838AR | Super Shield Carbon Conductive Coating

Low Frequency EMI shielding and Grounding Coating

Description

838AR is a carbon-filled conductive acrylic coating for grounding, conductivity enhancement, and low-frequency radio frequency interference (RFI) shielding of plastic electronic enclosures and assemblies.

It forms a conductive surface that effectively attenuates low-frequency RFI while providing reliable electrical continuity across enclosure surfaces and electronic assemblies. The coating adheres well to most engineering plastics and can be applied by brush, spray gun, or selective coating equipment for prototype through production-scale applications.

Key Characteristics

Shielding Effectiveness

10 kHz to 100 kHz:	92-101 dB
100 kHz to 1 MHz:	53-92 dB
1 MHz to 10 MHz:	18-53 dB

Electrical Properties

Resistivity:	6.3×10^{-1} Ω·cm
Surface Resistance @ 25 µm:	252 Ω/sq

Coating Thickness & Particle Size

Recommended:	25 µm
Minimum achievable:	25 µm
Particle Size Distribution:	D10 30nm, D50 53nm, D90 144nm



Features & Benefits

- Conductive carbon coating for grounding and low-frequency RFI shielding
- Strong attenuation of low-frequency RFI
- Provides reliable electrical continuity across enclosure surfaces and assemblies
- Excellent adhesion to common engineering plastics
- Fast-drying coating suitable for brush, spray, and selective coating processes
- Ambient-temperature cure with optional heat acceleration
- Economical conductive coating for large-area grounding and shielding applications

Applications

- Grounding and conductive reference surfaces for electronic enclosures
- Large-area conductive coating and grounding applications
- Industrial automation and control electronics
- Sensors and instrumentation systems
- Low-frequency RFI shielding for electronic assemblies and housings
- Telecommunications and networking equipment
- Automotive electronics and EV systems
- Musical instrument cavity shielding and grounding

Ordering Information

Part #	Pkg.	Net Vol.	Net Wt.
838AR-P*	Pen	5.0 mL	4.45 g
838AR-55ML	Bottle	55 mL	48.9 g
838AR-340G*	Aerosol	442 mL	340 g
838AR-900ML	Can	850 mL	755 g
838AR-3.78L	Can	3.60 L	3.20 kg

*See separate TDS for aerosol and pen formats.

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Physical Properties

Colour	Black
Pencil Hardness	H, Hard
Salt Fog Resistance	Excellent
Service Temperature Range	-40—120 °C

Electrical Properties

Surface Resistance @ 50 µm	126 Ω/sq
Surface Resistance @ 25 µm	252 Ω/sq
Resistivity	6.3 x 10^{-1} Ω·cm
Magnetic Class	Diamagnetic

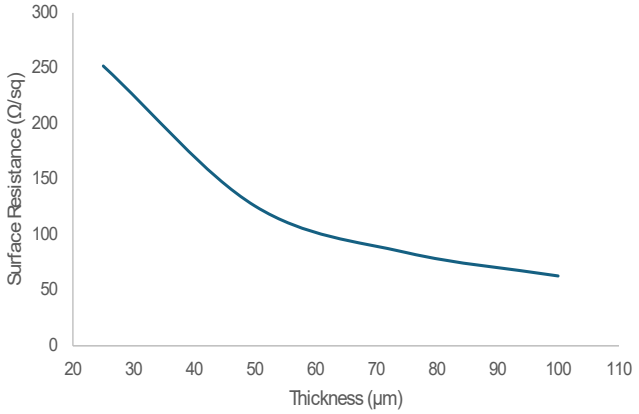
Cured properties unless otherwise stated.

Cure Schedule

25°C	24 hours
65°C	30 minutes



Surface Resistance by Paint Thickness



Adhesion Performance

ABS	5B
Aluminum	0B
Copper	0B
Polycarbonate	5B
Polyamide	1B
Glass	0B
PVC	5B
FR4	0B
Stainless Steel	0B

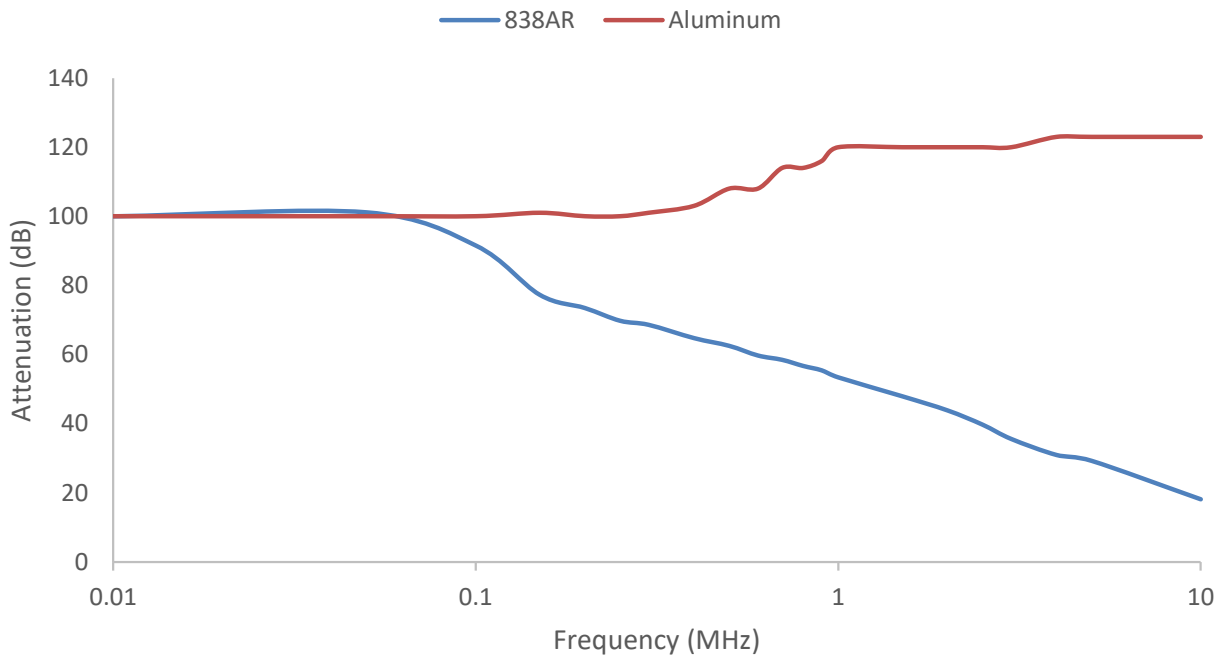
Uncured Properties

Film Thickness - Recommended	25 µm
Film Thickness - Minimum	25 µm
Coverage @ 25 µm	40,670 cm^2/L
Density	0.9 g/mL
Viscosity @ 23 °C	114 cP
Recoat Time	3 min.
Percent Solids	15%
Dilution Ratio	None
Shelf Life	3 y
VOC Content	718 g/L
Storage Temperature	16 to 27°C

Shielding Effectiveness At Selected Frequencies

Frequency	Attenuation	Note
1 MHz	53	Lower limit of most EMC standards
100 MHz	6	Core commercial EMC band
1 GHz	8	Boundary between RF and Microwave
3 GHz	10	Upper limit of most broadband shielding specs
10 GHz	9	X-band radar, critical for aerospace and defense applications

Shielding Attenuation Graph



Standards Used

Adhesion	ASTM D3359	Viscosity	ASTM E3116
Pencil Test	ISO 15184	Shielding Effectiveness	MIL-STD-285
Salt Fog	ASTM B117	Resistivity	MIL-STD-883J Method 5011.6
Density	ASTM D1475		

Additional Resources

Scan a QR Code or click a link to access supporting documentation and product resources.

Product Webpage

Full product information, downloads, videos and more

SDS

Safety Data Sheet

Application Guide for AR Conductive Coatings

Application instructions and best practices

QC Guide for Conductive Coatings

Testing methods and quality control procedures

Category Data Sheet for AR Conductive Coatings

Technical overview and performance summary

EMI Shielding Coatings Catalogue

Complete solutions for EMI shielding

Ready to Solve Your EMI Shielding Challenge?

Our application engineers are here to help you select the right materials and achieve optimal shielding performance.

- Material Selection
- EMI Troubleshooting
- Process Optimization
- Custom Solutions

Talk to an Application Engineer

Get expert recommendations tailored to your design, materials, and requirements

Contact Engineering

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