



Aluminum Nitride (AlN) Powders

Engineering Better Material Solutions™

Surmet's AlN features

- Very low Oxygen and Carbon contents
- High thermal conductivity
- Good sinterability
- Low Fe and other metallic impurities
- Available in both uncoated and water-resistant grades
- Available in tonnage quantities
- Multiple grades for various applications

Physical Properties

- Thermal Conductivity (sintered) 70 – 180 W/mK*
- Dielectric Constant 8.2 – 9.0
- Color Gray*
- Density 3.26 g/cm³
- Sublimes @ 2450° C
- Crystal Structure Hexagonal, Wurtzite

*Tailored via processing conditions and additives

AlN Characteristics

- **Chemical** :Exhibits good resistance to several corrosive materials and does not react with most metals such as Al, Cu, Li, U, ferrous and some super alloys. It is also resistant to many molten salts including carbonates, chlorides and cryolite.
- **Thermal** :8 to 10 times more thermally conductive than alumina, and its conductivity will not deteriorate with rising temperatures. With a relatively low thermal expansion coefficient, AlN structures meet thermo-mechanical requirements for many electronic device components.
- **Electrical** :High dielectric strength and low loss tangent makes it high performance insulator for many semi-conductor and power electronic applications.
- **Mechanical** :Because of its covalent nature, AlN is mechanically strong, durable and has high wear resistance

Applications

- **Thermal Management/Heat extraction:**
High powder LEDs, electronic packaging, fillers for thermally conductive epoxies/adhesives, metal bonded micro-channel coolers, power transformers and transistors, Laser diodes, etc.
- **Dielectric and Microwave:**
RF output windows, Severs, Terminations, Loss buttons, Collector and support rods, Chip resistors, etc.
- **Semiconductor:**
Susceptors and heaters for CVD and dry etching, Crucibles and Evaporation boats for semiconductor crystal growth, Thermocouple shields, etc.
- **Other applications:**
High temperature refractories (furnace tooling and components), insulators, etc.

Specifications		Grade					
		A100	A100 UM	A500			
				20	50	150	UM
Particle Size (µm)	D ₅₀	3 to 6	-	7 to 10	11 to 15	14 to 23	-
	D ₉₇	<40	-	<20	<50	<150	-
Specific Surface Area (m ² /gm)		2.3 to 3.5	-	-	-	-	-
Impurities [§]	Fe	<100		<500			
	Si	<200		<500			
Carbon		<0.15%	<0.14%	-	-	-	-
Oxygen		~1.5%	-	-	-	-	-

[§]Based on ICP Chemical Analysis

[Contact us](#) for more information

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