ATOMET 25

ATOMET 25 is a high strength reduced 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 25** allow for rapid sintering and high dimensional control. This allows close-to-die-size part design, reduces sintered dimensional variation and improves dimensional control infiltrated parts.
- **Consistency -** a stable ore base and a 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 25** is produced from one, not scrap, assuring a consistency pure product. Consistency of premix chemistry and improved compressibility are benefits that help extend tool life and promote rapid sintering.

PHYSICAL AND CHEMICAL PROPERTIES

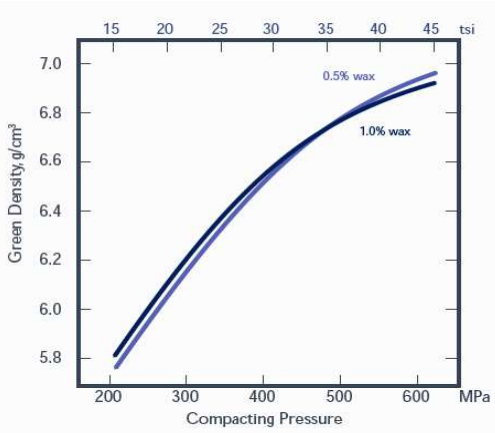
Chemistry, wt%					Particle Size Analysis, wt%				A.D.	Flow	Density*
C	O	S	Mn	U.S. mesh	+60	+100	+325	-325	g/cm^3	s/50g	g/cm^3
0.003	0.20	0.006	0.008	µm	+250	+150	+45	-45	2.52	29	6.90
					Trace	3	67	30			*@43.5 tsi @600 MPa

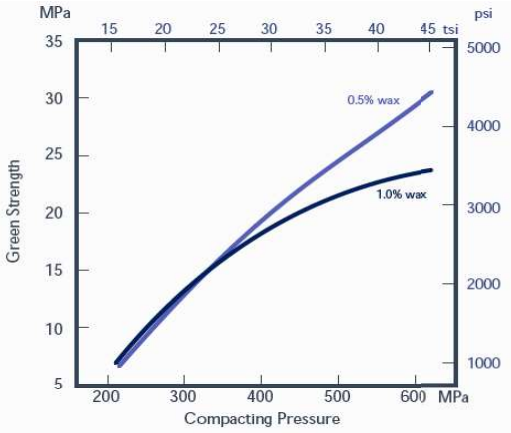
COMPACTING PROPERTIES

Compressibility

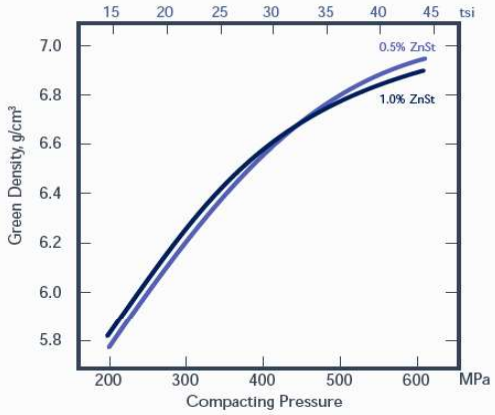
Green Strength

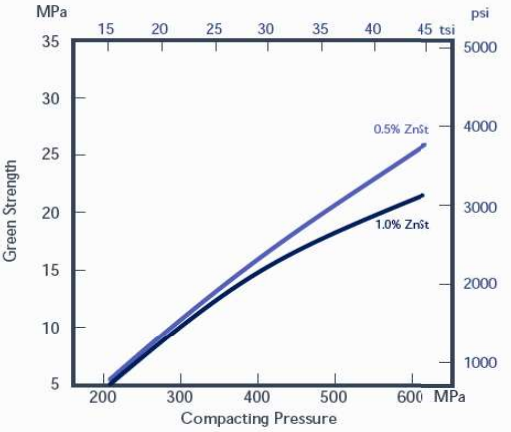
ATOMET 25 + Wax





ATOMET 25 + ZnSt



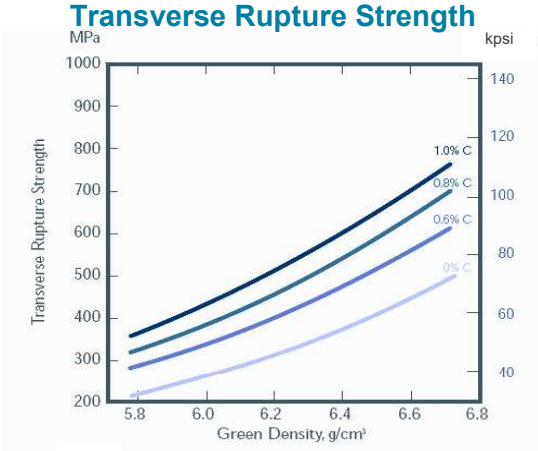


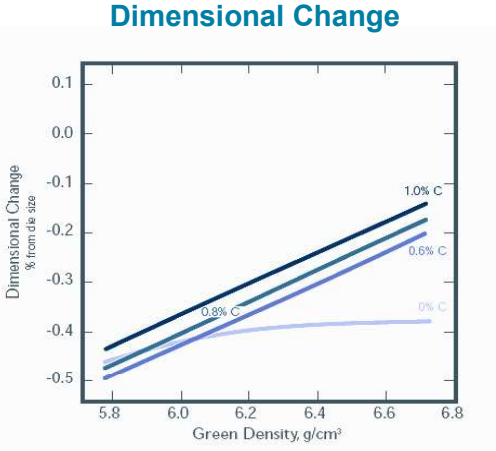
SINTERED PROPERTIES - Carbon Steels

Composition: **ATOMET 25** + graphite + 0.75% ZnSt.
Sintered in a rich endo atmosphere (0.3% CO_2) at 1120ºC (2050ºF) for 25 minutes.

Transverse Rupture Strength

Dimensional Change

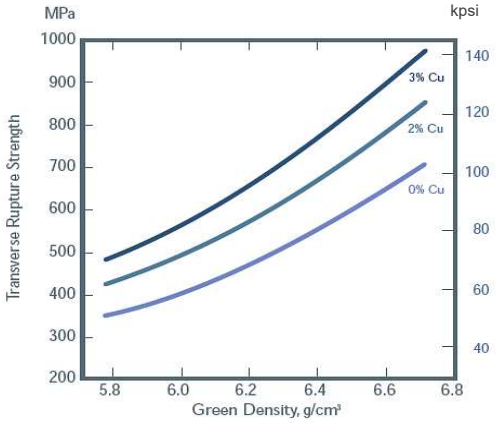




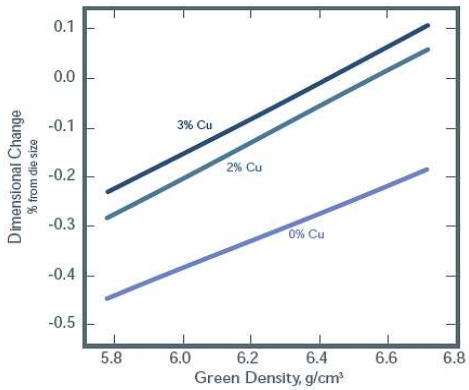
SINTERED PROPERTIES - Copper Steels

Composition: **ATOMET 25** + copper + 0.8% graphite + 0.75% ZnSt.
Sintered in a rich endo atmosphere (0.3% CO_2) at 1120ºC (2050ºF) for 25 minutes.

Transverse Rupture Strength

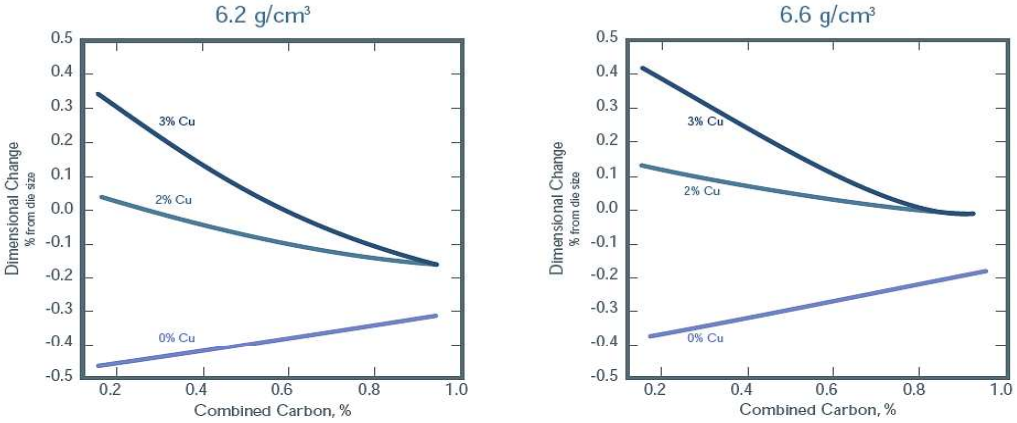


Dimensional Change



Composition: **ATOMET 25** + copper + graphite + 0.75% ZnSt.

Green Density



SINTERED PROPERTIES - Carbon and Copper Steels

Composition: **ATOMET 25** + copper + graphite + 0.75% ZnSt.
Sintered in a rich endo atmosphere (0.3% CO_2) at 1120ºC (2050ºF) for 25 minutes.

Material Code	Sintered Density	Added Copper	Added Graphite	Transverse Rupture Strength		Apparent Hardness
MPIF Std	g/cm³	%	%	MPa	kpsi	HRB (HRF)
F-0000	6.28	0.00	0.00	340	49	(56)
F-0008	6.26	0.00	0.80	480	70	52
FC-0200	6.14	3.00	0.00	475	69	45
FC-0208	6.18	3.00	0.80	675	98	71

TENSILE AND IMPACT PROPERTIES - Copper and Nickel Steels

Composition: **ATOMET 25** + nickel + copper + graphite + 0.75% ZnSt.
Sintered in a rich endo atmosphere (0.3% CO_2) at 1120ºC (2050ºF) for 25 minutes.

Heat treatment: 30 minutes at 870ºC (1600ºF).
30 minutes at 840ºC (1550ºF) in an atmosphere with 8.8% carbon potential.
Oil quenched and tempered for 1 hour at 175 ºC (350ºF).

Material Code	Sintered Density	Added Nickel	Added Copper	Added Graphite	Tensile Strength		Yield Strength		Elongation	Unnotched Charpy Impact		Apparent Hardness
MPIF Std	g/cm³	%	%	%	MPa	kpsi	MPa	kpsi	%	J	ft-lb	HRB (HRC)
FC-0208	6.25	0.0	2.0	0.8	480	70	415	60	2.0	4.1	3.0	69
FC-0208	6.52	0.0	2.0	0.8	550	80	490	71	0.0	5.5	4.1	77
FC-0208 HT	6.57	0.0	2.0	0.8	670	97	620	90	<0.5	5.5	4.1	(30)
FN- 0205 HT	6.64	2.0	0.0	0.5	740	107	675	98	<0.5	5.5	4.1	(26)

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