

Innovation²

From the global leader in P/M and MIM powders

You choose innovation by manufacturing precision parts with more complexity, special property values and higher volumes using P/M and MIM.

Take innovation to the next power with **AMETEK**, the powder metallurgy leader since 1970.

All of our P/M Stainless, Ultra-Stainless, Motor Vehicle Series™ and custom formulated powders are quality controlled, and made to the customer's exact specifications.

AMETEK also developed a proprietary method of producing and processing superfine metal powders down to 10 microns for MIM.

All powders are produced consistently and economically with our advanced atomization manufacturing technology.

Let **AMETEK** help you develop products with more diverse and improved properties.

AMETEK®
SPECIALTY METAL PRODUCTS
Innovative & Advanced Metallurgical Technology

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Using MPIF standard test procedures, our experienced and highly qualified technicians control and certify each production lot of powder for chemical and physical properties.

Every blended lot is compared to a set of certified standards to ensure consistent properties from one lot to another. Using statistical process control technology, we have developed a quality assurance program that is second-to-none.

In recent years, as the need for P/M stainless steels with improved corrosion resistance has become more widespread, **AMETEK** has invested heavily in research and development in this area. These efforts have resulted in AMETEK's patented Ultra Stainless Steel Powders™.

Our material are produced by alloying conventional austenitic compositions with a small amount of tin, then blending them with a small amount of copper-nickel-tin alloy. This combination of metals results in a marked improvement in corrosion resistance, while other properties are comparable to their conventional counterparts.

- P303L
- P304L
- P316L
- P410L
- P420L
- P430L
- P431L
- P434L
- 70/30 FeCr
- 17-4PH
- 50/50 NiFe

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Open New Doors With Our Metal Powders

Ultra 300, 300 PLUS and HP series

Heightened concerns about industrial security have led many companies to require stronger internal and external door hardware, including lock tumblers, locks, latches, dead bolts and knobs. Our stainless steel powder metal (P/M) products can help you manufacture the most durable, high-quality hardware available.

"Industrial use of stainless steel P/M products is on the rise due to improved corrosion resistance and relatively low cost," says Jim Karol, CSR Director. "We can provide you with the material building blocks and technical assistance you need to develop solutions in markets you currently serve, and help you create markets that you may have never thought possible."



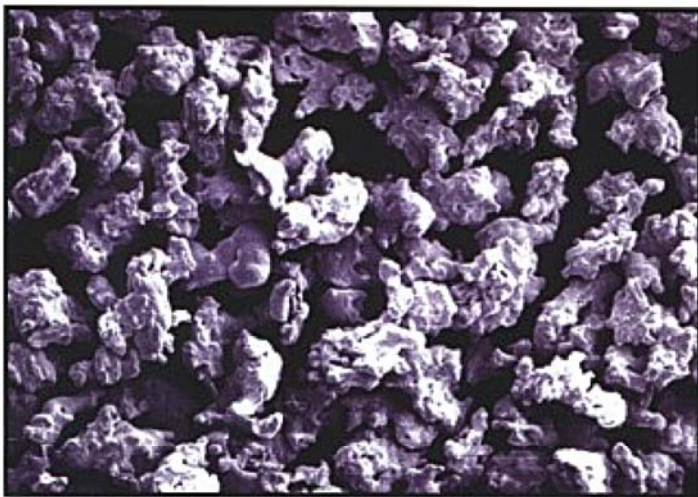
AMETEK Ultra HP Stainless Steel Powders

Offer Improved Corrosion Resistance

AMETEK Specialty Metal Products' Ultra High Performance™ (Ultra HP) line of corrosion-resistant stainless steel powders improve the life span of products used in automotive, aerospace, marine, general industrial, commercial and residential applications.

AMETEK's Ultra HP stainless steel powders' high resistance to corrosion is characterized by tight control of chemistry from one batch to the next.

The development of Ultra HP 303L, Ultra HP 304L and Ultra HP 316L exemplifies AMETEK's ongoing commitment to innovation, anticipating market needs and acting on them, making AMETEK a leader in the metal powders market.



500 HOUR SALT SPRAY

Motor Vehicle 400 Series™

Stainless Steel Powders

Ferritic stainless steel P/M technology is being specified by automotive engineers as consumers demand longer-term performance and reliability. Good atmospheric and saline corrosion resistance, hot oxidation resistance and elevated temperature yield strength, at the most economical costs, are the reasons for specifying 400 Series automotive components.

To improve the compressibility of our low-carbon, highly engineered stainless steel powders, we recently installed the North American P/M industry's largest annealing furnace. This capital investment ensures that AMETEK powders meet any set of molding specifications.



Automotive components requiring 400 Series powders include rear view mirror mounts, sensor rings, exhaust flanges, exhaust support brackets and seals.

Typical Composition of AMETEK Powder Specifications MVS 400 Series Alloys

	MVS409CB	MVS410L	MVS430L	MVS434L
Chromium	11.0	12.0%	17.0%	17.0%
Carbon	0.03	0.03	0.02	0.02
Iron	Bal.	Bal.	Bal.	Bal.
Silicon	0.9	0.6	0.9	0.9
Manganese	0.2	0.2	0.2	0.2
Molybdenum	—	—	—	1.0
Columbium	0.5	—	—	—

Grades:
17-4 PH
316L
70/30 FeCr
80/20 NiCr
PI 600
P430L
P410L
Iron Aluminide
Custom Alloys

Advanced Testing:
Microtrac
Tap Density
Pycnometric Density

Sizing:
Each order is processed
per customer specifications.
-400 Mesh
-500 Mesh
-20µm D50= 20 microns
-15µm D50=15 microns
-10µm D50=13 microns

AMETEK Fine Powders

Metal Injection Molding, Plastics Compounding and Other Applications

Ametek Grade	Nominal Chemical Composition (%)								
	Fe	Ni	Cr	Mo	C (max)	Cu	Cb	Mn (max)	Si (max)
316L	Bal.	10-14	16-18	2-3	0.03	—	—	0.5	1.0
430L	Bal.	—	16-18	—	0.05	—	—	1.0	1.0
17-4 PH	Bal.	3-5	15.5-17.5	—	0.07	3-5	0.15-0.45	0.5	1.0
PI600	6-10	Bal.	14-17	—	0.15	—	—	—	1.0
80/20 NiCr	—	80	20	—	—	—	—	—	—
70/30 FeCr	70	—	30	—	—	—	—	—	—

Other Elements: Total by difference may not exceed 1.0% combined.

Properties for MIM Components

Material Code	Physical Properties				Hardness
	Ultimate Strength 10 ³ psi	Yield Strengths 10 ³ psi	Elongation %	Density g/cm ³	Rockwell
316L	60-75	20-25	35-50	7.6	57 HRB
430L	50-60	30-35	20-25	7.5	65 HRB
17-4 PH	150-172	120-158	4.0-6.0	7.5	33 HRC