

POWDER COATING

TROUBLE SHOOTING GUIDE

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TROUBLE

POSSIBLE CAUSES

SOLUTIONS

<p>1. Poor charging-inadequate powder film thickness or poor coverage.</p>	<p>1. High voltage source not providing enough KV at charging electrode.</p> <p>2. Poor ground.</p> <p>3. Powder delivery rate is too high.</p> <p>4. Excessive moisture in powder booth air.</p> <p>5. Powder too fine.</p> <p>6. Powder type or formula.</p> <p>7. Powder delivery air too high. Powder blowing by part.</p>	<p>1a. Check if high voltage source is on. Systematically check electrical continuity from voltage source to electrode; including cable, resistors and fuses.</p> <p>1b. Replace missing or broken electrode.</p> <p>1c. Clean electrode insulated by powder buildup or impact fusion.</p> <p>2. Check ground from conveyor rail (or rub bar when used) through hanger to part. All contact areas must be free of powder buildup, heavy grease and other insulating materials.</p> <p>3. Reduce powder delivery rate until material is adequate charged.</p> <p>4. Moisture in humid air will tend to dissipate the charge on the powder particles. Control the humidity in the powder spray area.</p> <p>5a. Maintain consistent blend of virgin and recycled powder.</p> <p>5b. Check particle size of powder. Contact your powder supplier.</p> <p>6. Some powder formulations charge better than others and some formulas are designed for thin film application. Contact your powder supplier.</p> <p>7. Turn down air setting or move gun position farther away from part.</p>
<p>2. Poor penetration. Powder will not coat Faraday cage area (holes, grooves, channels, inside corners and recesses).</p>	<p>1. Powder delivery too low.</p> <p>2. Poor ground.</p> <p>3. Incorrect powder spray pattern.</p> <p>4. Voltage too high.</p> <p>5a. Powder delivery velocity too high.</p> <p>5b. Powder delivery velocity too low.</p> <p>6. Poor gun placement.</p>	<p>1. Turn up powder delivery air setting.</p> <p>2. Check ground. Refer to Section A, Trouble 1, Cause 2.</p> <p>3a. Adjust powder spray pattern.</p> <p>3b. Try alternative nozzle selections.</p> <p>4. Turn voltage setting down so that surfaces closer to the gun do not repel powder from corners.</p> <p>5a. Turn air setting down so powder air stream does not blow powder out of corners.</p> <p>5b. Increase air setting to deliver powder into corners.</p> <p>6. Adjust gun position so powder cloud has a direct path to recessed areas.</p>
<p>3. Back ionization-powder layers are repelled from part.</p>	<p>1. Voltage too high.</p> <p>2. Gun positioned too close to part.</p> <p>3. Poor ground.</p> <p>4. Excessively heavy powder build-up.</p>	<p>1. Turn down voltage setting.</p> <p>2. Change gun placement farther away from part.</p> <p>3. Check ground. Refer to Section A, Trouble 1, Cause 2.</p> <p>4. Refer to Section A, Trouble 1, Cause 3.</p>
<p>4. Powder feed surging or spitting-interrupted powder feed.</p>	<p>1. Insufficient air pressure or volume.</p> <p>2. Hoses kinked, flattened or too long.</p> <p>3. Hoses, powder pumps or suction tubes.</p> <p>4. Incorrect powder delivery.</p> <p>5. Incorrect feed hopper fluidizing.</p> <p>6. Low powder level.</p>	<p>1. Check air supply. Determine if air supply piping to equipment is large enough. Enough air volume must be provided so that air pressure to powder feed does not drop.</p> <p>2. Check powder feed hose routing and condition. Refer to Section B, Trouble 5, Cause 2.</p> <p>3a. Clean hoses, powder pumps and guns.</p> <p>3b. Check air supply for moisture.</p> <p>3c. Check powder delivery settings.</p> <p>3d. Check coating area relative humidity and temperature.</p> <p>3e. Check powder delivery system for vacuum leaks.</p> <p>4a. Check powder delivery settings.</p> <p>4b. For low powder delivery rates, increase powder transport air flow settings.</p> <p>4c. Replace powder hose with smaller inside diameter hose.</p> <p>5a. Adjust fluidization air pressure.</p> <p>5b. Check porous fluidizing membrane for clogging or defects.</p> <p>5c. Refer to Section B, Trouble 3.</p> <p>6. Add powder.</p>
<p>1. Powder blowing out of hopper.</p>	<p>1. Fluidization air pressure too high.</p> <p>2. Insufficient hopper ventilation.</p>	<p>1. Adjust air regulator to lower pressure to fluid bed.</p> <p>2a. Check hopper vent for plugging.</p> <p>2b. Check vent assist device for obstruction and proper air supply.</p>
<p>2. No air percolating through powder surface.</p>	<p>1. Insufficient air pressure.</p> <p>2. Plugged membrane.</p> <p>3. Obstructed membrane.</p> <p>4. Compacted powder on membrane.</p>	<p>1. Check hopper fluidization air supply. Increase air pressure as required.</p> <p>2. Check membrane for plugged pores from dirty or oil air supply.</p> <p>3. Check bottom of hopper for obstructions.</p> <p>4. Manually loosen powder and fluidize well with clean, dry air.</p>
<p>3. Poor fluidization/air blowing large holes through powder surface.</p>	<p>1. Powder level too low.</p> <p>2. Packed or moist powder.</p> <p>3. Obstructed membrane.</p> <p>4. Plugged or broken membrane.</p>	<p>1. Add powder until hopper is filled to proper level.</p> <p>2a. Manually loosen powder and fluidize well with clean, dry air.</p> <p>2b. Check compressed air and booth air for high humidity or oil content.</p> <p>2c. Powder sieving may be required.</p> <p>3. Check bottom of hopper for obstructions.</p> <p>4a. Check membrane for plugged pores or oil contaminated air supply, cracks or holes.</p>

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<p>4. Plugged hoses and/or powder pumps from impact fusion buildup.</p>	<p>5. Powder particle size.</p> <p>6. Insufficient fluidizing characteristics of powder.</p> <p>1. Normal buildup. 2. Air pressure too high.</p> <p>3. Moisture in air supply.</p> <p>4. Composition of powder feed hoses.</p> <p>5. Worn powder pumps and parts. 6. Powder particle size.</p> <p>7. Powder type or formula.</p> <p>8. Kinked or flattened hoses.</p>	<p>4b. Check for proper seating of membrane/leaking around edges.</p> <p>5a. Maintain consistent blend of virgin and recycled powder.</p> <p>5b. Check particle size of powder in hopper.</p> <p>6. Contact your powder supplier.</p> <p>1. Clean or replace parts.</p> <p>2a. Reduce powder hose length.</p> <p>2b. Turn down air settings on pumps and guns.</p> <p>3. Check air supply for clean, dry, oil free air.</p> <p>4. Check hoses. Contact your equipment supplier.</p> <p>5. Replace all worn parts.</p> <p>6a. Maintain consistent blend of virgin and recycled powder.</p> <p>6b. Check particle size of powder in hopper. Contact your powder supplier.</p> <p>7. Some powder types are more susceptible to impact fusion. Contact your powder supplier.</p> <p>8a. Avoid sharp bends and restrictions in the hose. Protect hoses from external abrasion and abuse.</p> <p>8b. Replace if permanently deformed.</p> <p>9. Reduce powder hose length; modify hose runs.</p>
<p>5. Insufficient powder feed.</p>	<p>1. Powder not fluidizing. 2. Obstruction of powder delivery system.</p> <p>3. Powder hose too long, or has too many sharp bends.</p> <p>4. Low air pressure.</p>	<p>1. Refer to section B, Trouble 2 and 3.</p> <p>2a. Check suction tubes, powder pump, hose and gun.</p> <p>2b. Check powder supply for contamination.</p> <p>2c. Sieve powder before using.</p> <p>3. Reduce powder hose length; modify hose runs.</p> <p>4. Check air supply. Adjust air settings to pumps and guns.</p>
<p>1. Part surface contamination.</p>	<p>1. Powder or contamination falling in spray booth from conveyor or hangers.</p> <p>2. Contamination from parts entering spray booth.</p> <p>3. Contamination from plant air circulated through spray booth.</p> <p>4. Contamination from compressed air supply. 5. Powder sieve screen torn, missing. 6. Inoperable powder sieve.</p>	<p>1. Clean conveyor regularly (or continuously) before it enters powder spray booth. Strip hangers as needed.</p> <p>2. Check cleaning and pretreatment equipment for proper operation. Ensure proper part drying before part enters spray booth.</p> <p>3. Insulate spray booth area. Preferably, enclose in a room with filtered, humidity controlled air. Maintain positive pressure in coating room. Inspect nearby operations as possible contamination sources; correct as necessary.</p> <p>4. Check compressed air supply system.</p> <p>5. Replace sieve screen.</p> <p>6. Repair sieve or sieve control circuitry or replace, if necessary.</p>
<p>2. Poor powder containment. Inadequate air flow through spray booth.*</p>	<p>1. Primary filters media blinding.</p> <p>2. Final filters clogged.</p> <p>3. Use of compressed air for booth clean down.</p> <p>4. Improper powder gun placement/alignment.</p> <p>5. Room drafts leading to powder drifting from booth.</p> <p>6. Blocked airflow.</p>	<p>1a. Clean or replace filter media as required.</p> <p>1b. Check ambient air humidity in coating area.</p> <p>1c. Check filter media air pulse operation.</p> <p>1d. Check for moisture/oil in compressed air supply</p> <p>2. Check primary filter media for powder leakage. Service, repair or replace as needed.</p> <p>3. Refer to operations manual for proper cleaning procedures.</p> <p>4. Correct as necessary, position guns away from openings.</p> <p>5. Map airflow in powder booth area. Minimize drafts to eliminate powder drift.</p> <p>6a. Check air volume control damper adjustment.</p> <p>6b. Check fire safety device for proper operation.</p>
<p>3. Cross contamination of recycled powder.</p> <p>4. Booth turbulence.</p> <p>5. Powder recovery percentage below equipment specification.</p>	<p>7. Inadequate blower operation.</p> <p>1. Inadequate booth/recovery equipment cleaning.</p> <p>1. High powder containment air velocity. 2. Poor system seals. 3. Too high a percentage of powder fines.</p>	<p>7. Check for proper operation.</p> <p>1. Clean equipment per equipment supplier recommendations.</p> <p>1. Contact equipment supplier.</p> <p>1. Refer to Section C, Trouble 2 above.</p> <p>2. Verify and correct any air leaks.</p> <p>3. Contact your powder and equipments suppliers.</p>
<p>1. Oven temperature does not equal set point.</p>	<p>1. Electrical wiring between thermocouple and heat source fault.</p> <p>2. Temperature controller out of calibration or failure. components.</p> <p>3. Thermocouple or capillary failure.</p> <p>4. Surrounding area has excessive positive or negative pressure.</p> <p>5. Air seals, relief hoods or exhaust system failure.</p> <p>6. Air turbulence.</p> <p>7. Low gas pressure.</p> <p>8. Exceeding capacity of product mass loading.</p> <p>9. Fuel/Air ratio incorrect.</p> <p>10. Placement of temperature sensor.</p>	<p>1. Check circuitry to ensure continuity between all components.</p> <p>2. Calibrate and/or replace defective</p> <p>3. Replace.</p> <p>4. Check surrounding area pressure conditions. Correct as needed.</p> <p>5. Check all air handling equipment for mechanical and air volume performance. Do an air survey of all make-up and exhaust air. Make necessary corrections.</p> <p>7. Check inlet gas pressure with manometer and set to recommended specifications.</p> <p>8a. Reduce total product mass loading.</p> <p>8b. Contact oven supplier.</p> <p>9. Adjust to recommended specifications.</p> <p>10. Check temperature at sensor vs. average oven temperature at product. Contact oven supplier for necessary changes.</p>
<p>2. Pilot will not light.</p>	<p>1. Main valve closed.</p> <p>2. One or more safety controls are open.</p>	<p>1. Open main valve.</p> <p>2. Trace wiring correct faulty "tripped" safety control.</p>

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	<ol style="list-style-type: none"> Gas pressures not set to manufacturer's specifications. Ignition transformer igniter fault. 	<ol style="list-style-type: none"> Reference burner manufacturer's specifications. Check igniter, clean and/or replace. Check ignition cable/connector, replace if necessary. Check ignition transformer, replace if necessary.
3. Main burner will not light. (Gas/Oil).	<ol style="list-style-type: none"> Improper pilot setting. Purge cycle not complete. 	<ol style="list-style-type: none"> Check pilot orifice setting at burner, follow burner manufacturer's specifications. Complete cycle. Check purge timer for correct operation.
4. Dirt/Contaminant on coated product.	<ol style="list-style-type: none"> Main valve closed. Fuel manifold valves and/or one more safety control circuits open. Pilot valve not open. Faulty signal from flame supervision system. Gas pressures not set to manufacturer's recommendations. Fuel control motor failure. Faulty air flow switch. 	<ol style="list-style-type: none"> Open main valve. Trace wiring look for fault or "tripped" safety control. Inspect and replace if necessary. Monitor signal with proper instruments, adjust or replace. Reference burner manufacturer's specifications, correct as necessary. Repair and/or replace. Check all air flow switches for proper settings and performance. Repair as necessary.
5. Coil will not energize. (electric heat)	<ol style="list-style-type: none"> High temperature limit switch lock-out activated. 	<ol style="list-style-type: none"> Correct cause of high temperature. Allow oven to cool, press reset limit switch prior to starting oven.
6. Powder blown off product prior to cure.	<ol style="list-style-type: none"> Dirt/contaminant in oven interior. 	<ol style="list-style-type: none"> Clean entire oven interior, including duct system and heat house.
7. Power on but infrared units do not heat up.	<ol style="list-style-type: none"> Carbon particulates. 	<ol style="list-style-type: none"> Clean and/or replace oven filtration equipment.
8. Heater elements do not come up to full heat.	<ol style="list-style-type: none"> Wiring fault. Fuse/breaker power supply fault. 	<ol style="list-style-type: none"> Clean oven air handling equipment. Check surrounding area pressure conditions. Correct as needed.
9. Heater will not start up.	<ol style="list-style-type: none"> Air flow too low through coil. 	<ol style="list-style-type: none"> Check condition of conveyor in oven. Clean, lubricate, or replace as needed. Ensure proper lubricant is being used. Burner firing off ratio, test and balance burner.
10. Heater unit does not come up to full heat.	<ol style="list-style-type: none"> High air impingement on product. 	<ol style="list-style-type: none"> Check all wires and connections. Correct condition that caused fuse/breaker to fail. Replace with same size fuse or reset breaker. Check air flow sensor. Repair or replace. Check for adequate air flow. Correct as needed.
11. Heater unit output is too high.	<ol style="list-style-type: none"> Exhauster motor starter failure, wiring fault to exhauster interlocks. Wiring fault to system interlocks i.e., conveyor or booth. Percentage timer, temperature controller failure. Thermocouple failure. Contact coil not energized or failed. 	<ol style="list-style-type: none"> Reduce or redirect air flow on product. Repair or replace starter, check circuitry to ensure continuity. Check circuitry to ensure continuity. Repair or replace defective components. Replace. Ensure continuity of circuitry from percentage timer or temperature controller to contact coil. Correct condition which caused fuse to fail and replace with same size fuse. Ensure continuity between contact points.
1. Chemical cross contamination.	<ol style="list-style-type: none"> Contact fuse blown. Wiring fault from control panel to heater elements. 	<ol style="list-style-type: none"> Correct condition which caused fuse to fail and replace with same size fuse. Repair or replace. Ensure continuity to elements, ensure connections are not loose. Check circuitry for continuity. Correct condition which caused fuse/breaker to fail and replace with same size fuse or reset breaker. Open valve. Reference manufacturers supply pressure recommendations and correct as necessary.
2. Dirty parts.	<ol style="list-style-type: none"> One of three fuses blown on three phase circuit from contactor to elements. Element burn out or partial burn out. Wiring fault to heater element. 	<ol style="list-style-type: none"> Reference manufactures supply pressure recommendations and correct as necessary. Clean as required. Reference element manufacturer's specifications and repair or replace. Repair or replace. Used only the types of gas unit is designed for replace injector orifice for new gas source. Reference manufacturers supply pressure recommendations and correct as necessary. Orient all parts to maximize drainage. Ensure adequate drain time between stages. Contact washer supplier. Check flow rate and temperature in each stage. Adjust per manufacturer's specifications. Clean and check spray nozzles. Replace as necessary. Position and set spray nozzles for maximum part coverage and impingement. Reference design guidelines for type of nozzles (i.e. flood or scrubbing type) and flow rate. Check operating specifications for chemicals. Contact chemical supplier. Heat exchanger (tube, coils, etc.) coated with chemical sludge. Clean as required. Ensure heat source operating properly.

THANK YOU !

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