

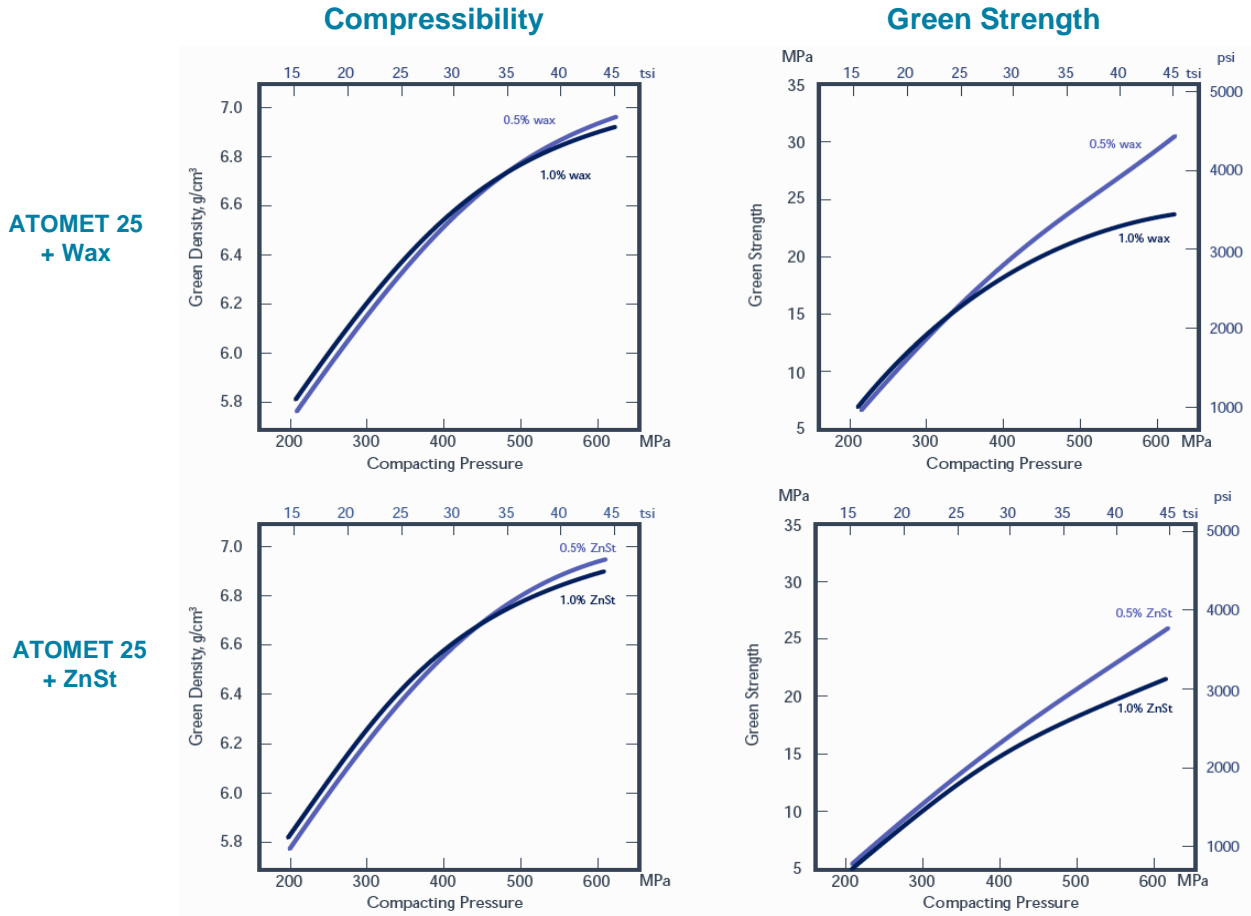
ATOMET 25 is a high strength reduced iron powder specifically manufactured for low to medium density P/M applications.

- **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

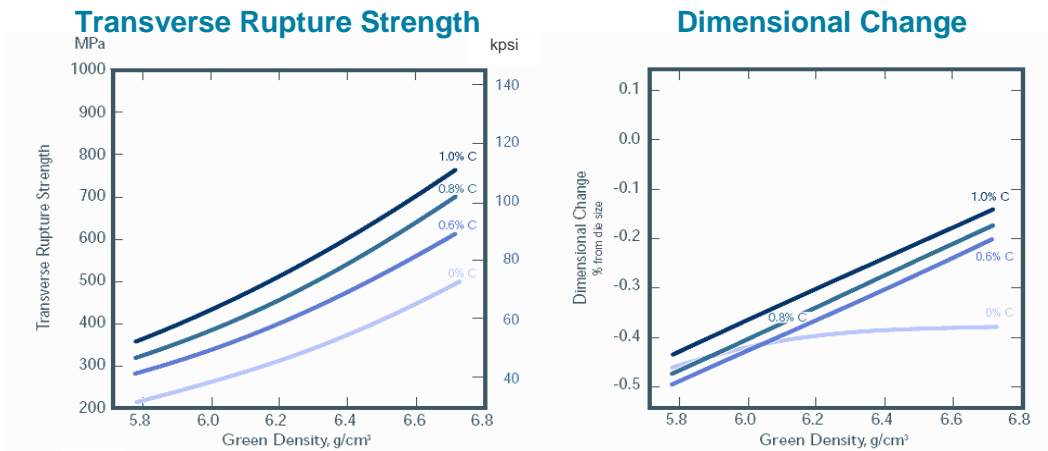
| Chemistry, wt% | | | | U.S. mesh µm | Particle Size Analysis, wt% | | | | A.D. g/cm ³ | Flow s/50g | Density* g/cm ³ |
|----------------|------|-------|-------|-----------------|-----------------------------|------|------|------|---------------------------|---------------|-------------------------------|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

COMPACTING PROPERTIES



SINTERED PROPERTIES - Carbon Steels

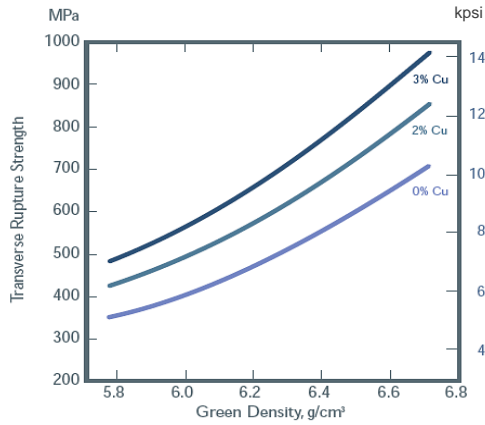
Composition: **ATOMET 25** + graphite + 0.75% ZnSt.
 Sintered in a rich endo atmosphere (0.3% CO₂) at 1120°C (2050°F) for 25 minutes.



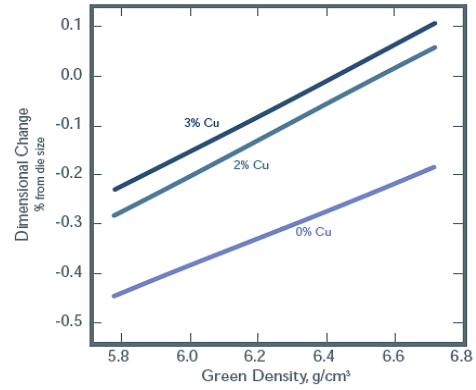
SINTERED PROPERTIES - Copper Steels

Composition: **ATOMET 25** + copper + 0.8% graphite + 0.75% ZnSt.
 Sintered in a rich endo atmosphere (0.3% CO₂) at 1120°C (2050°F) for 25 minutes.

Transverse Rupture Strength

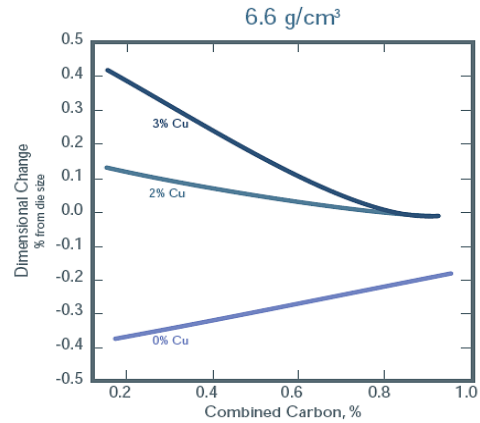
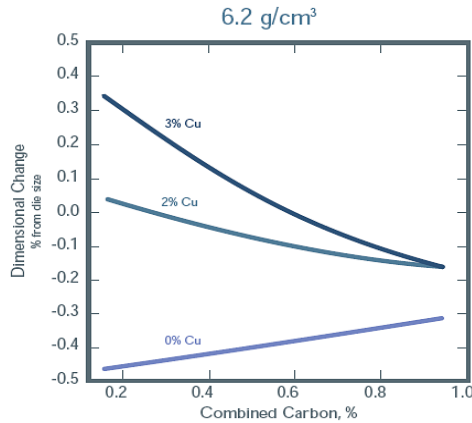


Dimensional Change



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% CO₂) at 1120°C (2050°F) for 25 minutes.

| Material Code | Sintered Density | Added Copper | Added Graphite | Transverse Rupture Strength | | Apparent Hardness |
|---------------|-------------------|--------------|----------------|-----------------------------|------|-------------------|
| MPIF Std | g/cm ³ | % | % | 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% CO₂) at 1120°C (2050°F) for 25 minutes.

Heat treatment: 30 minutes at 870°C (1600°F).

30 minutes at 840°C (1550°F) in an atmosphere with 8.8% carbon potential.

Oil quenched and tempered for 1 hour at 175 °C (350°F).

| Material Code | Sintered Density | Added Nickel | Added Copper | Added Graphite | Tensile Strength | | Yield Strength | | Elongation | Unnotched Charpy Impact | | Apparent Hardness |
|---------------|-------------------|--------------|--------------|----------------|------------------|------|----------------|------|------------|-------------------------|-------|-------------------|
| MPIF Std | g/cm ³ | % | % | % | 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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