

Powder Coater



Machine Purpose: Finishing and Sealing of Parts

Safety: **Must wear safety glasses and respirator while operating this equipment. This machine has no built-in safety system. Beware of high voltage shock. BEWARE OF AIR BORNE POWDERS.**

Materials: Metals, High Heat Plastics and Synthetics

Machine Specs: 15,000V or 25,000V

Limitations: Materials must be able to 200-400 degrees (depending on powder you choose to use)

Accessories: Oven, Extra Powder Coat Containers

Instruction Required: None, see shop staff for assistance

Notes: Make sure your parts are clean, free of dust, oils and grease before coating



Area Prep

- Make sure booth is clean and free of excess objects
- Make sure there are no cords laying atop or too close to oven before turning on
- Preheat oven to temperature specified by powder manufacturer (use warm not bake on our oven)

Part Prep

- Remove any old coatings from your object
- Remove any dust, debris, oils, grease etc from your object

Gun Prep

- Make sure gun is clean and free of any residual powder from previous use.
 - o Never use water to clean. Always use air or clean dry cloth to wipe unit clean)
 - o Disassemble unit to clean thoroughly
- Take clean empty container and fill with powder 1-2 inches from the bottom (DO NOT FILL CONTAINER!).
- Set air pressure between 5-8 psi, this will be adjusted as necessary during operation.

Applying Powder

- Always make sure to run dust and filtration system while operating
- Suspend or support object to be coated in a manner that allows voltage clip to attach to conductive base (allowing clip to attached metal hanger, wire, directly to the part)
- Connect grounding clip to part or hanger/stand
- Set air pressure set between 5-8 psi with regulator attached to table
- Set voltage preference on base unit 15kv for smaller parts and singles, 25kv for multiple parts or large areas of coverage or for second coat.
- Keep around 4" from gun muzzle and part
- Press button on voltage activation trigger (small cylinder with single button atop that connects to voltage control box)
- Press trigger on gun and coat part with powder, hold gun at various angles and positions to get full coverage.
- Release voltage trigger when not spraying to keep risk of shock as low as possible.
- Part is fully covered when part is a dull opaque color.
- If powder is knocked on part during operation or transport to cover its best to clean part and start over



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Curing Powder

- Curing powder requires heat, check with manufacturer of your powder for the temperatures and times required for your powder.
- The high temperature changes the powder from it's dry solid state to a "glossy" liquid state. This is called the "flow out" or "gloss over". The time the powder is in this liquid state and "flows" is called the gel time. To help maximize chip resistance and produce a smooth coating, the substrate (piece you are coating) must be brought up to the cure temperature quickly and allowed to stay at that temperature for the specified cure time.
- Always preheat oven (use warm on our oven **DO NOT USE BAKE**)
- Carefully as to not knock the powder, transfer your part from what ever rack or holding you are using to the oven.
- Close door and wait 5 minutes. After 5 minutes check to see if your part has glossed over, if not wait another 5 and check again as necessary until ALL powder has glossed over.
- Once part has entirely glossed over start the your timer as required by your powder manufacturer (typically 20 minutes at 400f).
- After 20 minutes remove piece from oven or crack open door allowing part to cool slowly.
- Once cool part can be second coated or is now finished.

2nd coat

- Not always necessary but you can apply a second coat for extra protection if desired.
- Higher voltage may be necessary for static charge to penetrate through coating
- 2nd coat can be applied hot after first cure time
- Grounding clip needs a bare metal path to work effectively

Clean up

- Turn off oven
- Transfer remaining powder in container to original container for reuse
- Wipe and blow gun clean of any remanences from your job. Anything that is left over can contaminate and effect the color of the next job run.
- Vacuum, brush, and wipe down the area and area around where you powder coated.
- Put away any custom work holding or jigs used
- Stay with oven until fully cooled down.



Tips, tricks and other knowledge

- Preheat parts to burn off excess moisture and off gas any trapped gases from production. Preheating part will also allow powder to more efficiently stick.
- Low spots/dents/dings – Fill these with a metal filler able to withstand 400 deg F. Never built up more than 1/16 layers or peeling may occur
- Mask holes, threads and other parts you wish not to be coated with hi temp tape, silicone plugs, or foil.
- 25kv can be too high of a voltage for some parts and actually may cause repelling
- Powder is difficult to apply to corners or deep recesses, try using gravity to your advantage or preheat.
- Powder will less efficiently stick as powder builds up on the emitter (tip of the gun), wipe or blow to clean off as powder builds up (remember to release activation button or shock will occur)
- Larger pieces can require longer to fully gloss over
- Clear and gloss typically require less heat or yellowing will occur
- Some coatings (chrome, smoke, silver) require a second coat for protection.
- To avoid chipping after being put into service use try to use washers under bolt heads.
- The deflector (cone on the tip of the gun) is not always necessary and can be removed. If installed should be 3/16" from the end.

