

E-Fill Speciality Material Capabilities

Oerlikon Metco is a valued supplier of conductive materials to the EMI shielding and electronics markets. Current customers include leading global EMI shielding material manufacturers, leading aerospace firms, and emerging technology firms. We offer rapid prototyping from concept to large tonnage production.

Published data^a has shown that nickel graphite filled polymers can achieve the following shielding effectiveness levels (dB):

Frequency	Field	Effectiveness
100 MHz	E-Field	100 dB
500 MHz	E-Field	100 dB
2 GHz	Plane Wave	95 dB
10 GHz	Plane Wave	95 dB

Oerlikon Metco's composite powders consist of metallic or non-metallic core particles which are uniformly coated with layers of metal. High purity nickel, nickel alloys or gold are the preferred coating metals because of their low resistance electrical contact and superior corrosion and heat resistance. Oerlikon Metco produces a variety of composite powders for functional applications in the aerospace, shielding and electronics industries.

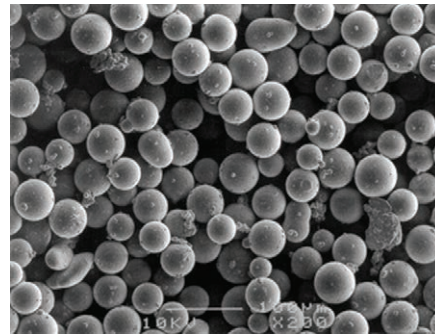
Oerlikon Metco's flexible coating processes and controls enable a variety of cores that can be clad.

Materials we have coated include, but are not limited to:

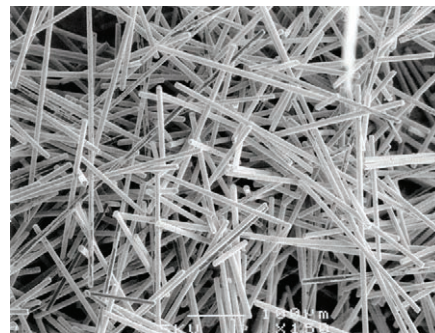
- Elemental (non-metallic) materials
- Pure metals
- Alloys
- Oxide and nitride ceramics and ceramic compounds
- Carbides
- Inorganic and organic compounds

Shapes that we have coated include:

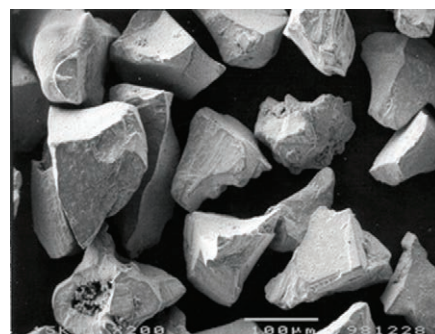
- Flakes
- Solid and hollow spheres
- Short fibers
- Granules



Nickel-Coated
Glass



Nickel-Coated
Carbon Fiber



Nickel-Coated
Titanium Carbide

Examples showing some of the materials and shapes Oerlikon Metco has coated

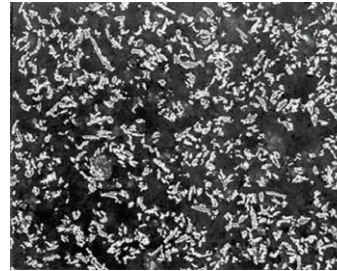
^a Chomerics, Division of Parker Hannifin Corp. "EMI Shielding for Commercial Electronics" 1999

The ability to select from a variety of core materials gives us the confidence to accurately control factors like shape, particle size distribution, apparent density and cost. A consistent coating method ensures the material quality and characteristics will be maintained across a broad range of particle sizes (10 to 600 μm). Our extensive, specialized particle screening and blending technology enables us to meet your specific particle distribution needs.

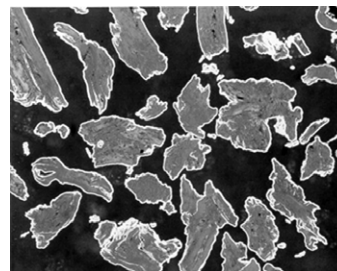
In addition to nickel and gold, alloyed coatings such as NiCrAl, NiAl, NiCr, NiMo, NiCrMo and others can be produced. We can also meet the needs of other special applications that may require duplex coatings such as Ni-Au.

Combining low density absorptive graphite with a stable layer of conductive nickel results in a highly effective lightweight shielding filler that is ideally suited for conductive gaskets and sealants. These fillers can be encapsulated with gold to ensure superior performance and environmental stability. The addition of a gold layer increases the conductivity of a standard Ni/C filler material by ten million fold (see below).

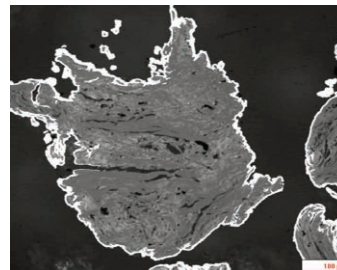
Oerlikon Metco has built a reputation for scientific accomplishments and innovative problem solving. To service the wide range of material activities and continuously develop new and improved products, we maintain a modern, well-equipped research facility. This allows us to provide timely technical assistance for all customer enquiries. We consider the improvement of existing materials and the development of new materials an important part of our business.



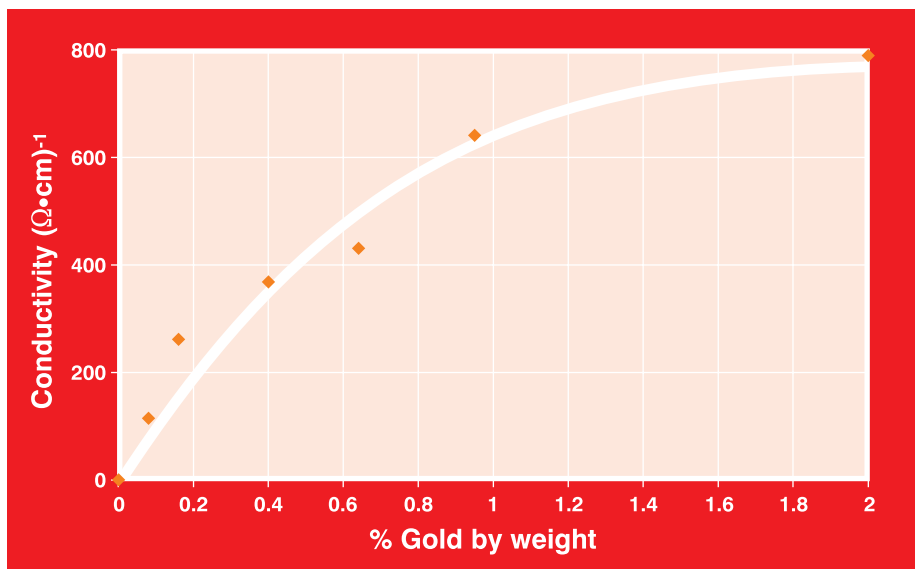
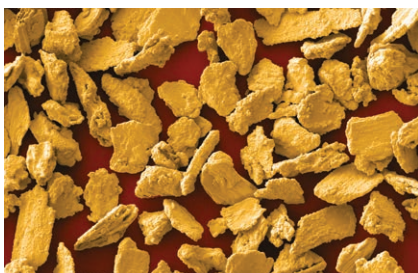
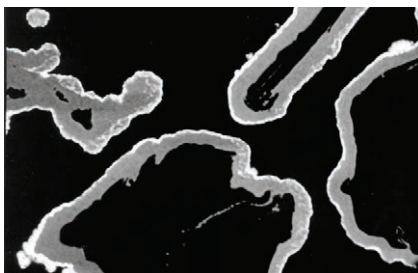
86 % Nickel, 14 % Carbon
Original magnification: 400X
Average particle size: 10 μm



65 % Nickel, 35 % Carbon
Original magnification: 200X
Average particle size: 115 μm



60 % Nickel, 40 % Carbon
Original magnification: 200X
Average particle size: 600 μm



The effect of the percentage of gold by weight on conductivity

Information is subject to change without prior notice.