

Alcoa Aluminum Powder

Your Link to Success



ALCOA

Alcoa Aluminum Powder

Alcoa Aluminum Powder is an important component of Alcoa Primary Metals, an independent business unit with revenues in excess of \$3 billion.

Alcoa Aluminum Powder is the preferred global provider of high quality fine and coarse aluminum powders.

Alcoa Aluminum Powder is the leading supplier of aluminum powder in the world. We operate two state-of-the-art production facilities. One, the largest operating aluminum atomizer in the world, is in Rockdale, Texas, with another fully integrated, totally computerized operation in Pocos de Caldas, Brazil.



Producing the World's Best Aluminum Powder

Both Rockdale and Pocos de Caldas run with the most stringent quality control processes. This provides powders that are the same lot-to-lot, drum-to-drum, all day every day. A consistent powder will give you more predictable yields in your processes and will reduce variation, resulting in higher utilization of your facilities.

Each atomizer is able to source its aluminum directly from the adjacent smelter, ensuring consistent metal

The size and sophistication of these atomizers demonstrate Alcoa's commitment to the industry.

chemistry compared to other powder producers that must source their aluminum from a larger, more variable supply base. **All of these benefits provided by Alcoa mean one major advantage for you – more consistent powders for the production of more consistent products.**



Providing Product Leadership

Next generation automotive pigments, photovoltaic solar paste, novel industrial coatings, aluminum metal foams, and cutting edge performance in refractories are just a few of the solutions Alcoa Aluminum Powder has developed with its customers. Significant competitive advantages are provided through the Alcoa Technical Center, the premier light metals research and technology center in the world.

Together with our customers, we can leverage the research and development, application engineering, and fundamental atomization technology, to develop new products that provide security, reliability and preferences faster than the competition.

provide security, reliability and preferences faster than the competition



Courtesy of Aerofoam Metals Inc.

Enhancing Our Customer's Efficiency

Our customer's success is Alcoa Aluminum Powder's success. We help our customers to achieve higher yields in their processes by eliminating waste. Powder products are tailored to customer needs through our specialized operations such as screening, classifying, coating and blending.

We focus on our customer's production process.

We focus on our customer's production process. Customer consumption rates drive our product delivery system to ensure that aluminum powder is delivered at the right place and time in the desired quantity.



Courtesy of NASA

Reliability of Supply

Customers who do business with Alcoa Aluminum Powder benefit from the security, reliability, and peace of mind that is created by our safe operations, sufficient capacities and multiple sourcing locations --- world-class plant distribution in North and South America, Europe, and Asia.

security, reliability, and peace of mind



Alcoa Aluminum Powder supplies your unique needs; it's one of our best characteristics. Our ability to produce specific particle size distributions and chemistries will move you to the next level of success with your customers.

The benefits we provide include:

Security of Supply – powder plants that are integrated with smelting operations to ensure metal quality, purity, and availability

Size and sophistication – Ample capacity of consistent, clean powder produced using multiple nozzles and advanced processes

Custom Solutions - Solving problems through application of over 100 years of aluminum expertise

Peace of mind - Working with Alcoa, the name that *means* aluminum



High Purity Aluminum Powders

- Alcoa offers a variety of high purity aluminum powders.
- These powders can be supplied in various particle sizes.
- Chemistry range from 99.7% aluminum to 99.98% aluminum.
- If your product demands:
 - Greater brightness
 - Higher electrical conductivity
 - Fewer contaminants
 - Greater corrosion resistance

What's New New air-classification system

Alcoa Aluminum Powder is the largest producer in the world. This new capability builds on our historical strengths of product consistency, installing commercial capacities, and providing the best customer service.

- Installed at the Alcoa atomizer in Pocos de Caldas Brazil
- Equipment has the ability to classify up to 1,000,000 lbs of fine powder annually
- Able to offer customized particle size distributions
- Locating the air-classification system next to the atomizer provides increased flexibility to manage the by-products that are created by the classification process. Being able to manage the by-products is one of the keys to offering greater capacity of the products that you want.
- Customized particle size distributions (PSD's) allow you to increase your process efficiency, and create less waste at your plant. You can focus on creating products that add value.
- Contact your local sales representative to inquire about samples, products, and prices.

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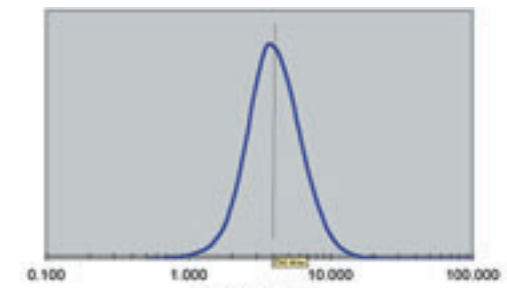
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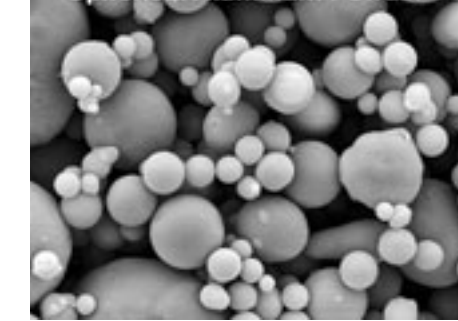
Standard Fine Powder Grade By Size	Typical Particle Size Distribution (µm) ¹		Typical Sieve Analysis (mesh)	Typical Chemistry Standard Purity (% By Weight)		Typical Chemistry High Purity (% By Weight)		Typical Physical Characteristics	
	d10	d50		Al	Si	Al	Si	BET Surface Area (m ² /gm)	Weight % Oxide as Al ₂ O ₃
4 µm	d10	2.5	+100 mesh	Al	99.5	Al	99.93	BET Surface Area (m ² /gm)	0.8
	d50	3.8 - 4.2	-100 mesh	Si	.25 max	Si	.15 max	⁴ Weight % Oxide as Al ₂ O ₃	0.6 to 0.8
	d90	8.5	+200 mesh	Fe	.15 max	Fe	.15 max	Weight % Moisture	<0.3
			-300 mesh	² Ti	0.005 to 0.25	Ti	0.003		
		+325 mesh	Others Each	.05 max	Others Each				
		-325 mesh	Others Total	.15 max	Others Total				
5 µm	d10	2.8	+100 mesh	Al	99.5	Al	99.93	BET Surface Area (m ² /gm)	0.5 to 0.7
	d50	5.5 - 6.0	-100 mesh	Si	.25 max	Si	.15 max	⁴ Weight % Oxide as Al ₂ O ₃	0.6 to 0.8
	d90	14.5	+200 mesh	Fe	.15 max	Fe	.15 max	Weight % Moisture	<0.3
			-300 mesh	² Ti	0.005 to 0.25	Ti	0.003		
		+325 mesh	Others Each	.05 max	Others Each				
		-325 mesh	Others Total	.15 max	Others Total				
6 µm	d10	3.1	+100 mesh	Al	99.5	Al	99.93	BET Surface Area (m ² /gm)	0.5 to 0.6
	d50	6.4	-100 mesh	Si	.25 max	Si	.15 max	⁴ Weight % Oxide as Al ₂ O ₃	0.6 to 0.8
	d90	15	+200 mesh	Fe	.15 max	Fe	.15 max	Weight % Moisture	<0.3
			-300 mesh	² Ti	0.005 to 0.25	Ti	0.003		
		+325 mesh	Others Each	.05 max	Others Each				
		-325 mesh	Others Total	.15 max	Others Total				
7 µm	d10	3.5	+100 mesh	Al	99.5	Al	99.93	BET Surface Area (m ² /gm)	0.5 to 0.6
	d50	7.5	-100 mesh	Si	.25 max	Si	.15 max	⁴ Weight % Oxide as Al ₂ O ₃	0.6 to 0.8
	d90	16.5	+200 mesh	Fe	.15 max	Fe	.15 max	Weight % Moisture	<0.3
			-300 mesh	² Ti	0.005 to 0.25	Ti	0.003		
		+325 mesh	Others Each	.05 max	Others Each				
		-325 mesh	Others Total	.15 max	Others Total				
9 µm	d10	3.8	+100 mesh	Al	99.5	Al	99.93	BET Surface Area (m ² /gm)	0.4 to 0.5
	d50	9.4	-100 mesh	Si	.25 max	Si	.15 max	⁴ Weight % Oxide as Al ₂ O ₃	0.5 to 0.7
	d90	20	+200 mesh	Fe	.15 max	Fe	.15 max	Weight % Moisture	<0.3
			-300 mesh	² Ti	0.005 to 0.25	Ti	0.003		
		+325 mesh	Others Each	.05 max	Others Each				
		-325 mesh	Others Total	.15 max	Others Total				
Custom Products	d10		+100 mesh	Al		Al		BET Surface Area (m ² /gm)	
	d50		-100 mesh	Si		Si		⁴ Weight % Oxide as Al ₂ O ₃	
	d90		+200 mesh	Fe		Fe		Weight % Moisture	
			-300 mesh	Ti		Ti			
		+325 mesh	Others Each		Others Each				
		-325 mesh	Others Total		Others Total				

Alcoa Aluminum Powders are available in both nodular and spherical form.

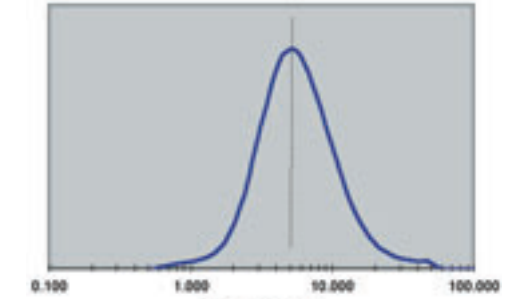
Alcoa 4 Micron



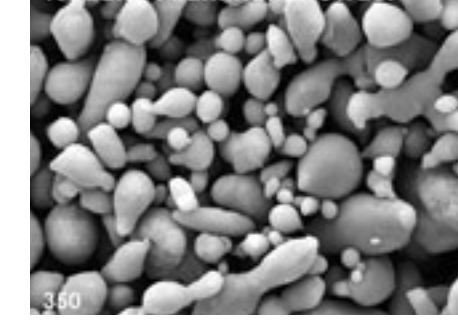
Spherical Aluminum Powder




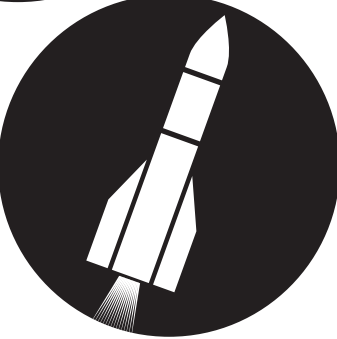


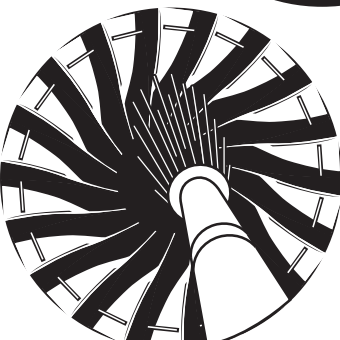
Alcoa 6 Micron



Nodular Aluminum Powder



Notes: 1. Particle size distribution measured using Microtrac Laser Light Scattering 2. Most grades available with or without Ti additions. 3. Values given are representative of powders in the size range given. 4. Oxide thickness for aluminum powders less than 10 µm is between 30 to 50 nm.

Standard Coarse Powder Grade By Size	Typical Particle Size Distribution (µm) ¹		Typical Sieve Analysis (mesh)		Typical Chemistry Standard Purity (% By Weight)		Typical Chemistry High Purity (% By Weight)		Typical Physical Characteristics		Markets	
	d10	d50	d90									
123 (22 µm to 30 µm)	d10	12	+100 mesh		Al	99.5	Al	99.95	BET Surface Area (m ² /gm)	0.2 to 0.3	 Chemicals	
	d50	25	+200 mesh		Si	.25 max	Si	.15 max	Weight % Oxide as Al ₂ O ₃	0.4 to 0.8		
	d90	52	-200 mesh		Fe	.15 max	Fe	.15 max	Weight			
			+325 mesh	3% to 5%	Ti	0.005	Ti	0.003	% Moisture	<0.3		
		-325 mesh	>94%	Others Each	.05 max	Others Each	0.01 max					
				Others Total	.15 max							
101 (23 µm to 48 µm)	d10	15	+100 mesh	0% to 0.2% max	Al	99.5	Al	99.95	BET Surface Area (m ² /gm)	0.1 to 0.3		
	d50	32	-100 mesh		Si	.25 max	Si	.15 max	Weight % Oxide as Al ₂ O ₃	0.4 to 0.6		
	d90	85	+200 mesh	4% to 7%	Fe	.15 max	Fe	.15 max	Weight			
			-200 mesh	10% to 15%	² Ti	0.005 to 0.25	Ti	0.003	% Moisture	<0.3		
		+325 mesh	78% to 82%	Others Each	.05 max	Others Each	0.01 max					
		-325 mesh		Others Total	.15 max							
104 (26 µm to 46 µm)	d10	14	+100 mesh	<1%	Al	99.5	Al	99.95	BET Surface Area (m ² /gm)	0.1 to 0.3	 Rocket Propellants	
	d50	38	-100 mesh		Si	.25 max	Si	.15 max	Weight % Oxide as Al ₂ O ₃	0.4 to 0.6		
	d90	90	+200 mesh	4% to 8%	Fe	.15 max	Fe	.15 max	Weight			
			-200 mesh	13% to 16%	² Ti	0.005 to 0.25	Ti	0.003	% Moisture	<0.3		
		+325 mesh	75% to 80%	Others Each	.05 max	Others Each	0.01 max					
		-325 mesh		Others Total	.15 max							
120	d10	na	+40 mesh	Trace	Al	99.5	Al	na	BET Surface Area (m ² /gm)			
	d50	na	-40 mesh		Si	.25 max	Si	na	Weight % Oxide as Al ₂ O ₃	0.4		
	d90	na	+100 mesh	10% to 25%	Fe	.15 max	Fe	na	Weight			
			-100 mesh	15% to 30%	Ti	.25 max	Others Each		% Moisture	<0.3		
		+200 mesh		Others Each	.05 max							
		-200 mesh	15% to 25%	Others Total	.15 max							
		+325 mesh	28% to 34%									
		-325 mesh										
130	d10	na	+8 Mesh	Trace	Al	99.5	Al	na	BET Surface Area (m ² /gm)		 Blasting Agents	
	d50	na	-8 mesh		Si	.25 max	Si	na	Weight % Oxide as Al ₂ O ₃	0.1%		
	d90	na	+40 mesh	25% to 80%	Fe	.15 max	Fe	na	Weight			
			-40 mesh	15% to 70%	Ti	.25 max	Others Each		% Moisture	<0.3		
		+100 mesh	6% max	Others Each	.05 max							
		-100 mesh		Others Total	.15 max							
1221	d10	na	+40 mesh	0% to 5%	Al	99.5	Al	na	BET Surface Area (m ² /gm)			
	d50	na	-100 mesh		Si	.25 max	Si	na	Weight % Oxide as Al ₂ O ₃	0.2		
	d90	na	+200 mesh		Fe	.15 max	Fe	na	Weight			
			-200 mesh	25% max	Ti	.25 max	Others Each		% Moisture	<0.3		
		+325 mesh		Others Each	.05 max							
		-325 mesh		Others Total	.15 max							
12C	d10	na	+100 mesh		Al	99.5	Al	na	BET Surface Area (m ² /gm)		 Refractories	
	d50	na	-100 mesh		Si	.25 max	Si	na	Weight % Oxide as Al ₂ O ₃			
	d90	na	+200 mesh		Fe	.15 max	Fe	na	Weight			
			-200 mesh		Ti	.25 max	Others Each		% Moisture	<0.3		
		+325 mesh	25% max	Others Each	.05 max							
		-325 mesh		Others Total	.15 max							
718	d10	11	+100 mesh	0	Al		Al	na	BET Surface Area (m ² /gm)			 Industrial Coatings
	d50	35	-100 mesh		Si	11.4 to 13.0	Si	na	Weight % Oxide as Al ₂ O ₃			
	d90	95	+200 mesh	5% to 8%	Fe	0.8	Fe	na	Weight			
			-200 mesh	15% to 20%	Zn	0.05	Others Each		% Moisture	<0.3		
		+325 mesh	70% to 80%	Cu	0.05							
		-325 mesh		Mg	0.05							
				Mn	0.05							
				Others Each	.05 max							
				Others Total	.15 max							

Notes: 1. Particle size distribution measured using Microtrac Laser Light Scattering 2. Most grades available with or without Ti additions. 3. Values given are representative of powders in the size range given. 4. Additional Alcoa Aluminum Powder purity levels are available upon request.

At Alcoa, our vision is to be the best company in the world—in the eyes of our customers, shareholders, communities and people. We expect and demand the best we have to offer by always keeping Alcoa's *Values* top of mind:

Integrity

Alcoa's foundation is our integrity. We are open, honest and trustworthy in dealing with customers, suppliers, coworkers, shareholders and the communities where we have an impact.

Environment, Health and Safety

We work safely in a manner that protects and promotes the health and well-being of the individual and the environment.

Customer

We support our customers' success by creating exceptional value through innovative product and custom solutions.

Excellence

We relentlessly pursue excellence in everything we do, every day.

Profitability

We earn sustainable financial results that enable profitable growth and superior shareholder value.

Accountability

We are accountable – individually and in teams – for our behaviors, actions and results.

People

We work in an inclusive environment that embraces change, new ideas, respect for the individual and equal opportunity to succeed.

We live our Values and measure our success by the success of our customers, shareholders, communities and people.

Contact Information

Please write or call your nearest Alcoa Aluminum Powder products sales office:

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