Application Guide

Water Based Conductive Paints

This guide outlines the equipment and recommended application processes for applying MG Chemicals Water Based Conductive Paints (WB Series). It is the user's responsibility to determine chemical, mechanical, and thermal compatibility of the substrate prior to using any of the suggested methods.

Substrate Preparation

Most coating defects result from the presence of moisture, grease, oils, dirt, flux, and other board contaminants. Therefore, it is highly recommended to ensure the cleanliness and dryness of a surface prior to coating.

Plastics—Clean the substrate with MG's 824 Isopropyl Alcohol, so the surface is free of oils, dust, and other residues. To enhance adhesion, sometimes mechanical sanding or primers may be required for highly resistant plastics and non-plastics. After sanding and etching, clean the surface again with 824.

Drywall—For new drywall, apply directly on top of the drywall primer, after the primer has properly cured. When applying on top of existing paint, first wash the wall with a solution of T.S.P. diluted with water at a 1:10 ratio, to ensure good adhesion.

To save time, mask areas that should not be coated prior to spraying. While the WB Series can be removed with water, masking is often more efficient. Painters tape or MG's 826 Solder Mask can be used for masking.

Mixing

The WB Series must be mixed carefully before use. If the filler is not evenly mixed, the conductivity, adhesion, and quality of the coating will vary.

Mix manually using a regular spatula, as outlined below. For larger containers, use a mechanical paint shaker or a high lift propeller mixer.

1. Use a spatula to scrape the bottom and sides to break up possible deposits.
2. Stir content until coating is fully smooth and homogeneous.
3. If lumps or deposit of material can be felt or seen, continue mixing.

After the coating has been properly mixed, it is suggested that it be kept under agitation during production.

Dilution

Dilution is not required for the WB Series.

Paint Brush

The paint brush method can be used for repairs or for small scale applications.

1. Dip a clean brush into the paint (⅓ of the bristle length) to load it.
2. Tap both sides of the brush lightly against the side of can. This avoids drips and runs.
3. Brush the coating on board using long, smooth strokes. This reduces possible air entrapment, helps create an even coat, and minimizes brush marks.
4. Reload brush as soon as the coating flow starts to break.
5. Keep subsequent brush strokes in same direction; work brush into the edges of previously applied

wet coating, but do not coat over wet areas.

6. Wait at least 7 minutes, and apply another coat. Keep brush from curing by dipping it in thinner, and dry brush before reuse.
7. If required, apply additional coats until the desired thickness is achieved.

Paint Roller

The WB Series can also be applied by paint roller. Paint roller applications of these paints require a skilled technique, and should be practiced on a test substrate prior to a full scale application.

1. Adequately mix the WB Series coating in the paint tray prior to loading the paint roller.
2. Quickly load the paint roller with the paint.
3. Apply the paint roller to the surface to be coated. Do not do more than 2-3 strokes over the same location. Quickly move on to the next area after an area has been sufficiently coated.
4. Reload the paint roller as soon as the strokes are not applying sufficient coating for adequate coverage.
5. Keep subsequent strokes in the same direction; overlay the subsequent strokes.
6. Wait at least 7 minutes for drywall and 30 minutes for plastics, then apply another coat. During waiting periods, ensure the paint roller is completely cleaned and dry prior to the second coat.
7. If required, apply additional coats until the desired thickness is achieved.

Manual Spray Guns

Use a standard fluid nozzle gun to spray the mixed paint. The settings listed below are recommendations; however, performance will vary between brands.

	LVMP	HVLP
Inlet pressure	5–15 psi	5–15 psi
Air flow	10–15 SCFM	8.3 SCFM
Air cap	5–10 psi	5–10 psi

Table 1. Recommended manual spray guns setting

Table 2 lists our recommendations for selecting a nozzle tip, depending on the type of filler that are used in our WB Series paints. However, nozzle tips with different diameters can be used depending on applications.

Cat. No.	LVMP	HVLP
841WB	1.2–1.4 mm	1.2–1.4 mm
842WB	1.2–1.4 mm	1.2–1.4 mm
843WB	1.8 mm	1.8 mm

Table 2. Nozzle tip diameter for spraying the WB Series paints

If using a pressure pot and agitator, keep the agitator at low mixing speed with air pressure of 20–50 psi. Use the lowest pressure necessary to keep the particles suspended.

For best results, keep the gun-to-surface distance constant. Move the gun in a straight line along the surface, avoiding arcing motions. Use spray-and-release strokes to avoid excess coat in one spot. If possible, start and end each stroke off the surface.

At production end or before extended stoppages, clean pot, purge fluid lines, and clean the gun thoroughly.

Selective Coating Equipment

For higher volume applications, paints can be applied via selective coating equipment.

Use a system with constant fluid recirculation to keep the particles from settling in the lines. Refer to Table 2 for choosing the fluid nozzle diameter. Fluid pressure of 5–10 psi is recommended depending on nozzle size.

Agitated Pressure Pots or Cups

Use a recirculation set up with an agitated pressure pot or a cup with agitator to prevent filler settlement. Transfer the pre-mixed paints to the pressure pot. Set mixing speed sufficiently high to avoid settling issues, but not so high as it can cause centrifugal effects that collect filler to the sides. Usually, 20 rpm or more is required. Preferably, use separate air lines for the air-driven mixer and the air gun. This avoids drop in mixing speed during spraying.

Curing Process

At room temperature, the WB Series is dry-to-touch (known as recoat time) in 5-7 minutes for plastics and 20-30 min for drywall. A full cure takes about 24 hours. To accelerate the curing time let the coating dry at room temperature for 30 minutes; no wet spots should be visible. Then, when possible, put in a convection oven at 65 °C [149 °F] for 2.5 to 3 hours.

Heating a fresh coat before flashing off can trap water in the binder system. This can cause bubbles and blistering, as well as harming the final coat properties and thickness.

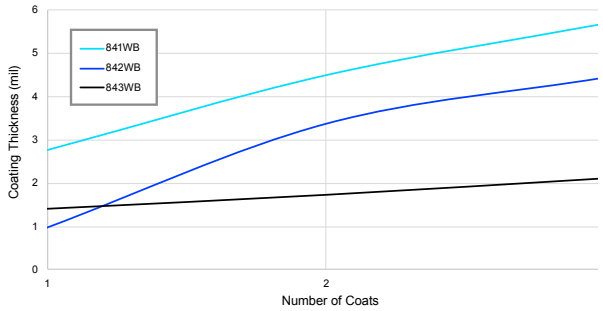
Coating Thickness

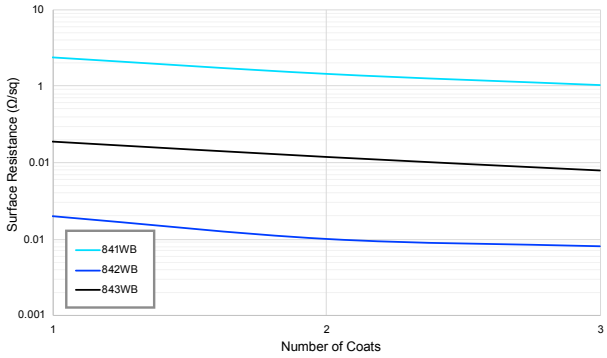
Surface resistance of conductive coating depends on the coat thickness. Typical individual coat thicknesses for each of the WB Series can be found in Table 3.

Cat. No.	Thickness per Coat	
841WB	2.0 mil	[51 µm]
842WB	0.60 mil	[15 µm]
843WB	1.2 mil	[30 µm]

Table 3. Typical coating thickness of WB Series

The below figures show the thickness and surface resistances of WB Series per number of coats.





Disclaimer

This information is believed to be accurate. It is intended for professional end-users who have the skills required to evaluate and use the data properly. M.G. Chemicals Ltd. does not guarantee the accuracy of the data and assumes no liability in connection with damages incurred while using it.

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