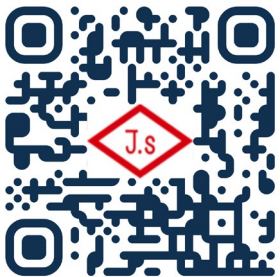




# TAN CHIN TECHNOLOGY INDUSTRY CO., LTD.

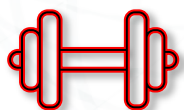


# Catalog

1. Company Introduction	1-2
2. Introduction to MIM Metal Injection Molding	3-4
3. Introduction to MIM Parts	5
4. Material Introduction	6-10
5. Equipment & Service Introduction	11-13

*Crafting your products with excellence is our commitment to quality, Promptly fulfilling your needs is our sincere service to you.*

**Complexity And  
Weight to 100g**



**The Shape You Can  
Dream Then Design**



**The beautiful  
surface and  
special flow lines**



# Company Profile

**Our company, established in 1980**, began with sewing machine parts like shuttle hooks and bobbin cases. We partnered with Brother Industries in Japan to develop high-quality parts for aluminum alloy sewing machines. Our products are highly recognized by our customers.

**In 1997, we introduced MIM technology and equipment, replacing raw material processing.** We prioritize production, quality, and equipment management, continuously improving our techniques. Guided by principles of quality first and customer priority, we plan for future expansion.

**From 1998 to 2006, our MIM technology was among Taiwan's leaders.** We accepted customer requests to develop MIM parts, adding sintering furnaces, injection machines, and material mixing equipment, becoming a major MIM manufacturing factory in Taiwan.

**By 2015, we had developed over 1000 parts for embroidery machines, 3C products, mechanical parts, hand tools, and gaming firearms.** MIM, suitable for precise and complex metal parts, now serves industries like medical equipment, leisure equipment, and industrial precision parts. **Our trading scope has expanded from Taiwan to Europe, America, and Japan, where we collaborate and exchange technology globally for continuous progress.**

**In 2017, we obtained ISO 9001:2015 certification.** By 2023, we expanded our factory to over a thousand pings and invested tens of millions in equipment, becoming an internationally certified MIM manufacturer. As demand for precise metal parts rises, we continually improve production techniques, introduce new equipment, and enhance capabilities, ensuring excellent quality, timely delivery, and customer satisfaction.



# Historical Development

- 1973: MIM technology introduced by ParmaTech, USA.
- 1980: Company founded, making shuttle hooks and bobbin cases.
- 1996: Introduced and researched MIM technology.
- 1998: Started developing MIM parts for customers.
- 2000: Became a major MIM manufacturer in Taiwan, 3 tons monthly capacity.
- 2006: Expanded to 6 injection machines, 3 vacuum sintering furnaces.
- 2008: Developed more MIM materials, 8 tons monthly capacity.
- 2012: Hired professional management, computerized equipment.
- 2015: Developed over 1000 customized parts.
- 2016: Added vacuum sintering furnaces, inspection machines, debinding system.
- 2017: Achieved ISO 9001:2015 certification.
- 2018: Invested 100 million, expanded factory to 1000 pings.
- 2020: Renovated factory, added 4 Japanese sintering furnaces.
- 2022: Bought 4 new injection machines, increased capacity.
- 2023: Installed German metal X-RAY 3D CT equipment.
- Planning business expansion, future trends.



Source: <https://www.comet-tech.com/products/ct-scanner-3d/>

# MIM

Metal Injection Molding technology combines plastic injection molding, polymer chemistry, powder metallurgy, and metal materials science. Using molds, it injects and sinters parts to produce **high-density, high-precision, and complex 3D structural components**. Applicable materials include stainless steel, iron-nickel alloys, alloy steel, and soft magnetic materials.

## Metal injection molding manufacturing process

### I. Mixing



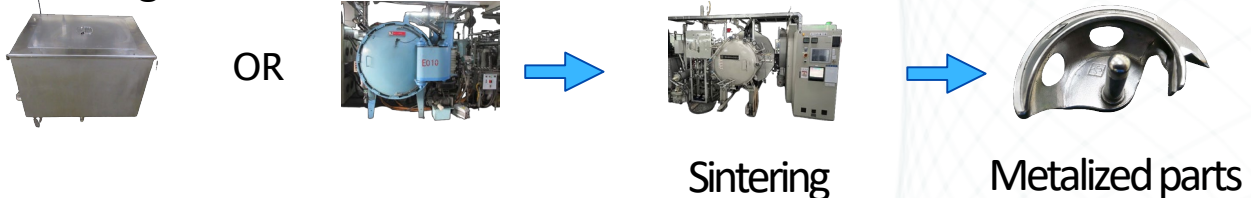
### II. Injection Molding



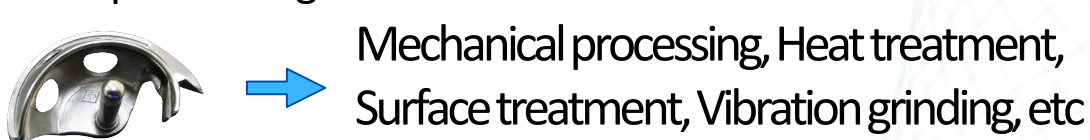
### III. Debinding



### IV. Sintering



### V. Post-processing



# Comparison of MIM

Characteristics	MIM	Traditional Powder Metallurgy	Die Casting (Zinc, Aluminum)	Precision Casting	Machining
Shape Complexity	High	Low	High	Medium	High
Minimum Thickness	0.5mm	1mm	0.8mm	2mm	0.5mm
Surface Roughness	2 $\mu\text{m Ra}$	Medium	Medium	5 $\mu\text{m Ra}$	Medium
Mechanical Strength	High	Medium	Low	High	High
Material Options	High	Medium	Few	Medium	High
Density	95-99%	< 95%	100%	100%	100%
Precision	Medium	High	Medium	Medium	High
Plating Capability	Excellent	Low	Medium	Excellent	Excellent
Mass Production	High	High	High	Medium	Low
Cost	Medium	Low	Medium	Medium	High

## MIM Dimensional Tolerances

Size (mm)	Standard Tolerance (mm)
25.0	+/- 0.100
12.0	+/- 0.050
6.0	+/- 0.040
3.0	+/- 0.030



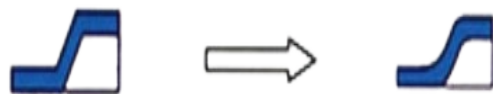
# MIM Part Design Guidelines

- Consider the position of the molding gate and parting line.

- Minimize weight and ensure uniform wall thickness (optimal 1-3mm).



- Use appropriate chamfers and avoid sharp internal corners.



- Plan sintering placement to reduce deformation.

## MIM Part Surface Plating



Zinc



Electroless  
nickel



Black chrome



Gold



Antique red  
copper



Bronze

# Material Classification

## Nickel Alloy Steel

Material Code	Description	Application	instruction manual
MIM—4605 (Fe2Ni) MIM—2700 (Fe8Ni)	Economic material used to replace low-carbon steel.	Widely used in embroidery machines, sewing machines, firearms, pneumatic and electric tools, and internal small connecting rods and brackets in automobiles.	Achieve different strengths and wear resistances by controlling carburizing and tempering.
MIM—4650 (Fe2NiC) MIM—2750 (Fe8NiC)	Economic material used to replace medium-carbon steel.	Widely used in model car transmission gears, pneumatic and electric tools, and internal small connecting rods and brackets in automobiles.	Tempering or controlling carburizing and tempering achieves different strengths and wear resistances, with better core hardness and rigidity than low-carbon steel.

# Material Classification

## Low Alloy Steel

Material Code	Description	Application	instruction manual
SCr430	Chromium steel has good mechanical strength and impact resistance.	Widely used in pneumatic and electric tools, and internal small connecting rods and brackets in automobiles.	Controlling carburizing and tempering can achieve different strengths and wear resistances.
SCM430	Chromium-molybdenum steel has better mechanical strength and impact resistance.	Widely used in embroidery machines, sewing machines, pneumatic tools, electric tools, and internal parts in automobiles.	Controlling carburizing and tempering can achieve different strengths and wear resistances.
SNCM220 (AISI8620) SNCM431 (AISI8630) SNCM240 (AISI8640) SNCM630	Nickel-chromium-molybdenum steel has better mechanical toughness, strength, and impact resistance.	Widely used in pneumatic and electric tools, 3C products, and internal small connecting rods, brackets, and cams.	Tempering or carburizing achieves different strengths and wear resistances, with better core hardness and rigidity than low-carbon steel.

# Material Classification

## Tool Steel

Material Code	Description	Application	instruction manual
SKD11	Wear-resistant tool steel provides high strength and excellent wear resistance.	Used in internal mechanical components such as cams.	Hardness can reach up to HRC60.
TCM5 (equivalent to SKD61)	Hot-work tool steel provides high strength, good wear resistance, and high-temperature tolerance.	Used in internal mechanical components or molds.	Hardness can reach up to HRC58.
SK5	High-carbon tool steel provides high hardness and excellent wear resistance.	Used in cutting mechanisms.	Surface hardness can reach above HV700.

# Material Classification

## Stainless Steel

Material Code	Description	Application	instruction manual
SUS 316L	Austenitic stainless steel provides the best corrosion resistance and high-temperature strength.	Widely used in medical instruments, underwater or water sports equipment, and fashion accessories.	
SUS 420 J2	Martensitic stainless steel provides good strength and wear resistance.	Widely used in hand tools and knives.	Hardness can reach up to HRC50.
SUS 630 (17-4PH)	Precipitation hardening stainless steel provides good corrosion resistance and strength.	Widely used in medical instruments and knife accessories.	Hardness can reach up to HRC40.

# Material Classification

## High speed steel

Material Code	Description	Application	instruction manual
SKH51 (AISI M2)	High-speed steel provides high strength, good toughness, and high-temperature hardness (equivalent to SKH59).	Used in cutting mechanisms.	Hardness can reach up to HRC60.

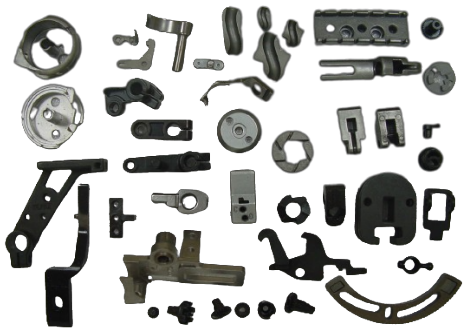
## Tungsten steel

Material Code	Description	Application	instruction manual
K10	Ultra-high hardness.	Used in ultra-wear-resistant mechanisms, drill bits, or cutting tools.	Hardness can reach up to HRC60.

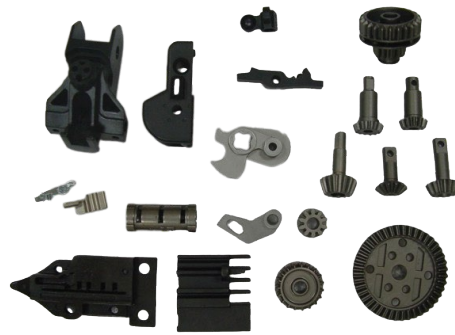
## Kovar

Material Code	Description	Application	instruction manual
F-15	Low thermal expansion coefficient.	Used in the sealing of glass and electrical components.	

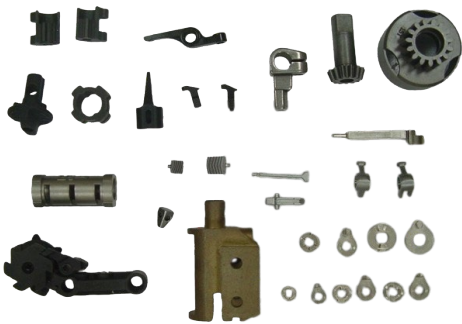
# MIM Product Demo



Nickel Alloy Steel



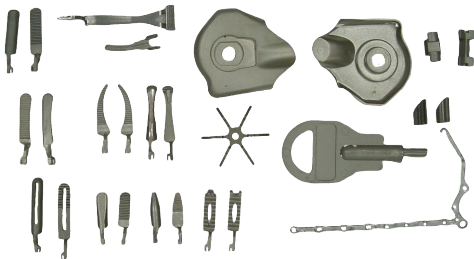
Low Alloy Steel



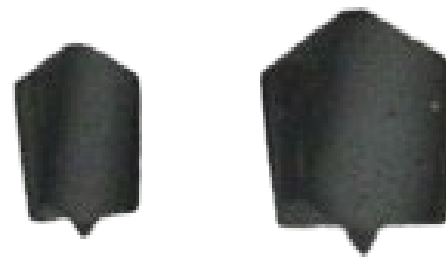
Low Alloy Steel



Tool Steel



Stainless Steel-  
SUS 630



Tungsten steel-  
K10



Stainless Steel-  
SUS 420 J2



Stainless Steel-  
SUS 316L

# Equipment List

## Injection Molding Machines

### 1.50-Ton Injection Molding Machine

1. Quantity: 2 units
2. Manufacturer: Made in Japan

### 2.100-Ton Injection Molding Machine

1. Quantity: 8 units
2. Manufacturer: Made in Japan

### 3.Vacuum Sintering Furnace

1. Quantity: 7 units
2. Manufacturer: Made in Japan

### 4.Degreasing Furnace

1. Quantity: 2 units
2. Manufacturer: Made in USA

### 5.Chemical Debinding system

### 6.Other Equipment

1. Mixers Machines,etc

## Other Processing Machines

### 1.Lathes

1. Quantity: >3 units
2. Purpose: Precision turning operations

### 2.Milling Machines

1. Quantity: >5 units
2. Purpose: Precision milling operations

### 3.Grinding Machines

1. Quantity: >5 units
2. Purpose: Surface finishing

### 4.Other Small Equipment

1. Quantity: >50 units
2. Purpose: Including drilling, cutting, polishing, etc.



## Inspection Equipment



### 1.X-RAY 3D CT

### 2.MT(Magnetic Particle Testing)

### 3.PT(Penetrant Testing)

### 4.Image measuring instrument

### 5.Precision measuring tools

# Custom Process Introduction

## Estimation & Quotation

We actively understand your product needs and review official drawings to confirm requirements. Our technicians analyze each processing step and coordination, providing you with a satisfactory price.



## Sample Production

From mold development to injection molding and various processing, we carefully create your product, offering appropriate surface treatment as per your requirements. We send the sample to you and discuss any improvements until you are satisfied.



## Mass Production

Upon sample approval, we begin mass production. We follow a comprehensive QC engineering table to ensure product quality, continuously planning, executing, inspecting, and acting to provide you with the best service.



 **TAN CHIN**  
Technology Company

No. 35, Gongyequ 22nd Rd., Nantun Dist.,  
Taichung City 408, Taiwan (R.O.C.)

TEL : 886-4-23591191

FAX : 886-4-23593343

E-MAIL : [service@tanchin.com.tw](mailto:service@tanchin.com.tw)