

LET'S TALK ABOUT PAINT

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and the
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Essentially, there are two types of paint: wet and dry. By dry, I do not mean paint that has cured, but paint that is applied in a dry state. 'Dry' paint is known as powder coating. The pigment is actually a powder that coats the surface to be covered.

We are all familiar with 'wet' paint. We've used it on our home, on the walls, on the patio furniture, and on our cars and trucks, too. There are, and have been, a variety of wet paints. They differ in that the solvent that they use differs. At one time a lacquer-based solvent was very common. Then came an oil of turpentine solvent - we called it oil-based. Then chemists figured out a way to use water as a solvent, and we had water-based paints. Aerosol paints also use a liquid solvent, but the variety of solvents varies so much that we will not even discuss them. It is enough to say that until the solvent completely evaporates - or 'cures' - the paint is still wet.

Wet paint films over; that is, the outer surface, the surface exposed to the air, dries first. But under that surface film the paint can still be in a liquid or semi-liquid state. When you read the label it often states that it is 'dry to the touch' in a certain amount of time, and fully cured after a lengthier period. That's because the paint farthest from the fresh air has not completely lost its solvent. That could take days.

When we paint at home or in our home-shop, we have to wait until the solvent is completely evaporated before the paint is tough enough to withstand handling or harder use. Fast-drying paints use a more volatile solvent and are ready for use sooner. When you send a part to a professional paint shop, they often accelerate the solvent evaporation by using heat

lamps. That, too, can be done in some cases at home, but control of the heat source can be difficult and expensive.

Wet paint can be applied in a variety of ways: brush, dipping, spraying. Each has its advantages (and disadvantages).

'Dry' paint, powder coating paint, is literally that: a powder. It is applied to a metal, electrically conductive surface. The static electric circuit holds the paint on the surface in much the same way that a balloon rubbed in your hair or against your sweater will stick to the ceiling. It is a static charge of electricity. The electricity does nothing but hold the powder to the surface until it can be converted into a non-powder form. That's done through heat. The metal part, covered in a powder, is placed in an oven where the powder literally melts, and each grain of powder becomes liquid and flows together with adjacent grains. The result is a smooth 'painted' surface. The heat, as well as the chemical composition of the powder, allows the liquid to dry rather quickly, so when removed from the oven and cooled, it is immediately usable.

We are going to discuss the pros and cons of both wet and dry painting in this issue. In future issues we will look at the equipment needed to powder coat, and the actual technique of powder coating. While at one time powder coating meant taking the part(s) to a professional powder coater and paying the (often rather high) minimum charge, today equipment is available so that the home-shop can have its own powder coating equipment, and at very reasonable prices. If your car club has a tool-lending program, this would be an excellent addition to it.

The Eastwood Company has made tremendous strides in providing quality equipment at very reasonable prices. Their home-shop oven is small enough so that it doesn't require its own building, nor does it require 220 volts. It is very user friendly. Granted, there are size limitations. Large items - wheels, frame, etc. will still have to go to the professional's shop where their production is scaled to accommodate large items.

Wet painting and powder coating do have some similarities, plus they have many differences. As a result, it is difficult to offer a one-to-

one comparison of the strengths and weaknesses of each. But we are going to try to offer a point by point analysis of each technique.

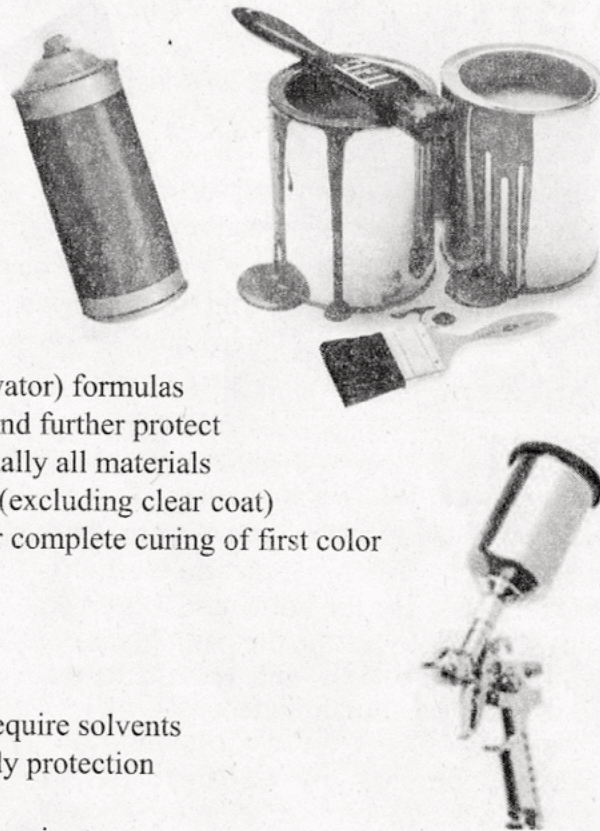
WET PAINT

- Ease of application
- May require no special equipment
- Unlimited variety of colors
- Variety of finish textures
- Can be used as touch up
- Can be used in small areas
- Variety of brushes readily available
- Available in one-component formulas
- Available in two-component (catalyst or activator) formulas
- Can use a clear-coat finish to enhance gloss and further protect
- With proper preparation, can be used on virtually all materials
- Can be polished after curing for higher gloss (excluding clear coat)
- Two-tone colors can be readily achieved after complete curing of first color

- Requires a bonding material (primer)
- Can change color as it cures
- Full cure can take up to several days
- Clean-up can be time consuming and could require solvents
- Spraying requires special face, hands and body protection
- Some paints are toxic
- Some paints require mixing two or more parts prior to use.
- Limited shelf life after mixing
- Commercial spraying often requires special ventilation and filtering equipment
- May require a thinner solvent to spray
- Disposal of solvent or excess paint may fall under local environmental regulations

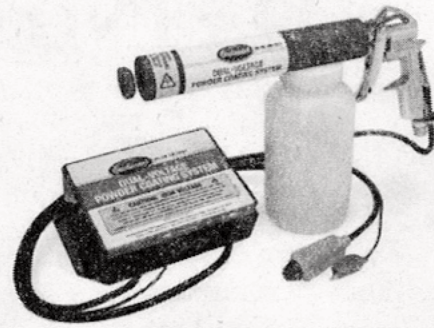
DRY PAINT (POWDER COATING)

- Provides a tough, durable finish
- Does not require a primer coat
- Can be used immediately after cooling
- Available in a range of colors or can be custom blended
- Color of the powder is the final color after curing
- Does not require solvents
- Ease of clean-up
- Does not have a short shelf life
- Does not require mixing with an activator
- Does not require a clear coat
- Two-tone effects can be achieved by masking and a second application of color
- Holes and dents can be filled with special material and then powder coated
- There are no problems with disposal



DRY PAINT (Cont't.)

- Requires special application equipment
- Does require an electrical and compressed air source
- Requires a dedicated oven*
- Face and breathing filters are required
- Must be applied to an electrically conductive material
- Cannot be used over plastic body filler
- Cannot be 'touched-up' in small areas
- Touch up with wet paint requires special preparation
- Cannot be used on moveable joints like hinges without prior disassembly
- Cannot (generally) be used on soldered joints
- Requires the same metal preparation as wet-painted surfaces
- Cannot benefit from a 'leveling' primer
- Two-tone colors require extra preparation and application
- Clear coat application requires a second baking process
- Cannot be polished as wet paint
- Not available as 'chameleon' or color-changing colors



* **DO NOT EVER** use the home cooking oven to cure powder. While curing, the paint gives off gases which may be toxic and remain in the oven. Food could be contaminated.

Surface preparation is no different whether you plan on powder coating or wet painting. Any irregularity in the metal will not only show up, but may be amplified when a gloss finish is applied. Often, when using a primer for wet paint, irregularities may become more evident and can be corrected before the final coat. The powder might mask small surface defects until the paint is cured (heated) and then the irregularities will be very evident. Powder will not fill tiny pits or scratches the way a high-build primer can.

When preparing a metal surface for powder coating, special fillers must be used. Because the powder adhesion relies on the electrical charge, non-electrically-conductive fillers, like plastic body filler or even surfacing putty will

generally not work well. Metal based fillers (like Lab-Metal or Hi-Temp Lab Metal) may be used. Regular Lab-Metal will work for items which are to be cured at 350°F (a constant temperature of 350° F – for example, a part that may require several applications cannot be cured at over 350° F, but for a one-time application, a temperature of 425° F is acceptable). Hi-Temperature Lab-Metal will withstand much higher temperatures, but the filler must be cured at 400° F for an hour prior to sanding, machining, drilling, or painting (either wet or dry paint).



In forthcoming issues we will look at the equipment required for home-shop powder coating, the basic techniques of powder coating, clean-up and filling voids with 'paste metal' which can then be powder coated.

S.K.