



MANUFACTURING LOCATION: MENOMONIE, WISCONSIN | US

## FREQUENTLY ASKED QUESTIONS: WHAT IS METAL INJECTION MOLDING?

This manufacturing process produces intricate and complex metal parts with high precision, suitable for detailed geometries in large quantities, ensuring strength and durability.

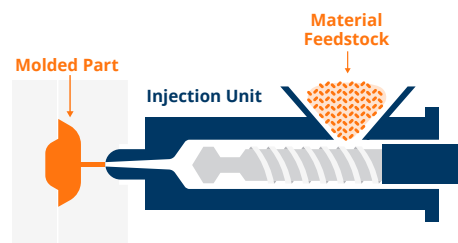
### Why MIM?

- Complex metal geometries
- Excellent surface finish
- Helps reduce waste - 100% recyclable
- Mechanical properties equal to wrought steel
- 96% to 99% density

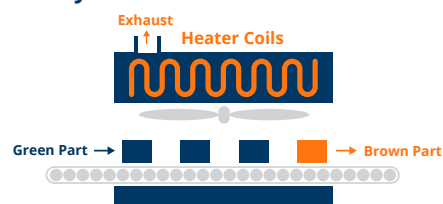
### How Does MIM Compare to Other Processes?

Machining	Investment Casting	Powder Metallurgy
Less weight	Thinner wall sections	Part complexity
Hard steels	Better surface finish	Thinner wall sections
Part consolidation	Less secondary machining	Part consolidation
Lower cost	Smaller holes	Higher density and strength
Fewer steps	Higher volumes at shorter lead times	Better corrosion resistance

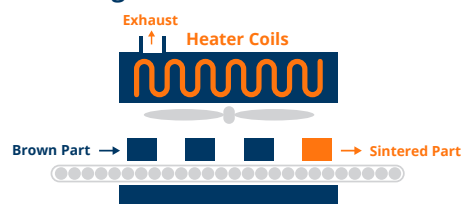
#### Metal Injection Molding Process (MIM)



#### Catalytic Debind



#### Sintering



# What Are the Philips Medisize Capabilities?

<b>Press Tonnage</b>	33 T to 100 T
<b>Materials</b>	<ul style="list-style-type: none"><li>• <b>LOW ALLOY STEELS:</b> FN02, FN0205, FN08, 4620, 4140, 8620, 8740</li><li>• <b>STAINLESS STEEL:</b> 17-4, 316, 420</li><li>• <b>SOFT MAGNETICS:</b> FeS13, FN50</li></ul>
<b>Finishes</b>	<ul style="list-style-type: none"><li>• Black oxide</li><li>• Salt bath nitro-carburize (QPQ or Melonite)</li><li>• Physical vapor deposition (PVD)</li><li>• Electroless nickel</li><li>• Electroless nickel teflon</li><li>• Zinc</li><li>• Zinc chromate</li><li>• Titanium nitride (TiN)</li><li>• Keramo polish</li></ul>
<b>Furnaces</b>	4 Continuous debind and sintering 2 Batch debind and sintering
<b>Volume</b>	5 K to 20 M EAU
<b>Secondary Operations</b>	<ul style="list-style-type: none"><li>• Machining</li><li>• Heat-treat</li><li>• Hot isostatic pressing (HIP)</li><li>• Passivation</li><li>• Tumbling and blasting</li><li>• Assembly</li><li>• Platings and coatings</li><li>• Pad Printing</li></ul>
<b>Certifications</b>	<ul style="list-style-type: none"><li>• IATF 16949</li><li>• ITAR</li></ul>

## What Are Some Industry Applications?

### AUTOMOTIVE

- Clutch and transmission components
- Fuel system and Injector components
- Ignition actuators and latch mechanisms
- Rocker arms

### CONSUMER

- Nozzles
- Gears
- Fasteners
- Brackets
- Valve bodies

### DEFENSE

- Firearms components
- Firearms accessories
- Communication device components

### MEDICAL

- Surgical device components
- Orthodontic device components
- Dental brackets
- Electric toothbrush components

To learn more about our diverse portfolio and our expertise in materials, injection molding and manufacturing, visit our website at [phillipsmedisize.com/non-medical](https://phillipsmedisize.com/non-medical).