SB Specialty Metals LLC
*Your **First Choice** for Specialty Metals*

PSB27 - Spray Form Tool Steel

The technology for tool steel production has evolved.

Conventional Production — EVOLUTION #1 → HIP'd Particle Metallurgy — EVOLUTION #2 → Spray Form Particle Metallurgy

Conventional Production → Ingot

HIP'd Particle Metallurgy:
Step 1. Gas Atomization → Step 2. Screening → Step 3. Blending → Step 4. Filling Sealing Can → Step 5. Hot Isostatic Pressing → Ingot

Spray Form Particle Metallurgy:
Atomizer System (inert gas), Spray Chamber, Spray Formed Billet, Collector → Ingot

Carbides and Costs

The primary differences in the different steel making processes are the resulting steel structures and the production costs.

- Both PM products have improved, more homogeneous structures with evenly distributed and spherical **carbides**.
- Each additional step in the HIP PM production process adds to the final **costs** of material.
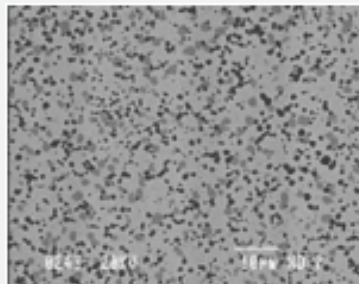
Conventional

1) Lowest cost for production.
2) Carbides are large and blocky with poor distribution.
3) Carbide size: 1-100 microns.
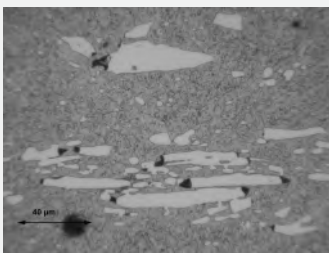
Carbides shown in white.
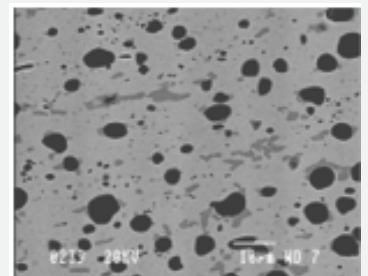
Particle Metallurgy - HIP Hot Isostatic Pressing

1) Highest cost for production.
2) Carbides are very small and spherical with very good distribution.
3) Carbide size range: 1-5 microns.

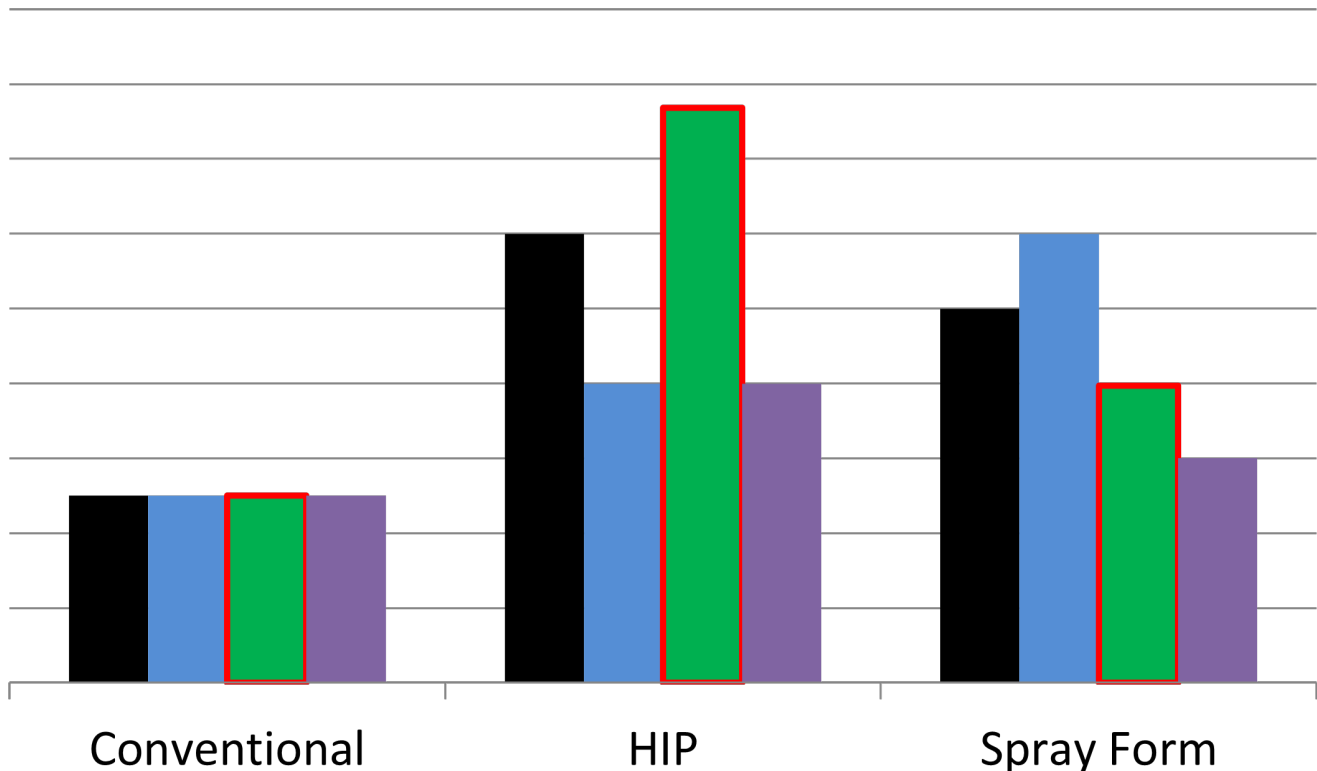Carbides shown in black.

Particle Metallurgy Spray Form process

1) Medium cost for production
2) Carbides are small, spherical and evenly distributed.
3) Carbide size range: 3-20 microns

Carbides shown in black.

Total Tooling Cost ....Find your balance

■ Toughness   ■ Wear Resistance   ■ Cost   ■ Machinability

Conventional   HIP   Spray Form

Consider PSB27 for these applications

Application	Tool steel to replace	Reason to consider replacing
Non-Woven - Cutting dies	D2	3x better wear resistance plus improved tougness.
Rotational Cutting dies	A2-ESR	3x better wear resistance with equal toughness.
Shredder Blades/Knives	D2	Improved wear resistance and toughness.
Rolling - Steel processing	D2	Improved wear resistance and toughness.
Threading Dies	D2	Higher hardness, 3X the tooling life.
Tubing roll inserts	Carbide	Higher toughness
Cutlery	D2, 440C, CTS XHP, 204P, PM 154	Improved toughness, similar/better edge retention.
Blanking, punching and forming	D2 or PMM4	Total Tooling Cost thru life of the tool.

Flats:	0.082" thru 0.265" Thick	Hardness Range:	58-61 HRc
Rounds:	0.75" thru 12" Diameter	Heat Treat:	Similar to D2