



Qingdao Sinter Metal Material Co., Ltd.

Qingdao Sinter Metal Material Co., Ltd. (SINTER METAL) specializes in the production of high-performance superfine stainless steel powders for Metal Injection Molding (MIM). Our powders for 17-4PH, 316L and 304L offer controlled particle size distribution, excellent flowability, high density sintering performance and outstanding as-sintered surface quality—delivering reliable, precision components for demanding applications.

MIM STAINLESS STEEL POWDER BROCHURE

Superfine Powder Solutions for Metal Injection Molding

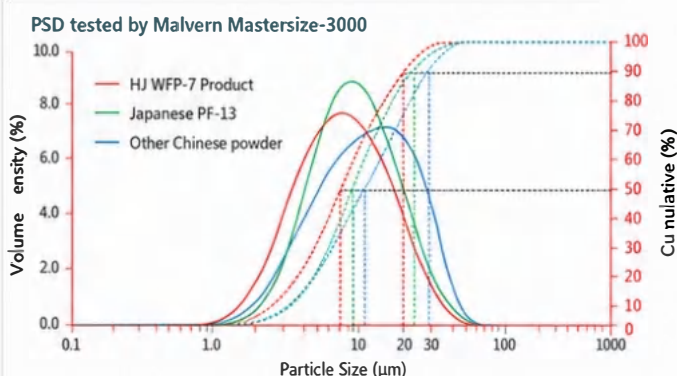
GENERAL CHARACTERISTICS OF SUPERFINE 7 μ m MIM POWDER

- High flowability for stable and consistent molding
- Excellent sinterability with high density and low deformation
- Smooth, shiny appearance with low surface roughness
- Narrow particle size distribution for uniform packing
- Ideal for precision MIM components with complex geometries
- Consistent quality to support scalable production

TYPICAL MATERIAL SYSTEMS

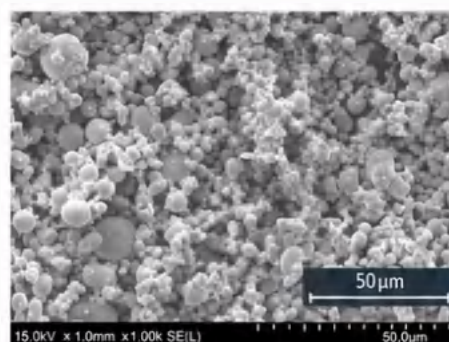
	Stainless Steels	316L, 304L, 17-4PH
	Low Alloy Steels	8620, 4140, 8740, 4605
	Carbon Steels	HK30, 420, 440, SKD11
	Cobalt based alloys	F75, FeCo50, FeCo4, 4J29

PARTICLE SIZE DISTRIBUTION & POWDER MORPHOLOGY



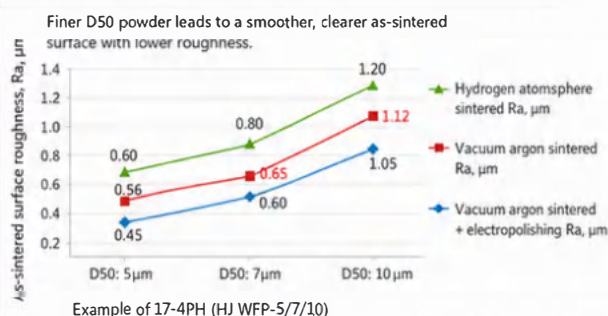
Narrow distribution centered around $\sim 7 \mu$ m delivers higher packing density and better sintering performance.

SEM Image of Water Atomized 316L Powder

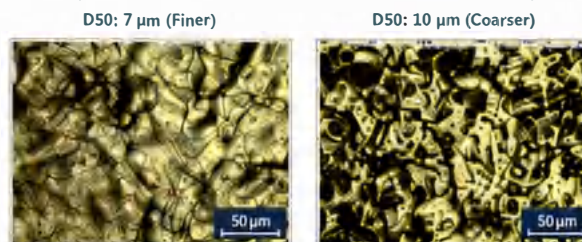


Spherical morphology with smooth surface promotes excellent flowability and packing behavior.

AS-SINTERED SURFACE PERFORMANCE



Comparison of As-Sintered Surface (316L) Under Microscope



Finer powder: clearer and smoother surface
Coarser powder: dim and irregular surface

TYPICAL APPLICATIONS



Precision Components
Gears, cams, levers, valves and structural parts



Consumer Hardware
Hinges, locks, tool parts, watch components and more



Medical & Industrial
Surgical instruments, implants, instruments and equipment parts



Corrosion-Resistant MIM Parts
Marine, chemical and food processing applications

★ Detailed Technical Data Sheets (TDS) and Certificates of Analysis (COA) are available upon request.



MAIN TYPES OF 17-4PH MIM POWDERS

PSD refers to Malvern Mastersizer 3000 analysis

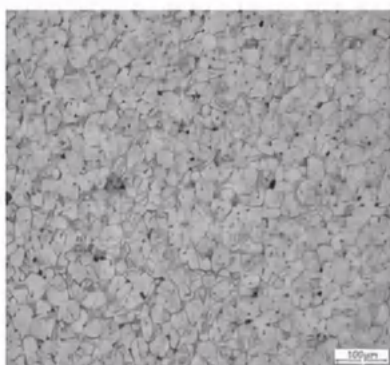
Type	Grade	Size, μm	D10, μm	D50, μm	D90, μm	Oxygen Content	Tap Density, g/cm ³	Note
Water atomized	NFP-7	7–9	<3.0	6.5–9	<21	<4000 ppm	4.3–4.7	Suitable for high gloss surface polishing
Water atomized	WFP-9	9–11	<3.5	9–11	<25	<4000 ppm	4.3–4.7	Standard grade
Gas atomized	GFP-12	12	<4.5	11.5–13	<28	1300 ppm	4.7–5.25	Suitable for high gloss surface polishing

HIGH STRENGTH 17-4PH-H

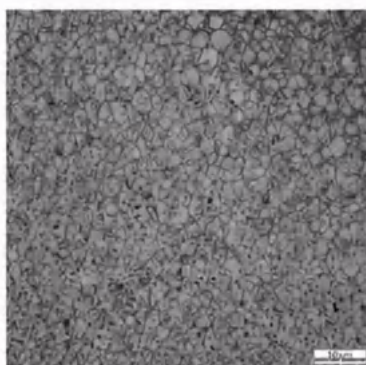
Using the MIM process, followed by continuous furnace sintering and subsequent heat treatment, 17-4PH-H achieves yield strength above 1200 MPa, tensile strength above 1300 MPa, elongation of 8–12%, and hardness of HRC 42. Compared with conventional 17-4PH, it offers a finer microstructure and improved overall performance.

Mechanical Property Comparison of High-Strength 17-4PH-H and Normal 17-4PH

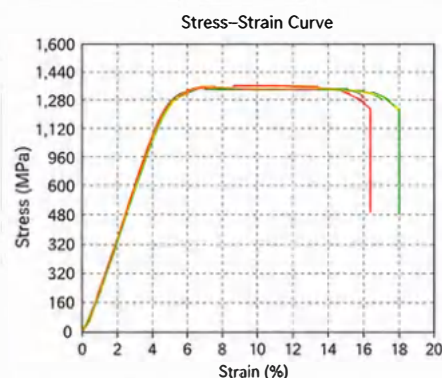
Material	Heat Treatment	Tensile Strength, MPa	Yield Strength, MPa	Elongation, %	Hardness, HRC
17-4PH-H	1050/1h, 485 °C/2h	>1300	>1200	>8	42
Normal 17-4PH	1050/1h, 485 °C/2h	~1200	~1100	>10	40



Sintered Normal 17-4PH with a Crystalline Size of 40–70 μm



Sintered High-Strength 17-4PH-H with a Fine Crystalline Size of 10–30 μm



Tensile Test Curve of High-Strength 17-4PH-H



Qingdao Sinter Metal Material Co., Ltd.

316L-W / 304L-W MIM POWDER

Water Atomized Fine
Powder Solutions



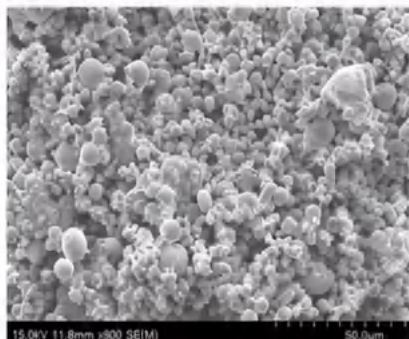
MAIN TYPES OF 316L-W / 304L-W MIM POWDER MATERIALS

PSD refers to Malvern Mastersizer 3000 analysis.

Type	Grade	Size, μm	D10, μm	D50, μm	D90, μm	Oxygen Content	Tap Density, g/cm^3
Water atomized	WFP-7	7	<3.2	7–9.5	<21	<4500 ppm	4.4–4.8
Water atomized	WFP-9	9	<3.5	9–10	<25	<4500 ppm	4.5–5.0



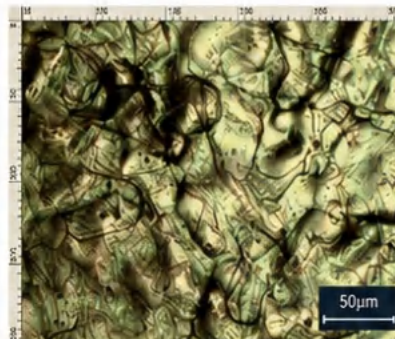
CHARACTERISTICS OF WATER ATOMIZED 316L POWDER MATERIALS



SEM of water atomized 316L



Depth of the surface densified layer



Very smooth surface sintered from fine
WFP-7 316L powder material



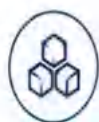
KEY MATERIAL BENEFITS



Fine water atomized
powder for MIM
stainless steel
components



Controlled particle
size distribution
for stable feedstock
behavior



Good packing
density and
sintering
response



Smooth as-sintered
surface from fine
powder grades

★ Detailed Technical Data Sheets (TDS), Certificates of Analysis (COA) and customized MIM powder recommendations are available upon request.