POLYBOND COATING PVT. LTD.

TROUBLE SHOOTING GUIDE FOR POWDER COATING

TROUBLE	POSSIBLE CAUSE	POSSIBLE SOLUTIONS
1) Problems related to Electrostatic Coating Operation :		
1. Poor charging - inadequate Powder build or wrap on part OR Pull-way or tearing - Coating film shrinks leaving bear substrate	• High voltage source not providing enough kv at charging electrode or grid	• Check high voltage source is on & check continuity from voltage source to electrode • Replace missing or broken electrode insulated by powder build • Clean electrode insulated by powder build
	• Poor ground	• Check ground from conveyor rail through hanger to part. All areas must be free from grease & insulating material
	• Powder delivery is too high	• Turn down powder feed
	• Excessive moisture in powder booth air	• Moisture in humid air will tend to dissipate humidity in the powder spray area
	• Powder too fine	• Too much reclaim added to virgin powder • Virgin powder pulverised too fine by manufacturer
	• Powder type or formula	• Some resin type charged better than others & some formulas are designed for specific application
	• Powder delivery air too high - Powder blowing by part	• Turn down air setting or move gun position away from parts
2. Poor Penetration - Faraday cage	• Powder delivery too low	• Increase powder delivery air settings • Use barrel extension
	• Poor ground	• Check ground from conveyor rail through hanger to part. All areas must be free from grease & insulating material
	• Powder spray pattern too wide	• Select smaller deflector
	• Voltage too high	• Turn voltage setting down so powder builds on parts edges & leading surfaces do not repel powder from corners

	• Powder delivery velocity too high	• Turn air setting down so powder/air stream does not blow powder from corners
	• Poor gun placements	• Adjust gun position so powder cloud has direct path to recess area
	• Powder too fine	• Too much reclaim added to virgin powder • Virgin powder pulverised too fine by manufacturer
3. Back charging - Powder layers are repelled from part in spots.	• Voltage to high .	• Turn down Voltage setting
	• Gun positioned to close to part	• Change gun placement away from part
	• poor ground	• Check ground from conveyor rail through hanger to part. All areas must be free from grease & insulating material
	• Powder too fine .	• Too much reclaim added to virgin powder • Virgin powder pulverized too fine by manufacturer
4. Powder picks up charge through powder hoses.	• Powder booth air to dry	• Adjust humidity of powder spray area
	• Poor delivery and/or reclaim equipments ground	• Provide ground for all equipment
5. Powder feed spurting or slugging - Interrupted powder feed	• insufficient air pressure volume	• check air supply. Air supply to piping and equipment is sufficient or not. Enough air volume must be provided.
	• Hoses kinked,flattened or too long	• Check powder feed hoses
	• Hoses, pump venturies or guns clogged with powder.	• Clean hoses, venturies and guns • Check air supply for moisture that causes powder compaction. • Check spray booth air humidity • Check powder supply for contamination. Check reclaim sieve.
6. Poor spray pattern -not a symmetrical powder cloud	• Worn gun parts.	• Replace worn feed tubes, orfices deflectors and covers.
	• Impact fusion build	• Clean gun parts as needed
	• Delivery (feed) air too low.	• Check air supply. Increase air for powder feed
	• Hoses, venturies or gun blocked with powder	• Clean hoses, venturies and guns

2) Problems Related to Collection and reclamtion operation :		
1. Contamination in reclaim powder	• Reclaim in - line sieve torn, missing or in operable	• Replace sieve or repair as necessary.
	• Powder or dirt falling in spray booth from conveyor or hangers	• Clean conveyor regularly (or continuously) before entering powder spray booth. Strip hangers as needed.
	• Contamination from parts entering spray booth .	• Check cleaning and pre treatment equipment and ensure proper part drainage before spray booth.
	• Contamination form plant air circulated through spray booth	• Isolate spray booth area. Preferably enclose in a room filtered & humidity controlled air.
2. Spray booth dusting - Inadequate air flow through spray booth	• Bag or cartride filters blinding	• Clean/replace bags or cartridge filters • Check spray booth air humidity • Check reverse air cleaning
	• Final filters clogged .	• Check filter bag/cartridge for powder leakage, repair or replace as needed
	• Too large of open area in spray booth housing	• Reduce open area. Increased opening reduces booth air velocity
	• Powder delivery (feed) to high	• Reduce the number of spraying or the amount of powder to each gun .

3) Problems of Coating finish - cured physical properties :		
1. Poor impact resistance / poor flexibility	• Under cured	• Increase oven temperature • Increase dwell time in oven
	• poor cleaning or pre-treatment	• Check pre-treatment equipment & chemicals
	• Film thickness too high	• Reduce film thickness by adjusting application equipment .
	• Change in substrate thickness or type	• Check substrate with supplier
	• Powder resin type or formula	• Check with powder manufacturer
2. Poor adhesion	• Poor cleaning or pre-treatment	• Check pre-treatment process and chemicals
	• Change in substrate.	• Check substrate with supplier
	• Under cured	• Increase oven temperature • Increase dwell time in oven
	•Powder resin type or formula	• Check with powder manufacturer
3. Poor corrosion resistance	• Poor cleaning or pre-treatment	• Check pre-treatment equipment and chemicals

	● Under cured	● Increase oven temperature ● Increase dwell time in oven
4. Poor chemical resistance	● Under cured	● Increase oven temperature
		● Increase dwell time in oven
	● Powder resin type or formula	● Check with powder manufacturer
5. Poor pencil hardness or poor abrasion resistance	● Under cured	● Increase dwell time in oven
	● Powder resin type or formula	● Check with powder manufacturer
6. Too much orange peel Poor surface flow	● Film thickness too thin	● Increase film thickness by ajusting application equipment
	● Heat-up rate too slow	● Increase oven temperature
		● Modify oven baffllling to increase heat rate
	● Powder resin type or formula	● Check with powder manufacturer
7. Gloss too low for high gloss powder	● Incompatible powder contamination	● Clean application equipment before changing powders
	● Micro-pinholing from gassing	● Check substrate for porosity ● Check substrate for moisture ● Check powder for moisture from reclaim or compressed air ● Check film thickness, coating to thick
	● Over cured film	● Check oven temp.
	● Powder resin type or formula	● Check with powder manufacturer
8. Gloss to high for a low gloss powder	● Under cured.	● Increase temperature of oven ● Increase dwell time in oven
	● Powder formula	● Check with powder manufacturer
9. Contamination in powder	● Virgin powder contaminated	● Check with powder manufacturer
10. Inconsistent film thickness.	● Guns positioned wrong	● Check & reposition guns so that spray patterns overlap slightly
	● Reciprocators not matched to line speed.	● Adjust line speed. Adjust reciprocator stroke
	● Air flow in booth disturbing spray pattern	● Consult your equipment supplier
	● Defective spray equipment	● Correct the Spray Pattern properly
11. Off color.	● Improper oven exhaust	● Check exhaust vent fans
	● Bake time too long	● Adjust line speed
	● Oven temperature too high	● Lower oven temperature
	● Variation in film thickness	● Check the Problem of "Inconsistent film thickness".
	● Powder formula	● Check with powder manufacturer

12. Pinholing and gassing through coating surface	• Micro-pinholing from gassing	• Check substrate for porosity • Check substrate for moisture • Check powder for moisture from reclaim or compressed air. • Check film thickness, coating to thick
13. Pull-way or tearing - Coating film shrinks leaving bear substrate	• Poor cleaning metal preparation or dry off	• Check pre-treatment process dry of oven and part drainage

4) Problems related to Powder Applications :		
1. Poor fluidizing properties in the powder hopper	• Pressure of fluidizing air too low	• Adjust (increase) pressure of fluidzing air
	• Fluidizing membrane is blocked	• Clean/replace the fluidzing membrane
	• Humidity of compressed air too high	• Install an air dryer with corresponding oil - micro filter or another suitable drying system
	• Humidity of the powder to high	• Check storage facilities. Powder shall be stocked at room temperature (30°c) in closed packing (max.humidity 60%)
	• Free flowing properties of the powder poor.	• Contact your powder supplier
2. Blockage in venturies and hoses	• Fusing of the powder in the venturi	• Clean or replace the hoses, if necessary reduce pressure of powder of transport air
	• Fusing of the powder in the hoses	• Clean the hose by bending & breaking up the fused powder if necessary replace it
	• Fusing of the powder in the hoses	• Install an air dryer with a corresponding oil micro filter or an air dryer with a corresponding oil micro filter or another
	• Bad free flowing properties of the powder	• Contact your powder supplier
3. Blockage in the gun .	• Fusing in the gun or gun outlet	• Clean the gun according to instruction of your equipment supplier.When blocking occurs frequently - check humidity of compressed air and the free flowing properties of the powder.
	• Blockage caused by contamination of the powder with dust or other coarse materials	• Clean the gun according to instruction of equipment supplier & determine the reason of this contamination (chk powder pumps for possible impact fusion .Impact

		fusion particles which break of in the pump could be transported to the spray gun & result in blockage)

5) Problems of Poor or insufficient coverage :		
1. Insufficient wrap around	• Poor electrostatic charging of the powder	• Adjust level of electrostatic kilovoltage (increase) if not possible, check equipment and guns according to instructions of the equipment supplier
		• Check for broken electrodes on the spray gun. If found, replace electrodes
		• Check for possible frictional transport through powder hose. If found, consult powder supplier for hose material recommendation.
	• Insufficient ground contact	• Check the ground contacts using a measuring device. Correct and insure sufficient earth to ground control
	• Output of powder too low	• Trun up powder delivery air setting
	• Using an unsuitable powder type	• Contact your powder supplier
2. Poor penetration into corners flanges, slots, etc.	• Output of powder too low	• Trun up powder delivery air setting
	• Insufficient ground contact	• Check the ground contacts and if necessary use a suitable measuring instrument
	• Powder cloud too wide	• Narrow powder cloud. If necessary install a more suitable deflector or adjust air for cone adjustment
3. Poor adherence of powder to part, powder falls from part easily	• Poor electrostatic charging of the powder	• Adjust level of electrostatic kilo-voltage
	• Powder output too high or the pressure for the transport air to high, which blow the powder from the object	• Reduce powder output and or reduce pressure of the transport air
	• Unsuitable particle size distribution of the powder or unsuitable powder type for object	• Contact your powder supplier

6) Problems related to Coating finish - Cured films appearance :		
1. Dust, precured or other coarse material	• Dust or other coarse parts on the metal surface	• Check pretreatment high sludge level in phosphate bath
	• Dust or other coarse parts in powder	• Check powder & locate the cause of this contamination. If possible use fresh or sieved powder
2. Matting of powder surface	• Contamination with other powder of different formulations	• Clean up powder coating equipments or contact your powder supplier
3. Orange peel	• Warming up of the coated material is too slow or too fast	• Check curing cycle or curing oven. Contact your powder supplier for exact curing procedure
	• Powder type too fine or too coarse particle size distribution	• Contact your powder supplier
	• Moisture contamination	• Replace powder
4. Cratering	• Contamination with other powder	• Clean up powder coating equipments or contact your powder supplier
	• Bad pretretment	• Check pretreatment & if necessary contact your pretreatment supplier
	• Contamination with incompatible material from the spraying area (i.e.silicones)	• Check the presence of incompatible material if required clean up powder coating equipments or contact your powder supplier
5. Pinholing	• Humidity of powder too high	• Check storage facility. Powder to be stored at room temp. in close packing. Max.humidity 75%
	• Air entrapement in casting	• Preheat object over 160° C and cool down before application
	• Gas entrapement and escaping due to chemical reaction	• Keep coating thickness below 100 microns if necessary contact your powder supplier