

LET'S TALK ABOUT PAINT

Part III - Powder Coating Technique

by Lee Carroll

You CAN powder coat at home, but probably not perfectly the first time you try it. Like almost everything else worth doing well, it takes practice, practice, and practice. I read the book, I read the instructions and I discovered many things that I didn't expect.

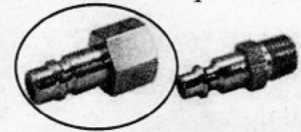
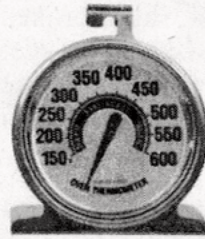
Let's start with equipment. I know that I covered this last month, but I am going to add a few things to that list. Little things, but things that will make your powder coating experience better.

Last month we discussed the curing oven. I used the Eastwood #15635 oven which has an spacious interior, but it sure seems small when you put stuff in to cure. The inside dimensions measure 15" wide x 14" deep x 8" high between the heating elements, top and bottom. As I began to work, I wished that I had an empty cardboard carton with inside dimensions about the same as the oven's. I'll explain why in a moment, but when putting your list of equipment together, include that empty carton.

I also used the Eastwood dual power powder coating gun - easy to use and pretty straightforward. There is the gun and a power box. The power box has four wires coming out. One is for 120 volt wall current, the next connects the box to the gun. The third is a small ground wire with an alligator clip on the end, and the final wire is a push button to activate the electrical part of the gun. (The trigger controls the powder flow. The two have to be used in conjunction with each other.)

The Eastwood kit #15785 comes with most everything else that you'll need: powder, extra bottles, silicon plugs, fiberglass tape and stainless steel wire.

What it doesn't come with are just very handy items - almost necessary to have. One is an oven proof glove. When you remove the rack from the oven, it is going to be 400° F. - too hot to hold with your bare hands. You need a pair of side cutters to clip and shape the stainless steel wire. You will need a face mask and eye protection. You will need a reliable oven thermometer. Get one at a local discount store. I tried a non-contact laser thermometer and was very unhappy with the results. You will need a means of controlling the air flow at about 5 - 10 psi. And you will need a connector so that you can connect your air line to the gun. The gun comes with a 1/8-NPT male thread. A female coupling for a quick-disconnect is a good choice.



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Have a pair of needle nose pliers and a larger regular plier available. You may need them to move the hot parts out of the oven. A few old bricks would be helpful. Use them to rest the hot rack when it is removed from the oven. The last thing that you need to get started is a whole bunch of empty coffee cans, tuna fish cans, metal pie plates, etc., labels removed. These are for practice. Initially you will probably go through three or four cycles of powder coating using the empty tins before you start with a good part. Make your mistakes with the throw-away items. Use them to learn, and then move on to valuable parts.

Okay. You've got everything that you need, and it's all neatly lined up so that you can begin to work. I set up the outfit in my garage, backed against the garage door. There is very little over spray of the powder, but I didn't want any of it getting on the shelves or into the cabinets in my garage. I had the oven on a rolling rack so I could move it around.

An old milk crate makes a good stand for small parts when you are shooting the powder. A 6 foot ladder with a rod extending from a chest-high step is a good stand for hanging parts when dusting them with the powder. When practicing with your tin cans, it makes no difference if the bottoms get coated. They can rest on the milk crates. It's just for practice.



Ready to get going? Put on your dust mask and eye protection. Put the oven thermometer into the oven and turn the oven on to pre-heat it to 400° F.

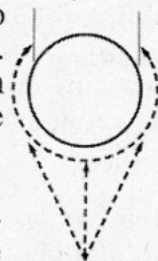
While it is preheating you will prepare the parts for the powder. If you are going to hang parts, fabricate hangers from the stainless steel wire. You will be hanging the parts from one of the oven racks. The easiest way to do it is to hang the parts from the rack, and when ready to go into the oven, lift the rack and the parts as one unit and put them into the oven.

Here's where that cardboard carton comes in. Try to fit the rack and parts into the carton before you coat them. Do they drag on the bottom of the carton? Do they bump the sides? Readjust the hangers now. It's easier to do so now rather than when they are covered with powder ready for curing. If they fit into the carton, let's move them back to the area that you have set aside to spray them. (I'm assuming that you've followed directions and cleaned and degreased the parts with acetone or Eastwood's PRE, and that you are wearing nitrile gloves.)

If more than one piece is going to be coated at one time, they have to be electrically connected (using the stainless steel

wire) so that each piece is grounded. Use a multimeter set on ohms to check that all parts are connected. You should get a reading of '0' ohms between the parts. Connect the ground wire to one of the parts.

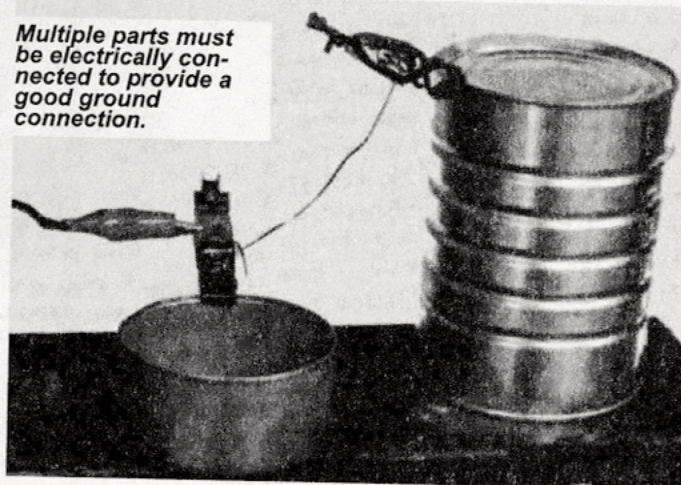
Fill the reservoir on the gun with an inch or two of the powder. Keep the tip of the gun at least 4" from the parts; ideally about 6 to 8 inches from the parts. Press the trigger of the gun while you press the activator button for the electrical. At the low air pressure that you are using, the powder will 'puff' out and will be attracted to the grounded part(s). The static electricity will 'pull' some of the powder around the sides, but it is still necessary to rotate the targets or move around to the back to achieve full coverage. Coat the parts until there is an even layer of powder and no bare metal shows through.



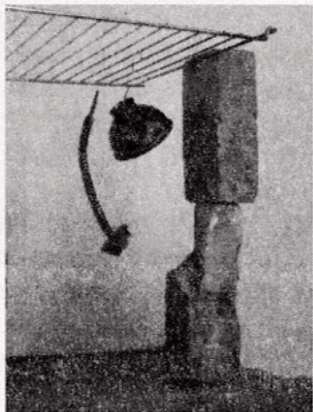
Carefully, so as not to disturb the parts, disconnect the ground, open the oven and place the rack inside. Close the door, set the timer for twenty minutes (an extra five minutes is recommended to assure that everything is heated). Now comes the hardest part: the waiting. When you are anxious to see how your work comes out, twenty minutes seems like an eternity.

When the time is up, put on the oven glove (and you may want to use a pair of pliers just to help balance the rack) and remove the rack from the oven. Place it between two stacks of bricks with the parts hanging down. Allow them to cool. Leave the oven on so that you do not have to go through the pre-heating again.

Multiple parts must be electrically connected to provide a good ground connection.



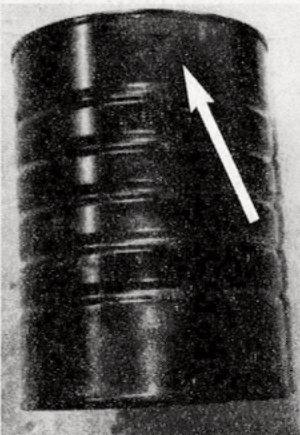
While they are cooling, you can prepare the next parts for coating. You may have had some problems with the first batch. Learn from them and figure a way so the second batch goes more smoothly. That's the practice part.



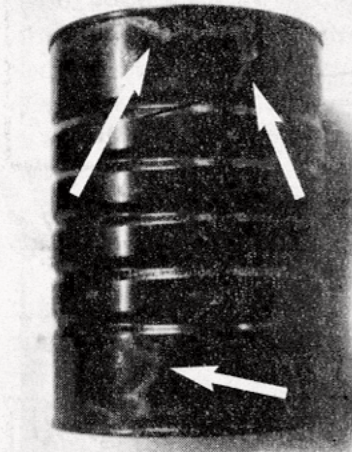
Right out of the oven the parts are hot. They must cool to complete the cure.

Before you put the second batch in the oven, examine the first parts. Are there lumps or high spots where the powder was too thick? Are there thin spots that required more powder? Were the hooks and/or ground connected in an inconspicuous place?

Correct your errors and try again. Each batch should get easier and better. When you are satisfied with the practice parts, it's time to move on to the ac-



Above: Examine for thin spots where the powder did not completely cover the metal (arrow).



Left: Preparation is extremely important. Here the adhesive holding the label onto the can was not completely removed. The powder did not adhere leaving bare spots.

tual parts that you want to powder coat. Be careful and remember the mistakes that you made. Avoid them on the actual parts.

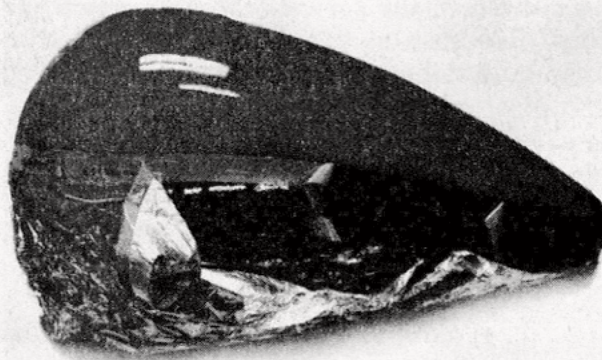
On larger parts, or for parts that must be coated both top and bottom, and to correct mistakes, the part can be re-coated. When fully cured (heated and cooled), the part may be treated to a second coat of powder.

Once properly cured, the powder coating is thermoset. It means that the cured powder coating will NOT remelt. On parts that require a finished bottom as well as a top, you can mask off the top section (wrap it with regular aluminum foil held on with fiberglass or high-temperature tape). Coat the bottom and cure it. After it is cooled, remove the aluminum foil, rest the part on the powder coated bottom, spray and cure. The bottom will not be affected by the second application and cure process.

On parts that were not completely or adequately coated the first time, the same second coating process may be done. For example, the can pictured to the left which shows thin spots may be re-sprayed and baked a second time. The second baking will not hurt the first.

If a second color has to be applied, the first color can be masked off using aluminum foil and fiberglass tape or high temperature powder coating tape. The piece can be re-sprayed with the second color and cured. Again, the first color will not be affected by the second curing process.

I have only touched on the basics of powder coating. Believe it or not, even non-metal items can be powder coated using special techniques. A number of special effects can be achieved for the more advanced pow-



The tank was first powder coated with a high-gloss black and then heated to 400° F and cooled. High-temperature powder coating tape was applied at the point the second color was to be coated. The balance of the bottom was masked with aluminum foil and it, too, was taped into place. The second color was applied and the piece again baked to 400°F before the foil was removed. When cooled, the second color covered the top half.

der-coater. The Eastwood book, Powder Coating Beginner's Guide (Eastwood #14104), discusses many of these special techniques and the processes necessary for achieving them. Reading the book before starting to powder coat is highly recommended.

Cleanup is easy. Disconnect the oven and let it cool down. Unplug the gun and the air lines. Pour the unused powder back into the original bottle. Use a small brush to brush excess powder off the gun. Sweep the excess powder from the floor. If it is clean, it can be reused. If not, discard it. After everything was swept up, I used a large wet rag to wash the floor to get the powder dust out of the pores and cracks of the concrete floor.

If you only have a few parts to powder coat, you may find that the effort and expense aren't justified for the couple of parts. Large parts will still have to go to the professional

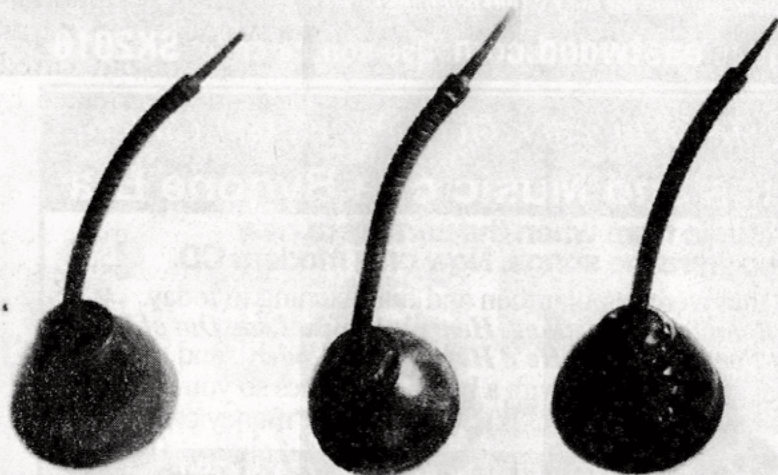
shop: wheels, dashboard or other parts too large for the oven. But first of all, there is a satisfaction in knowing that you did it yourself. And after only two or three times, you will find that you've spent less than bringing the parts to a professional powder coating shop. Word will spread quickly, and before long friends will be bringing parts to you so that you can powder coat them. Treat it as an opportunity to get additional practice and also to build up your selection of powder colors.

The Eastwood powder coating equipment also makes an excellent purchase for a club's tool sharing program. By charging a nominal fee to members to use the set-up, the club will quickly re-coup the initial costs.

S.K.

The Eastwood Company's experts are available to help you select the right tools and equipment to begin your adventure into powder coating. See their on-line catalog at www.eastwood.com, or telephone them at 800-345-1178 for sound advice. Several powder coating items are on sale for *Skinned Knuckles*' readers. See the Eastwood ad on the following page.

And PLEASE, mention *Skinned Knuckles* magazine.



Far Left: I started with an old, rusted oil can.

Center: I blasted it clean with an abrasive blaster, and then washed it thoroughly with acetone to remove any traces of oil or dirt.

Right: I hung the oil can, in two parts, from a rack, sprayed with the dry powder, and then placed it in the oven at 400° F for twenty minutes. After cooling on the rack it looks brand new. I used fiberglass tape on the male threads of the top, and silicon plugs in the opening of the bottom section of the can.

Editor's Note: I know that this was mentioned in an earlier article, but it bears repeating. **DO NOT** bake powder coated parts in the same oven as you use to prepare food. While going through the baking process, the plastic powder melts; as it melts it degasses. The fumes and chemical residue remain in the oven even after it has cooled. It still could contaminate food.

REMINDER: Classified ads for the November issue must be received by October 4, 2016. One ad per item; 6 ads maximum per issue; 25 words maximum per ad: