



Conductive Paints

Material Solutions for
Electronics Protection

EMI / RFI shielding | PCB Prototype and repair | ESD protection | Grounding surfaces
Galvanic corrosion resistance | Electroplating plastics | www.mgchemicals.com



Conductive Paints



Overview

Engineered by dispersing conductive pigments into resin binders, creating coatings that can conduct electricity across the painted surface. MG Chemicals offers paints with a variety of different pigments and resin binders, providing options that tailor to both performance and budgetary requirements.

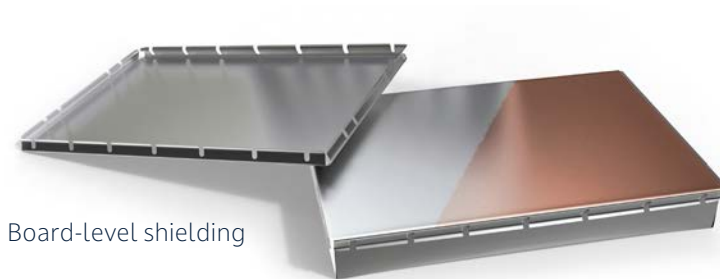
Conductive paints are lightweight and conformal – they can be sprayed, brushed, or dipped onto virtually any substrate, including plastics. This makes them ideal for retrofitting or shielding irregularly shaped components.



Environment-level shielding



Package-level shielding



Board-level shielding

About EMI / RFI Shielding

EMI (Electromagnetic Interference) and RFI (Radio Frequency Interference) shielding use conductive materials to reduce the energy of electromagnetic radiation by reflecting and absorbing it. This helps maintain electromagnetic compatibility (EMC) in electronic devices, ensuring they operate reliably and comply with regulatory standards.

EMI shielding can protect individual chips (package-level shielding) and PCBs (board-level shielding) by preventing interference among components.

For RFI, which originates from lower-frequency signals that can travel greater distances, PCBs can be enclosed in housings lined with conductive materials. Traditional metal enclosures have largely been replaced by lighter, more cost-effective plastic enclosures coated with conductive paint. Coating room walls with conductive paint creates fully shielded environments.

Nickel

Graphite

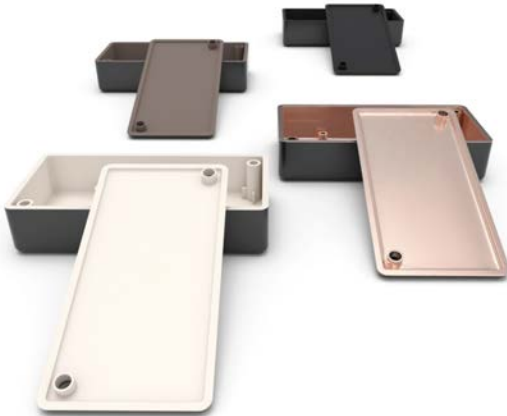
Carbon

Conductive Paints



Pigment Options

MG Chemicals offers paints with graphite, carbon, nickel, silver-coated copper, and pure silver, providing options that tailor to both performance and budgetary requirements.



Graphite – Lowest Cost

This economical anti-static material reduces low-frequency EMI/RFI. It cures to a smooth, durable finish and is resistant to abrasion, oxidation, and extreme thermal cycling – making it a great choice for outdoor treatments. Add a conductive layer to shield plastic surfaces and even drywall to block entire rooms from low frequencies.

Carbon

Excellent for grounding paint, electrical contact paint, or carbon shielding paint in low frequency RFI shielding applications. Shield metal detectors and other devices where a metal-filled conductive paint would cause malfunction.

Nickel

In addition to EMI / RFI shielding, nickel is also ferromagnetic and shields the magnetic component. It is smooth, hard, and abrasion resistant, and provides strong corrosion resistance – suitable for use in marine environments.

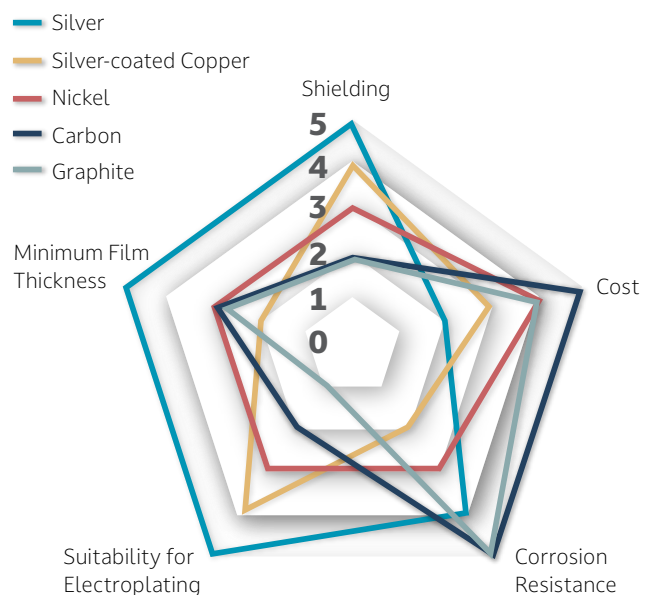
Silver-coated Copper

Highly conductive silver-coated copper flake creates a smooth, hard, and abrasion resistant finish. Most commonly used for the interior of plastic enclosures to suppress EMI / RFI emissions. It excels when higher levels of shielding are required, providing nearly the same performance as silver, but at significantly lower cost.

Silver – Most Conductive

Cures to a smooth, hard, and abrasion resistant surface. It is used to shield plastic enclosures from EMI, for the highest level of shielding. It creates a very thin layer that makes it ideal for trace and spot shield repair. Also used as a conductive undercoat for electroplating plastic when a high level of conductivity is required.

Comparison by Pigment



Comparison of conductive paints based the pigment type
0 = Lowest performance 5 = Highest performance

Silver-coated Copper

Silver

Conductive Paints



Resin Binder Options

Binding systems play a large role in determining the adhesion, durability, and chemical resistance of the coating. They also determine how the coating will be applied; properties like working time, application methods, and curing procedures.

Acrylic

Acrylic is the most common binder for plastic enclosures. Simple to apply with a brush, spray, or dip, and creates a durable coating, resistant to environmental stressors such as temperature fluctuations and humidity.

Why Choose Acrylic Conductive Paint?

High Attenuation – Increases the shielding capability of the paint.

Adhesion to Plastics – Bonds well to PVC, nylon, ABS, polycarbonate, and even wood.

Ease of Use – Acrylic is easy to clean off of surfaces, purge from cleaning systems, and rework.

Epoxy

It offers mar and scratch resistance, very strong adhesion, chemical resistance, extreme abrasion, chemical resistance and impact resistance. The best choice for coating metals and concrete.

Why Choose Epoxy Conductive Paint?

Adhesion – Superior adhesion to metals, plastics, ceramics, composites and concrete

Chemical Resistance – Epoxies have superior thermal and chemical resistance, so ideal for harsh environments

Water-based Urethane

Low VOC, nonflammable, has no noxious vapors, and is not a dangerous good when shipped by air. Can be applied directly onto drywall for shielding entire rooms.

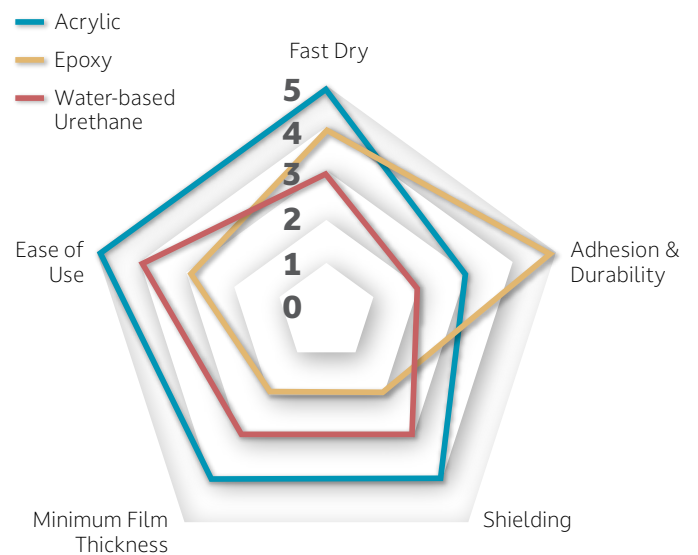
Why Choose Water-based Urethane Paint?

Room Shielding – Can be applied directly to sheetrock without use of primer, and does not emit heavy odors.

Nonflammable – Easier and less expensive to ship and store.

Low VOC - Ideal for industries and regions with strict environmental restrictions.

Comparison by Binder



Comparison of conductive paints based on the binder type
0 = Lowest performance 5 = Highest performance



Conductive Paints



Packaging / Application Methods



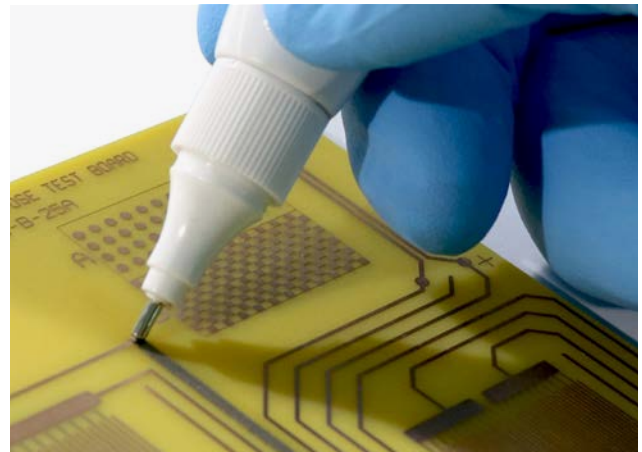
Liquid

Conductive paints are also packaged in either small bottles, convenient for touch up and repair, or larger cans for charging spray systems or rolling onto flat surfaces.



Aerosol

Quick and easy coat plastic enclosures and all types of smooth and uneven surfaces. The cured coating is smooth, hard, and abrasion resistant. It adheres strongly to most injection molded plastics, such as ABS, PVC, nylon and polycarbonate.



Pen

Circuit repair pen dispenses a precise spot of conductive paint. Adheres well to plastics and FR-4 PCB substrate, so ideal for PCB repair. The valve tip opens when pressed against a surface, and the flow is controlled by squeezing the barrel. The product works best on a smooth, flat, hard surface, but the cured traces are highly flexible.

Conductive Paints

Available Sizes and Formats



● Graphite — Acrylic

839 SUPER SHIELD™ Graphite

839-1G	3.60 L (3.58 kg)	Can
839-5G	18.9 L (18.8 kg)	Pail



● Carbon — Acrylic

838AR TOTAL GROUND™ Carbon

838AR-340G	442 mL (340 g)	Aerosol
838AR-P	5 mL (4.21 g)	Pen
838AR-55ML	55 mL (48.9 g)	Bottle
838AR-900ML	850 mL (755 g)	Can
838AR-3.78L	3.60 L (3.20 kg)	Can
838AR-18.9L	18.9 L (16.8 kg)	Pail



○ Conductive Paint Thinners

4351 Thinner 1

4351-1L	945 mL (31.9 fl oz)	Can
4351-4L	3.78 L (1 gal)	Can
4351-20L	18.9 L (5 gal)	Pail



● Nickel — Acrylic

841AR SUPER SHIELD™ Nickel

841AR-P	5.0 mL (7.57 g)	Pen
841AR-340G	232 mL (340 g)	Aerosol
841AR-55ML	55 mL (92.8 g)	Bottle
841AR-900ML	850 mL (1.43 kg)	Can
841AR-3.78L	3.60 L (6.07 kg)	Can



● Nickel — Epoxy

841ER SUPER SHIELD™ Nickel

841ER-1.17L	1.17 L (1.92 kg)	2 Can Kit
841ER-3.25L	3.25 L (5.34 kg)	2 Can Kit



● Nickel — Water-based Urethane

841WBU SUPER SHIELD™ Nickel

841WBU-55ML	1.17 L (1.92 kg)	Bottle
841WBU-850ML	3.25 L (5.34 kg)	Can
841WBU-3.78L	3.60 L (6.50 kg)	Can

Conductive Paints

Available Sizes and Formats



● Silver-coated Copper — Acrylic

843AR SUPER SHIELD™ Silver-coated Copper

843AR-340G	400 mL (340 g)	Aerosol
843AR-55ML	55 mL (60.0 g)	Bottle
843AR-900ML	850 mL (927 g)	Can
843AR-3.78L	3.60 L (3.93 kg)	Can
843AR-18.9L	18.9 L (20.6 kg)	Pail



● Silver — Acrylic

842AR SUPER SHIELD™ Silver

842AR-PS	2 mL (3.65 g)	Pen
842AR-P	5.0 mL (8.69 g)	Pen
842AR-900ML	850 mL (1.47 kg)	Can
842AR-3.78L	3.60 L (6.25 kg)	Can

842ARL SUPER SHIELD™ Silver

842ARL-55ML	55 mL (72.1 g)	Bottle
842ARL-900ML	850 mL (1.11 kg)	Can



● Silver-coated Copper — Epoxy

843ER Super Shield™ Silver-coated Copper

843ER-800ML	810 mL (895 g)	2 Can Kit
843ER-3.25L	3.25 L (3.59 kg)	2 Can Kit



● Silver — Epoxy

842ER Super Shield™ Silver

842ER-60ML	60 mL (91.7 g)	2 Bottle Kit
842ER-900ML	900 mL (1.37 kg)	2 Can Kit
842ER-4.25L	4.25 mL (6.48 kg)	2 Can Kit



● Silver-coated Copper Water-based Urethane

843WBU SUPER SHIELD™ Silver-coated Copper

843WBU-55ML	55 mL (75.3 g)	Bottle
843WBU-850ML	850 mL (1.16 kg)	Can
843WBU-3.78L	3.6 L (4.93 kg)	Can



● Silver — Water-based Urethane

842WBU SUPER SHIELD™ Silver

842WBU-55ML	55 mL (90.2 g)	Bottle
842WBU-850ML	850 mL (1.39 kg)	Can
842WBU-3.78L	3.6 L (5.90 kg)	Can

Conductive Paints

Selection Guide

Pigments	Binders			Shielding	Cost
	Acrylic	Epoxy	Water-based		
Graphite	839	—	—	Lowest	Lowest
Carbon	838AR	—	—	↓	↓
Nickel	841AR	841ER	841WBU		
Copper-coated Silver	843AR	843ER	843WBU	↓	↓
Silver	842AR & 842ARL	842ER	842WBU		

Properties Guide

Properties	Products											
	839	838AR	841AR	841ER	841WBU	843AR	843ER	843WBU	842AR	842ARL	842ER	842WBU
Elec. Conductivity	×	×	✓	✓	✓	✓+	✓+	✓+	✓+	✓+	✓+	✓+
Ruggedness	✓	✓	✓	✓+	✓	✓+	✓+	✓	✓	✓	✓+	×
Water Resistance	✓	✓	✓	✓+	✓	✓	✓+	✓	✓	✓	✓+	×
Chemical Resistance	×	×	×	✓+	×	×	✓+	×	×	×	✓+	×
Adhesion	✓	✓	✓	✓+	✓	✓	✓+	✓	✓	✓	✓+	✓+
Low Odor	×	×	×	✓	✓+	×	✓	✓+	×	×	✓	✓+
Low VOC	✓	✓	✓	×	✓+	✓	×	✓+	✓	✓	×	✓+
Easy Clean-up	✓+	✓+	✓+	✓	✓+	✓+	✓	✓+	✓+	✓+	✓	✓+
Easy Repair	✓+	✓+	✓+	×	✓+	✓+	×	✓+	✓+	✓+	×	✓+

✓+ = Best ✓ = Good × = Not Recommended

Applications Guide

Applications	Products											
	839	838AR	841AR	841ER	841WBU	843AR	843ER	843WBU	842AR	842ARL	842ER	842WBU
Trace Repair	×	×	✓	✓	✓	✓	✓	✓	✓+	✓+	✓+	✓+
Shielding Repair	×	×	✓	✓	✓	✓	✓	✓	✓+	✓+	✓+	✓+
Component Shielding	×	×	✓	✓	✓	✓+	✓+	✓+	✓+	✓+	✓+	✓+
Device Shielding	×	×	✓	✓	✓	✓+	✓+	✓+	✓+	✓+	✓+	✓+
Room Shielding	✓	✓	✓+	✓+	✓+	✓+	✓+	✓+	✓+	✓+	✓+	✓+

✓+ = Best + = Good × = Not Recommended

Contact MG Chemicals for technical support, or your favorite distributor for pricing and availability.