

Acrylic ESD Coating—Aerosol

Description

844AR is a one-part, solvent-based, permanent static dissipative coating for protecting sensitive electronic components from static charges. It forms a translucent coating, and provides excellent adhesion to plastics, paints, metals, and many other surfaces. The coating can be cured at room temperature or higher. The cured coating is flexible, durable, and will not crack, chip or peel.

Application and Uses

In the electronics industry, electrostatic discharges (ESD) as small as 100 V can damage components. Adding a film of electro-dissipative material such as 844AR helps prevent static charge accumulation.

844AR is commonly used to coat interior areas. Applications include:

- *Electronic enclosures*
- *Computer rooms*
- *Server casings*
- *Robotic components*
- *Explosion hazard areas*
- *Cabinets*
- *Clean rooms*
- *Shelving*
- *Aircraft hangers*

Features and Benefits

- *Permanent and translucent*
- *Packaged in a convenient aerosol format*
- *Surface resistance of $1.5 \times 10^9 \Omega/\text{sq}$*
- *Flexible, smooth, durable, and abrasion resistant*
- *Does not contain toluene, xylene or MEK*
- *Quick dry*
- *Superior adhesion*
- *Does not deplete ozone*
- *Low VOC and HAP free*

Usage Parameters

Properties	Value
Recoat Time	5 min
Drying Time @22 °C [72 °F]	24 h
Drying Time @65 °C [149 °F]	30 min
Theoretical 340G Spray Can Coverage ^{a)}	≤1 000 cm ² [≤150 in ²]

a) Idealized estimate based on a coat thickness of 50 µm [2.0 mil] and 50% transfer efficiency.

Temperature Ranges

Properties	Value
Constant service temperature	-40 to 120 °C [-40 to 248 °F]
Intermittent temperature limit	-50 to 125 °C [-58 to 257 °F]
Storage temperature limit ^{b)}	-5 to 40 °C [23 to 104 °F]

b) The product must stay within the storage temperature limits stated. Aerosol container will be crushed at ≤-26.5 °C [≤15.7 °F].

Cured Properties

Electrical & Magnetic Properties	Method	Value	
Surface Resistance ^{a)} 1 coat @0.3 mil 2 coats @0.7 mil 3 coats @0.9 mil	square probe square probe square probe	Resistance $1.5 \times 10^9 \Omega/\text{sq}$ $5.5 \times 10^8 \Omega/\text{sq}$ $2.2 \times 10^9 \Omega/\text{sq}$	Conductance $6.6 \times 10^{-10} \text{ S}$ $1.8 \times 10^{-9} \text{ S}$ $6.6 \times 10^{-10} \text{ S}$
Magnetic Class	—	Diamagnetic (Non-magnetic)	
Relative Permeability	—	<1.0	

a) Surface resistance is given in Ω/sq and the corresponding conductance in Siemens (S or Ω^{-1}).

Physical Properties	Method	Value
Paint Type	—	Lacquer (thermoplastic)
Color	Visual	Semi-translucent white
Abrasion Resistant	—	Yes
Blister Resistant	—	Yes
Peeling Resistant	—	Yes
Water Resistant	—	Yes

Cured Properties

Mechanical Properties	Method	Value
Adhesion		
Acrylonitrile butadiene styrene (ABS)	ASTM D3359	5B
Polycarbonate (PC)	ASTM D3359	5B
Polyvinyl chloride (PVC)	ASTM D3359	5B
Nylon 66 (Polyamide)	ASTM D3359	5B
Aluminum	ASTM D3359	5B
Copper	ASTM D3359	5B
Brass	ASTM D3359	5B
Stainless Steel	ASTM D3359	0B
Glass	ASTM D3359	0B
Pencil Hardness		
Acrylonitrile butadiene styrene (ABS)	ASTM D3363	H, hard

Uncured Properties

Physical Properties	Mixture
Color	Off-white
Density @25 °C [77 °F]	1.06 g/mL
Viscosity @25 °C [77 °F]	TBD
Flash Point	-17 °C [1.4 °F]
Odor	Sweet

Compatibility

Chemical—Thermoplastic resin is dissolved by common paint solvents like toluene, xylene, acetone and MEK. This allows for great coating repair and work characteristics, but makes the coating unsuitable for use in solvent-rich environments.

Adhesion—844AR adheres to most plastics and metals used to house printed circuit assemblies; however, it is not compatible with contaminants like water, oil, or greasy flux residues, which may affect adhesion. In case of contamination, first clean the surface to be coated with MG Chemicals 824 Isopropyl Alcohol.

Adherence Compatibility

Substrate	Note
Acrylonitrile Butadiene Styrene (ABS)	Chemically etches ^{a)} and adheres well to this substrate.
Polycarbonate (PC)	Chemically etches ^{a)} and adheres well to this substrate.
Polyvinyl Acetate (PVA)	Chemically etches ^{a)} and adheres well to this substrate.
Polyvinyl Chloride (PVC)	Chemically etches ^{a)} and adheres well to this substrate.
Polyamide (Nylon 66)	Chemically etches ^{a)} and adheres well to this substrate.
Acrylics or Acrylic Paints	Adheres well to clean surfaces
Epoxy, FR4 substrate	Adheres well to clean surfaces
Polyurethane	Adheres well to clean surfaces for most urethane types
Wood	Adheres well with surface preparation
Brass	Adheres well with surface preparation
Copper	Adheres well with surface preparation
Aluminum	Adheres well with surface preparation

a) Etching is similar to sanding, except that it also softens the surface, helping to meld the paint to the plastic for superior adhesion.

Attention! Use with care on thin plastics or on plastics where you want to keep original surface intact. Our 844AR spray contains a controlled amount of solvents designed to chemically etch plastic surfaces. This helps adhesion by melding the acrylic coating into the plastic substrate, which prevents flaking or peeling.

Storage

Store between -5 and 40 °C [23 and 104 °F] in a dry area, away from sunlight. Storing above or below this temperature range will cause the container to rupture or collapse.

Health and Safety

Please see the 844AR-Aerosol **Safety Data Sheet** (SDS) for further details on transportation, storage, handling, safety guidelines, and regulatory compliance.

Aerosol Application Instructions

For best results, and to ensure optimal conductivity, follow the procedure below. Apply thin, wet coats as opposed to thick coats. We recommend a final dry film thickness of at least 1.0 mil [25 µm].

Prerequisites

- Clean and dry the surface of the substrate to remove oil, dust, water, solvents, and other contaminants.

Material & Equipment

- Personal protection equipment (See 844AR-Aerosol SDS).

To apply the coating:

1. Shake the can vigorously for 2 minutes, and swirl the bead around the bottom to lift settled material back into solution.
2. Spray a test pattern. This step ensures good flow quality and helps to avoid runs by establishing an appropriate distance.
3. At a distance of 20 to 25 cm (8 to 10 inches), spray a thin and even coat onto the surface. For best results, and to avoid excess paint buildup in one spot, use spray-and-release strokes with an even motion.
4. Before applying the next coat, rotate the surface 90° or change stroke direction (horizontal or vertical). This will ensure good coverage.
5. Wait one minute, shake the can, and spray on another coat. The delay will help you to avoid trapping solvent between coats.
6. Go to Step 3, and apply additional coats until desired thickness is achieved.
7. Let dry for 5 minutes (flash-off time) at room temperature.

Note: Swirling the aerosol can slightly while you wait prevents settling.

Attention!

- Holding the can at a non-vertical angle during spray application may result in uneven coating.
- Applying too thick a coat can cause runs that will hamper solvent evaporation.
- Spraying onto horizontal surfaces is not recommended.

After use, clear the nozzle of the aerosol:

1. Turn the aerosol can upside down immediately.
2. Press button until clear propellant comes out. The propellant should turn clear in a few seconds.
3. Ensure the face of the button is clean of residue by wiping with a cloth or paper towel.

Attention! Failure to clear nozzle can lead to valve being blocked open or closed in a way that is hard to spot.

- If blocked shut, the can will not be usable.
- If blocked slightly open, the contents can spill out overnight, creating a mess.

Cure Instructions**Room temperature cure:**

- Let air-dry 24 hours

Heat cure:

- After flash-off, put in oven or under heat lamp at 65 °C for 30 min.

Note: Coats that are very thick require more time to dry. Heat curing ensures optimal performance.

Attention! When heat curing, do not exceed 65 °C, as this may cause surface defects due to solvents evaporating too quickly.

Packaging and Support Products

Cat. No.	Packaging	Net Volume	Net Weight	Packaged Weight
844AR-340G	Aerosol	373 mL [12.6 fl oz]	0.08 kg [0.18 lb]	TBD

TBD = To Be Determined

Thinners & Conductive Coating Removers

- Thinner: Cat. No. 435-1L, 435-4L
- Thinner 1: Cat. No. 4351-1L, 4351-4L

Technical Support

Please contact us regarding any questions, suggestions for improvements, or problems with this product. Application notes, instructions and FAQs are located at www.mgchemicals.com.

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