



I.P.M.C
Iran Powder Metallurgy Complex

Powder Products

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History

Iran Powder Metallurgy Complex, the only producer of iron powder in the Middle East and one of the largest producers of powder metallurgy parts in Iran. This company was established in 1984 in Alborz industrial city, Qazvin province, and using advanced technology and technical knowledge of MANNESMANN DEMAG Company. The production activities began in 1991 with the investment of the Sanat-Madan Bank, and were privatized in 2002 through public auctions.

Our productions include raw and reduced iron, alloyed iron, copper and bronze powder by water atomization method in accordance with international standards.

Iron powder production shop

The Iran powder metallurgy complex has advanced equipment such as electric arc furnace, water atomization machine, powder dewatering and drying equipment, powder reduction furnaces and variety of other machines for preparation and packaging of iron, copper and bronze powder.

Industrial Parts production shop

Iran Powder Metallurgy Complex equipped with the most modern machinery in various stages such as mixing, forming, Sintering, sizing and heat treatment.

Our main productions include Iron and bronze parts with application in various industries such as Automobile, household appliances and etc in accordance with international standards.

There are 12 press Machines with the capacity of 15-350 tons and 7 secondary presses with the capacity of 40-250 tons for compacting and sizing PM parts. The

green parts are sintered in three furnaces involves one walking beam and two mesh belt furnaces with dissociated ammonia and endo gass atmosphere. Other advanced machines, such as Heat treatment furnace, Steam treatment furnace, grinding machines and oil infiltration machine are finishing equipments.

Quality and laboratory site

Quality Control site and Laboratory of Iran Metallurgy Powder Complex with the possession of advanced machinery and equipment such as Spectrometers, Spectrophotometers, Atomic Absorption, Autograph, Projectors Profile, Conturoscop, CMM (Coordinate Measuring Machine), microhigh and etc.

Quality control of manufactured products and complete monitoring of production takes all the steps.

Design and molding shop

Designing of molds for producing PM parts is performed with professional engineers by applying advanced software and hardware. The main machines for manufacturing of molds are Spark, lathes, heat treatment furnaces and etc.

Quality Policy

I.P.M.C top priorities based on quality management system according to the international standards are:

- Increasing staff productivity
- Reduce the cost
- sales increasing
- Increase customer satisfaction



Continuous improvement of processes affecting quality, by using appropriate methods, resources and tools, as well as having qualified human resources results in a win-win relationship among all beneficiaries (stockholders, customers, contractors, employees and the community).

In this regard, the quality management system based on the ISO9001: 2015, IATF16949: 2016 standards and also specific requirements of customers, make our operating instructions.

Powder products

WPL 200

WPL 200 is the water atomized standard iron powder for high-quality PM parts from the medium up to the high density range. It is a highly compressible iron powder of high chemical purity and high green strength. The extremely low oxygen content of this material makes it particularly suitable for manufacturing of carburized sintered steels. The irregular particle structure and the high ductility combine in a unique way primary characteristics which hitherto could be obtained only by employing various different grades. Maximum particle size approx. 0.2 mm (65 mesh).

WPL 200 CHEMICAL ANALYSIS (Wt. %)(Max)							
Specification	C	S	P	Mn	Si	Fe	H ₂ Loss
%	0.02	0.015	0.015	0.15	0.05	Base	0.2
PHYSICAL PROPERTIES							
Specification	Particle size Analysis (µm) (Wt. %)				Apparent density (g/cm ³)	Flow rate (50 g/sec) (Max)	
µm	-63	63-100	100-160	160-200	2.50-2.70	33	
%	15-40	24-40	25-45	1-15			

WP 200- HD

Is a high-purity iron powder of highest compressibility for the production of sintered steels having a density above 7.1 g/cm³ using the single pressing method; maximum size approx. 0.2 mm (65 mesh).

WP200 HD CHEMICAL ANALYSIS (Wt. %)(Max)							
Specification	C	S	P	Mn	Si	Fe	H ₂ Loss
%	0.02	0.015	0.015	0.15	0.05	Base	0.15
PHYSICAL PROPERTIES							
Specification	Particle size Analysis (µm) (Wt. %)				Apparent density (g/cm ³)	Flow rate (50 g/sec) (Max)	
µm	-63	63-100	100-160	160-200	2.80-3.10	30	
%	25-45	20-40	20-40	0-15			

Astaloy Mo

In our modern facility we can produce all known types of alloys from molten steels by water atomization. We have developed pre-alloyed powders for some typical applications which meet the powder industry's requirements and furthermore provide the advantages of homogeneous alloy. This grade of pre-alloyed powders, contain 1.5% Molybdenum and desired amount of Nickel and/or Copper. In order to retain a sufficient compressibility, the necessary carbon content is not present in a combined form; it must be admixed as graphite powder.

Astaloy Mo CHEMICAL ANALYSIS (Wt. %)(Max)								
Specification	C	S	P	Mn	Si	Mo	Fe	H ₂ Loss
%	0.02	0.015	0.015	0.15	0.05	1.4-1.6	Base	0.2
PHYSICAL PROPERTIES								
Specification	Particle size Analysis (µm) (Wt. %)				Apparent density (g/cm ³)	Flow rate (50 g/sec) (Max)		
µm	-63	63-100	100-160	160-200	2.60-2.90	33		
%	15-40	24-40	25-45	1-15				

Astaloy Mo- HD

It is the high density grade of ASTALOY Mo with following characterization:

Astaloy Mo-HD CHEMICAL ANALYSIS (Wt. %)(Max)								
Specification	C	S	P	Mn	Si	Mo	Fe	H ₂ Loss
%	0.02	0.015	0.015	0.15	0.05	1.4-1.6	Base	0.2
PHYSICAL PROPERTIES								
Specification	Particle size Analysis (µm) (Wt. %)				Apparent density (g/cm ³)		Flow rate (50 g/sec) (Max)	
µm	-63	63-100	100-160	160-200	2.90-3.10		30	
%	25-45	20-40	20-40	0-15				

ULTRAPAC® Powders

Admixing alloying elements in powder form, is a technique known and practiced for years. Depending on particle size, distribution and particle shape of the plain iron powder, there is the risk of segregation, and the optimum effect of alloying elements (Cu, Ni, Mo) is not always achieved.

I.P.M.C has developed diffusion alloyed steel powders employing its very pure and highly compressible water atomized powder WPL 200 as base material. According to the strength and hardenability required, the amounts of the alloying elements copper, nickel and molybdenum are finely adjusted to each other. The required carbon is added in the form of graphite.

ULTRAPAC® is the registered trade name for this range of diffusion alloyed iron powders and these are their main advantages:

- No segregation of the alloying elements
- High compressibility
- High green strength
- Intensified sintering activity

- High dimensional accuracy of the sintered components
- Close tolerance of combined carbon content due to low total oxygen content
- Improved physical properties of the sintered components and good hardenability

We produce two grades of ULTRAPAC powder which are classified as ULTRAPAC LA and ULTRAPAC LE with following characterizations.

ULTRAPAC-LA CHEMICAL ANALYSIS (Wt. %)(Max)										
Specification	C	S	P	Mn	Si	Ni	Mo	Cu	Fe	H ₂ Loss
%	0.02	0.015	0.015	0.15	0.05	1.6-1.9	0.45-0.55	1.35-1.65	Base	0.2
PHYSICAL PROPERTIES										
Specification	Particle size Analysis (µm) (Wt. %)					Apparent density (g/cm ³)		Flow rate (50 g/sec) (Max)		
µm	-63	63-100	100-160	160-200	200-315	2.60-2.90		30		
%	25-45	25-45	20-40	0-7	0-1.5					

ULTRAPAC-LE CHEMICAL ANALYSIS (Wt. %)(Max)										
Specification	C	S	P	Mn	Si	Ni	Mo	Cu	Fe	H ₂ Loss
%	0.02	0.015	0.015	0.15	0.05	3.9-4.1	0.45-0.55	1.35-1.65	Base	0.2
PHYSICAL PROPERTIES										
Specification	Particle size Analysis (µm) (Wt. %)					Apparent density (g/cm ³)		Flow rate (50 g/sec) (Max)		
µm	-63	63-100	100-160	160-200	200-315	2.60-2.90		30		
%	25-45	25-45	20-40	0-7	0-1.5					

WPL Cu

WPL Cu is another type of diffusion alloyed iron powder which contains 2.2% copper. This alloyed powder has the advantages of ULTRAPAC series which mentioned above and is an excellent choice for those parts that require homogeneous hardness and high dimensional precision.

WPL-Cu CHEMICAL ANALYSIS (Wt. %)(Max)								
Specification	C	S	P	Mn	Si	Cu	Fe	H ₂ Loss
%	0.02	0.015	0.015	0.15	0.05	2.1-2.3	Base	0.2
PHYSICAL PROPERTIES								
Specification	Particle size Analysis (µm) (Wt. %)				Apparent density (g/cm ³)	Flow rate (50 g/sec) (Max)		
µm	-63	63-100	100-160	160-200	2.60-2.90	33		
%	15-40	24-40	25-45	1-15				

Iron powder for welding

Iron powder has for a long time been one of the most important and frequently used raw materials in the production of coated welding electrodes. In recent years, it has also become a popular raw material for cored wires.

All of our standard welding powders are based on atomizing method with low level of impurities. Whether used for coated welding electrodes or cored wires, our iron powders offer high and uniform quality, giving advantages both to producers and end users of welding consumables. Among the standard welding grades are fine powders suitable for coated electrodes with required amount of iron powder and for all types of cored wires.

We provide a complete range of welding powders, with varied particle size, particle shape and chemical composition as listed below:

CHEMICAL ANALYSIS (Wt. %)(Max)										
%	C	S	P	Mn	Si	Cr	Cu	Ni	Fe	H ₂ Loss
Raw WPL	0.1-0.2	0.015	0.015	0.15	0.05	0.1	0.1	0.1	Base	1.5
ELTRIX	0.08	0.02	0.018	0.2	0.05	0.1	0.1	0.1	Base	1.5
ELTRO	0.02	0.015	0.015	0.015	0.05	0.1	0.1	0.1	Base	0.2
K74	0.08	0.015	0.015	0.15	0.05	0.1	0.1	0.1	Base	1.3
RWZ	0.06	0.015	0.015	0.15	0.05	0.1	0.1	0.1	Base	0.3
UDP	0.1-0.2	0.015	0.015	0.15	0.13	0.1	0.1	0.1	Base	3
RDP	0.02	0.015	0.015	0.15	0.13	0.1	0.1	0.1	Base	0.3

PHYSICAL PROPERTIES										
Specification		Particle size Analysis (µm) (Wt. %)								Apparent density (g/cm ³)
Raw WPL	mµ	-63	63-100	100-160	160-200	200-315	315-400	400-630	>630	2.7-3.2
	wt%	40-60	20-35	10-25	0-10	0-6	0-2	0-2	0-0.5	
ELTRIX	mµ	-63	63-200	200-315	315-400	400-630	>630			3.3-3.5
	%	5-20	30-50	30-45	5-20	12 max	0.5 max			
ELTRO	mµ	-63	63-100	100-160	160-200	200-315	315-400	-	-	2.4-2.7
	%	0-5	0-10	5-20	15-35	45-65	0-15			
K74	mµ	45	90	180	355	500	-	-	-	3-4
	%	90-100	60-85	30-65	0-15	0				
RWZ	mµ	>355	>300	>150	>75					≤3.5
	%	0-5	0-10	45-75	90-100					
UDP	mµ	-63	63-100	100-160	+160					2.7-3.5
		50-85	15-45	0-5	1.5 max					
RDP	-63	63-160	160-315	315-400						2.7-3.3
	50-85	15-45	0-5	1.5 max						

We are also capable of producing any type of iron powder according to our customers' need.