

CONDUCT-O-FIL®

Conductive Additives

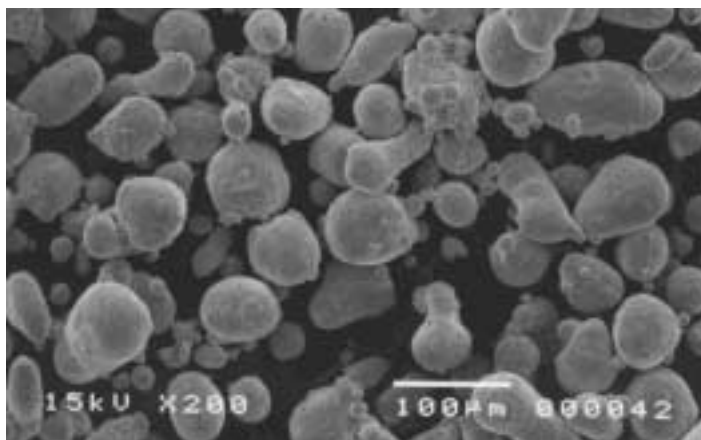


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CONDUCT-O-FIL Silver-Coated Aluminum Particles

Potters Industries CONDUCT-O-FIL® silver-coated aluminum granules have been designed for end-use electronic packaging applications requiring Electromagnetic Interference (EMI) shielding properties, when exposed to salt spray environments. The EMI grade particles are typically coated with 20% by weight of pure silver, which completely envelops the aluminum core to provide maximum conductivity.

CONDUCT-O-FIL silver aluminum particles are especially suited to meet the electromagnetic shielding requirements of MIL-G-83528, the military specification on conductive elastomers.



Scanning Electron Micrograph, SA270S20

Typical Particle Properties

Particle Core	Aluminum
Particle Shape	Spherical
Silver Content	20% by weight
Powder Resistivity	<1.5 mohm-cm

Typical Properties

Product #	% Ag Metal	Powder Resistivity mohm-cm	D10 Particle Size (microns)	D90 Particle Size (microns)	Mean Partical Size (microns)	True Density (g/cc)	Scott Apparent Density (g/in3)
SA270S20	20	0.7	44	88	62	3.2	25
SA300S20	20	1.2	20	60	40	1.8	23
SA325S20	20	1.2	15	58	30	1.8	23

Quality Control

Each CONDUCT-O-FIL product is subjected to a battery of QC analyses to ensure that every lot meets established specifications before it is released for shipment. Specification parameters typically include:

- **Percent silver**
- **Powder resistivity**
- **Color L* value**
- **Apparent density**
- **Silver adhesion**
- **Coating defect incidence**
- **Particle size distribution**

Specifications are established in relationship to actual performance of the conductive filler in silicone EMI shielding gaskets and other filled systems such as adhesives and lacquers. Testing begins in our research laboratories where we produce ASTM silicone test slabs or other filled systems, and measure their performance characteristics using standardized industry-accepted procedures. Measurements include volume resistivity and durometer, both as initially prepared and after accelerated heat aging and ambient shelf aging. Where appropriate, we measure EMI shielding effectiveness and conduct other critical tests such as stability under vibration and electromagnetic pulse at outside DoD-approved testing laboratories. Testing then often moves to partnership programs with customers for further development and qualification for setting final specifications.

Quality assurance testing and R&D are conducted in modern laboratories located in Potters' 65,000 sq. ft. manufacturing and warehousing facility in Carlstadt, NJ.

Laboratory equipment that we use for R&D and QC of CONDUCT-O-FIL products include:

- Scanning electron microscope equipped with digital imaging, EDS, and quantitative elemental analysis
- Numerous optical microscopes - including digital imaging
- A pilot facility for scaling up new or improved conductive products and production processes - capable of operating at full manufacturing scale
- Particle size analyzers - laser-based Malvern and Coulter instruments
- IR, visible, UV, and atomic absorption spectrophotometers
- Macbeth colorimeter
- Instron equipment for measuring tensile and tear strengths, and other stress/strain properties
- Salt-spray environmental test chamber
- Powder resistivity apparatus - developed and custom designed by Potters
- Gasket volume resistivity probes and associated instruments
- Durometers
- Scott apparent density apparatus
- Pycnometric specific gravity analyzer
- Brabender and other blenders for producing test conductive compounds
- Hydraulic presses, electrically heated, and plattens for ASTM test slabs
- Large variety of convection ovens
- Wide assortment of wet-chemical analytical equipment