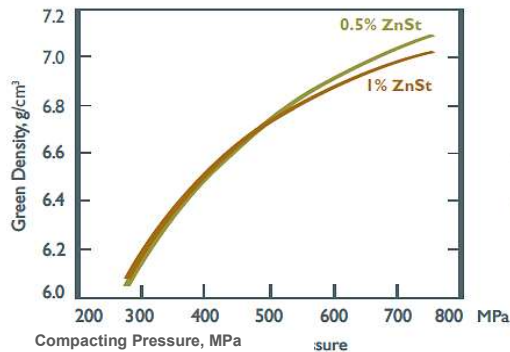
Chemistry, wt%						Particle Size Analysis, wt%				A.D.	Flow	Density*	
C	O	S	Mn	P	Fe	U.S. mesh	+60	+100	+325	-325	g/cm <sup>3</sup>	s/50g	g/cm <sup>3</sup>
0.01	0.21	0.005	0.008	0.025	99.4+	μm	+250	+150	+45	-45	2.46	30	6.90
							Trace	5	71	25			*@43.5 tsi @600 Mpa

## COMPACTING PROPERTIES

**ATOMET 24**  
+ EBS Wax

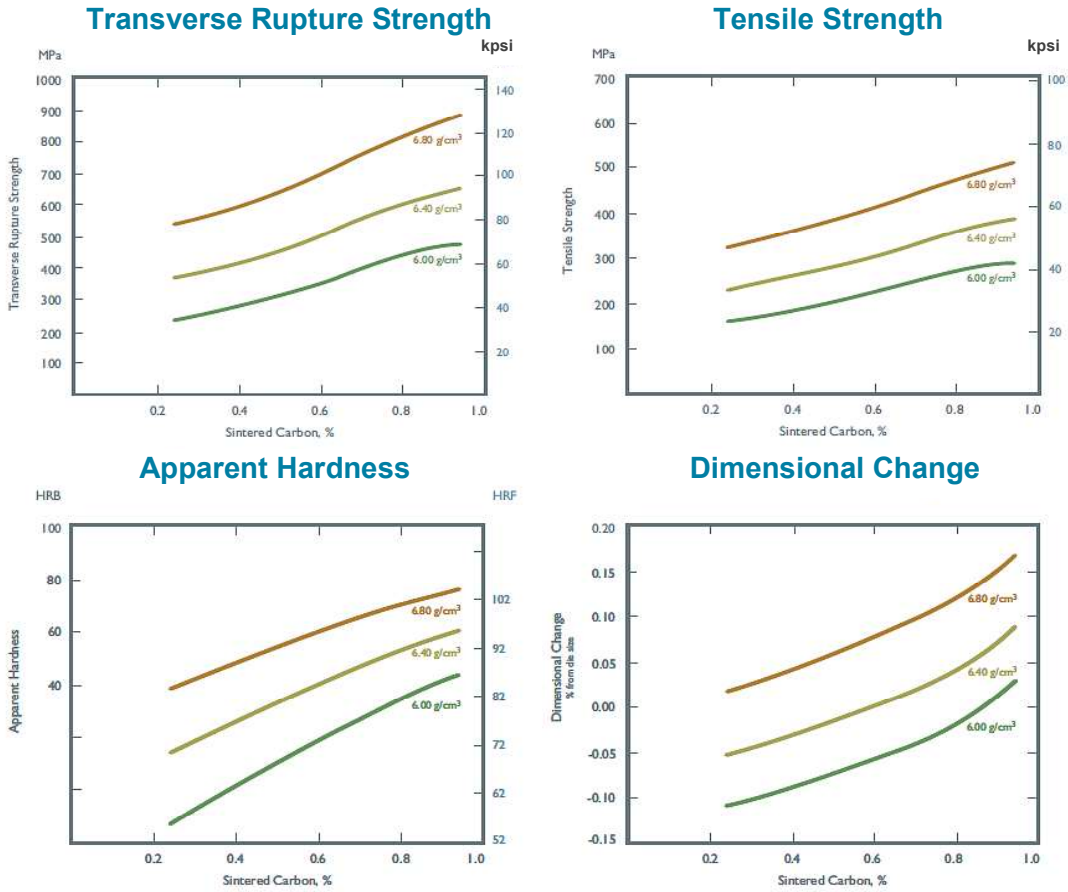


**ATOMET 24**  
+ ZnSt



## AS-SINTERED PROPERTIES - Carbon Steels

Composition: **ATOMET 24** + graphite + 0.75% wax  
 Sintered in a nitrogen-based atmosphere at 1120°C (2050°F) for 25 minutes.



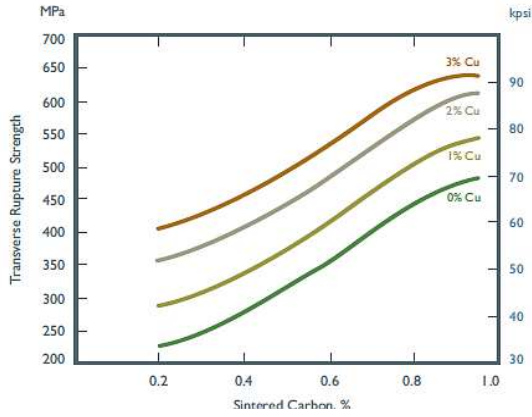
Sintered Density	Combined Carbon	Transverse Rupture Strength		Apparent Hardness	Dimensional Change	Tensile Strength	
g/cm3	%	MPa	kpsi	HRB (HRF)	%	MPa	kpsi
6.00	0.24	234	34	(55)	-0.11	160	23
6.00	0.52	321	47	(65)	-0.07	207	30
6.00	0.80	441	64	(76)	-0.02	272	39
6.00	0.94	482	70	44	0.03	294	43
6.40	0.24	366	53	(66)	-0.05	231	34
6.40	0.52	464	67	(76)	-0.01	285	41
6.40	0.80	605	88	53	0.04	362	52
6.39	0.94	656	95	61	0.09	389	56
6.80	0.24	538	78	(78)	0.02	325	47
6.80	0.52	655	95	55	0.06	388	56
6.80	0.80	818	119	70	0.12	478	69
6.80	0.94	884	128	76	0.17	513	74

AS-SINTERED PROPERTIES - Copper Steels

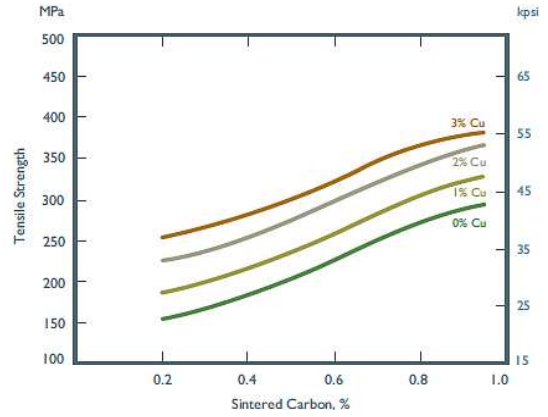
Composition: **ATOMET 24** + copper + graphite + 0.75% wax  
 Sintered in a nitrogen-based atmosphere at 1120°C (2050°F) for 25 minutes.

Sintered Density  
 6.0 g/cm<sup>3</sup>

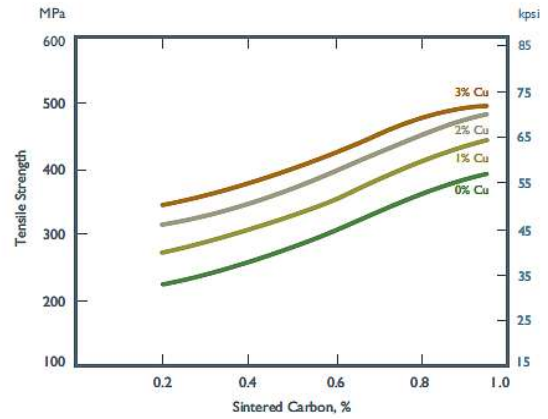
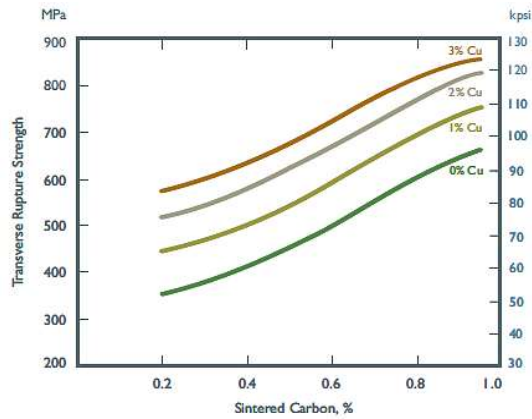
Transverse Rupture Strength



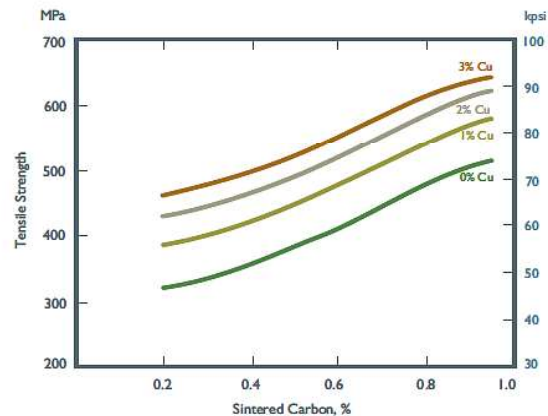
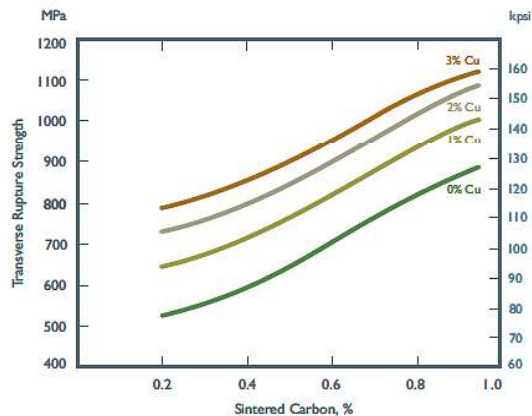
Tensile Strength



Sintered Density  
 6.4 g/cm<sup>3</sup>



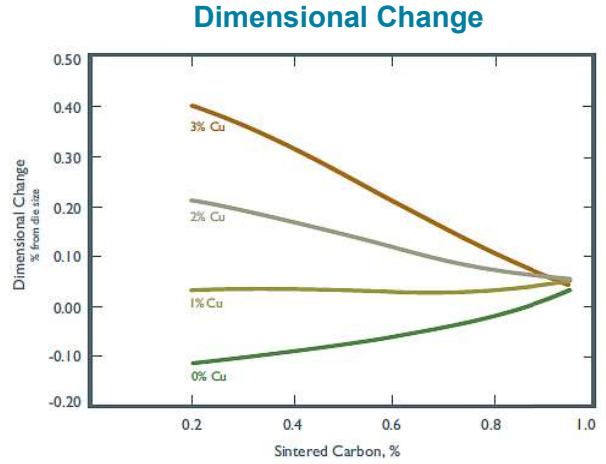
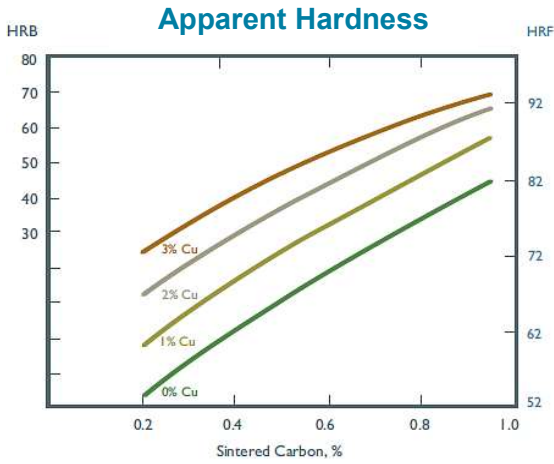
Sintered Density  
 6.8 g/cm<sup>3</sup>



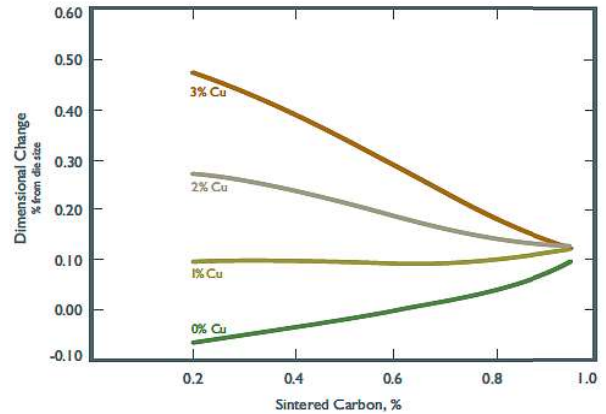
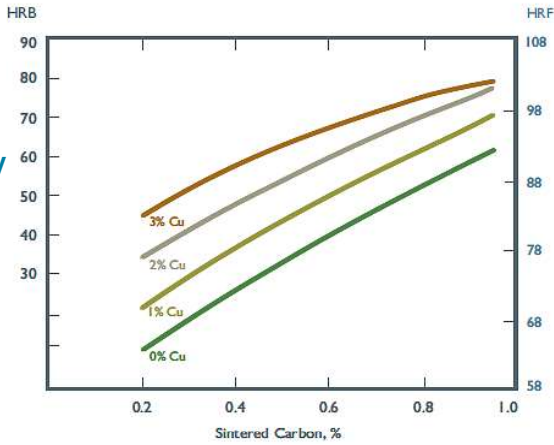
AS-SINTERED PROPERTIES - Copper Steels

Composition: **ATOMET 24** + copper + graphite + 0.75% ZnSt  
 Sintered in a nitrogen-based atmosphere at 1120°C (2050°F) for 25 minutes.

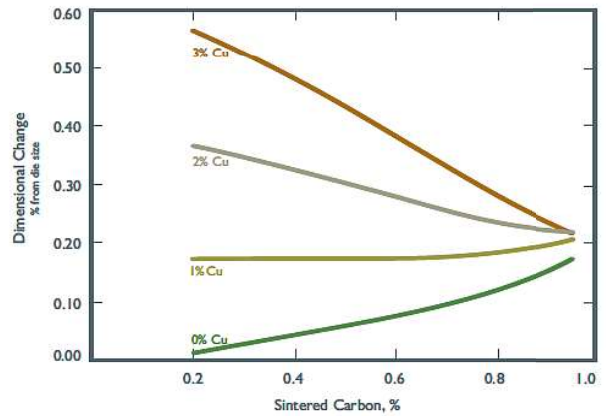
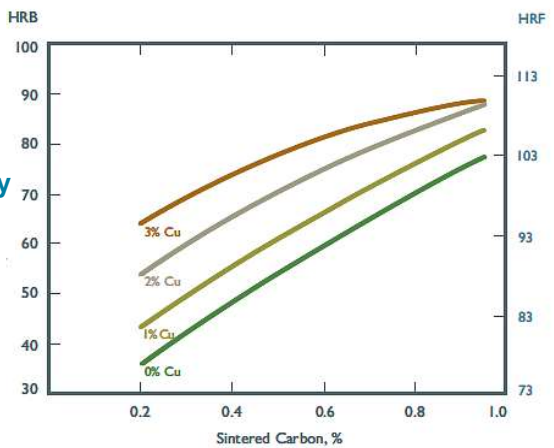
Sintered Density  
 6.0 g/cm<sup>3</sup>



Sintered Density  
 6.4 g/cm<sup>3</sup>



Sintered Density  
 6.8 g/cm<sup>3</sup>



## AS-SINTERED PROPERTIES - Copper Steels

Composition: **ATOMET 24** + copper + graphite + 0.75% ZnSt  
Sintered in a nitrogen-based atmosphere at 1120°C (2050°F) for 25 minutes.

Sintered Density g/cm <sup>3</sup>	Added Copper %	Combined Carbon %	Transverse Rupture Strength		Apparent Hardness HRB (HRF)	Dimensional change %	Tensile Strength	
			MPa	kpsi			MPa	kpsi
6.00	0	0.30	248	36	(57)	-0.10	167	24
6.00	0	0.61	359	52	(69)	-0.06	228	33
6.00	0	0.89	474	69	41	0.01	290	42
6.00	1	0.30	309	45	(63)	0.04	200	29
6.00	1	0.61	420	61	(75)	0.03	261	38
6.00	1	0.89	531	77	53	0.04	321	47
6.00	2	0.30	378	55	(70)	0.19	238	34
6.00	2	0.61	490	71	-	0.12	299	43
6.00	2	0.89	602	87	62	0.06	360	52
6.00	3	0.30	428	62	(75)	0.36	265	38
6.00	3	0.61	541	78	54	0.21	327	47
6.00	3	0.89	638	93	67	0.07	379	55
6.40	0	0.30	382	55	(68)	-0.04	240	35
6.40	0	0.61	508	74	-	0.00	309	45
6.40	0	0.89	643	93	58	0.07	382	55
6.40	1	0.30	472	68	(74)	0.10	289	42
6.40	1	0.61	600	87	51	0.09	358	52
6.40	1	0.89	735	107	67	0.11	432	63
6.40	2	0.30	547	79	-	0.26	330	48
6.40	2	0.61	676	98	61	0.19	400	58
6.40	2	0.89	811	118	75	0.13	474	69
6.40	3	0.30	601	87	52	0.43	359	52
6.40	3	0.61	730	106	68	0.28	430	62
6.40	3	0.89	846	123	78	0.14	493	71
6.80	0	0.30	561	81	-	0.03	337	49
6.80	0	0.61	705	102	60	0.08	416	60
6.80	0	0.89	865	126	74	0.15	503	73
6.80	1	0.30	680	99	50	0.18	402	58
6.80	1	0.61	825	120	67	0.18	481	70
6.80	1	0.89	986	143	80	0.20	569	83
6.80	2	0.30	760	110	60	0.35	446	65
6.80	2	0.61	907	131	75	0.28	526	76
6.80	2	0.89	1061	154	85	0.22	610	88
6.80	3	0.30	817	119	69	0.53	477	69
6.80	3	0.61	959	139	81	0.37	554	80
6.80	3	0.89	1106	160	88	0.24	634	92

All mixes contain 0.75% wax

**Rio Tinto Metal Powders**  
1655 Route Marie-Victorin  
Sorel-Tracy, Quebec J3R 4R4  
Canada  
T + 1 450 746 5050  
F + 1 450 743 0223