



Powder Coatings Troubleshooting Guide

Fluidizing Bed		
Problem	Potential Cause	Solution
1. Dusting – powder blowing out of hopper	Air pressure too high	Adjust air regulator pressure to fluid bed
	Powder too fine	Adjust virgin / reclaim mixture
	Insufficient vent on hopper or plugged	Virgin powder ground too fine
2. No air – percolating through powder surface	Insufficient air pressure	Check air supply; increase air regulator pressure
	Compacted powder	Check air line size to equipment
3. Rat holing – air blowing large jet holes into powder surface	Powder level too low	Add powder; hopper should be 2/3 full when fluidized
	Packed or moist powder	Check compressed air and application room for moisture/high humidity
	Broken or plugged membrane	Check membrane for plugged pores from dirty air supply, cracks or holes
4. Stratification – powder separating into layers of fine and coarse particles	Powder too fine	Adjust virgin / reclaim mixture

Hoses & Pumps		
Problem	Potential Cause	Solution
5. Plugged from impact fusion	Normal build-up / routine maintenance not being done	Clean or replace parts; set standard procedure for maintenance
	Air pressure too high	Use lower air pressure settings on gun and transfer pumps
	Moisture in compressed air supply	Check compressed air supply for clean, dry air
	Powder is too fine	Adjust virgin / reclaim mixture
6. Insufficient powder feed to gun	Powder not fluidizing properly	See <i>Fluidizing Bed</i> section
	Obstruction in powder supply	Check and clean pick-up tubes, pumps and hoses
		Check sieve screen for tears and proper operation
	Hoses kinked or crushed	Replace deformed hoses; avoid sharp bends
	Worn pump venturiers	Replace worn parts; set standard procedure for maintenance
	Low air pressure	Check air supply for obstructions; adjust air settings to pumps

Application		
Problem	Potential Cause	Solution
7. Poor charging, low film build, insufficient wrap	Low or no voltage at electrode	Check for voltage at electrode, cable and power supply
		Replace missing or broken electrodes
		Clean build-up from electrodes
	Poor ground	Check ground from conveyor through hanger to part; adequate ground is less than 1 megohm
		Remove any build-up of insulating materials from conveyor and hangers
		Control humidity to the proper specification for your system (40-60% RH)
8. Poor penetration – powder will not coat in Faraday cage areas	Voltage too high or too low	Adjust voltage so that powder builds on edges evenly and does not repel corners
	Powder / air velocity too high	Reduce air pressure so that powder does not blow out of recesses
	Poor ground	Check for adequate ground not to exceed 1 megohm
	Improper technique or gun placement	Adjust gun so that powder is directed at surfaces adjacent to the corners
	Improper spray pattern	Select different nozzle or deflector; see your equipment manufacturer
	Powder too fine	Adjust virgin / reclaim mixture
	Voltage too high	Reduce voltage setting
	Poor ground	Check for adequate ground not to exceed 1 megohm
9. Back ionization – powder repelled from part	Powder too fine	Adjust virgin / reclaim mixture
	Insufficient air pressure or volume	Check air supply lines for proper size; see equipment specifications
		Increase atomizing air pressure
	Hoses kinked, crushed or too long	Replace deformed hoses, avoid sharp bends; hoses should be as short as practical
10. Guns spitting, spurting – inconsistent powder feed	Hoses, pumps, pick-up tubes, or guns clogged	Check/clean hoses, pumps, pick-up tubes and guns
		Check compressed air for sufficient dryness
	Powder too fine	Adjust virgin / reclaim mixture
	Powder not fluidizing	See <i>Fluidizing Bed</i> section
11. Poor spray pattern	Worn gun parts	Replace worn nozzles, deflectors and electrode sleeves
	Blockage from impact fusion	Clean any impact fusion from parts; set standard procedure for maintenance
	Hoses, pumps, pick-up tubes or guns clogged	Check/clean hoses, pumps, pick-up tubes and guns
		Check compressed air for sufficient dryness
		Control humidity to the proper specification for your system

Appearance		
Problem	Potential Cause	Solution
12. Craters	Oil or moisture in air lines	Inspect air lines and, if necessary, install filters
	Contamination with incompatible materials	Inspect for presence of incompatible materials throughout the process
	Contamination with incompatible powder	Clean guns, hoses and hoppers; use virgin powder
	Inadequate cleaning or pretreatment	Check pretreatment equipment and concentrations; consult pretreatment supplier
13. Poor color and poor opacity	Over-cured / under-cured	Run oven profile to determine if recommended time at temperature is achieved; increase / decrease oven temperature or increase / decrease line speed
	Contamination from incompatible powders	Clean guns, hoses and hoppers; use virgin powder
	Out-gassing / micro-pinholes	Check for moisture in compressed air or powder
	Improper oven exhaust	Check for blockage in exhaust stacks
14. Poor flow – too much orange peel	Film thickness too low	Increase film by using higher voltage, longer spray time or a more dense powder cloud
	Powder too fine	Adjust virgin / reclaim mix
	Oven temperature too high	Reduce oven temperature and/or time in oven
15. Sags	Film thickness too high	Decrease film by using lower voltage, shorter spray time or a less dense powder cloud
	Oven temperature too low	Increase oven temperature and/or time in oven
16. Pinholing	Moisture in compressed air or powder	Check for moisture in compressed air or powder
	Film thickness too high	Decrease film build by using lower voltage, shorter spray time or a less dense powder cloud
	Oven temperature too high	Reduce oven temperature and/or time in oven
	Substrate porosity	Check substrate for porosity

Cured Film Properties		
Problem	Potential Cause	Solution
17. Poor impact resistance / flexibility	Under-cured	Run oven profile to determine if recommended time at temperature is achieved; increase oven temperature / decrease line speed
	Inadequate cleaning or pretreatment	Check pretreatment equipment and concentrations; consult pretreatment supplier
	Film thickness too high	Lower film thickness by adjusting application equipment
18. Poor adhesion	Under-cured	Run oven profile to determine if recommended time at temperature is achieved; increase oven temperature / decrease line speed
	Inadequate cleaning or pretreatment	Check pretreatment equipment and concentrations; consult pretreatment supplier
	Film thickness too high	Lower film thickness by adjusting application equipment
19. Poor corrosion resistance	Inadequate cleaning or pretreatment	Check pretreatment equipment and concentrations; consult pretreatment supplier
	Under-cured	Run oven profile to determine if recommended time at temperature is achieved; increase oven temperature / decrease line speed
20. Poor pencil hardness, poor abrasion resistance	Under-cured	Run oven profile to determine if recommended time at temperature is achieved; increase oven temperature / decrease line speed



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