POWDER COATINGS
TROUBLESHOOTING GUIDE

POWDER FEED – POOR FLUIDIZATION

PROBLEM	CAUSE	REMEDY
FLUIDIZED BED: no air circulation through the powder paint; no surface air circulation	Insufficient air pressure	▪ Check air supply. Increase air pressure to fluidizer
	Inefficient container membrane; does not allow correct fluidization	▪ Check fluidizing membrane for plugged pores from oil in air supply ▪ Check that the agglomerates tube in the carton is free of agglomer ate; turn on the vibrator
	Agglomeration: Lumps in the powder caused by humidity or heat	▪ Mix the powder manually before operating
RAT-HOLING: The powder coating does not fluidise evenly and forms volcanoes and air holes	Powder level in hopper too low	▪ Add powder until hopper is 60-70% full when fluiding air is on
	Packed or moist powder	▪ Manually stir powder with paddle or clean, dry air. If powder is moist, add fluidising additive
	Problem with membrane	▪ Check bottom of bed for obstructions, plugged pores or damage to membrane
DUSTING: Powder blowing out of hopper	Excessive air pressure on the fluidizer	▪ Adjust air regulator to lower pressure to fluidizer
	Powder too fine	▪ Decrease the recovery powder and increase the virgin powder ▪ Contact your Sherwin-Williams representative to have the particle size distribution checked

POWDER FEED – TRANSPORT HOSES AND CONNECTED PUMP

PROBLEM	CAUSE	REMEDY
POOR POWDER FEED	Damaged feed hoses. Avoid hoses that are too long, kinked or flattened	▪ Repair or replace as needed ▪ Avoid sharp bends
DISCONTINUOUS FLOW OR INTERRUPTION OF THE FLOW	Insufficient air pressure or volume	▪ Check air supply. Ensure adequate air supply is constant
	Kinked powder hoses	▪ Check powder feed hoses
	Pump, venturi tubes, hoses or guns clogged with powder	▪ Adequately clean each area of passage of the powder coating ▪ Check air supply for oil or moisture, which causes powder compaction
	High humidity in powder application area	▪ Check and adjust humidity as needed
IMPACT FUSION: Fusion of powder in pipes and guns	Excessive buildup	▪ Clean and replace parts
	Air pressure	▪ Turn air settings down on pumps and guns
	Oil or moisture in air supply	▪ Check air supply for clean, dry air
	Worn venturi tubes	▪ Replace as needed
	Powder too fine	▪ Reduce recovery: change the ratio between virgin and recovery ▪ Contact your Sherwin-Williams representative to have the particle size distribution checked

APPLICATION BOOTH

PROBLEM	CAUSE	REMEDY
POWDER COMES OUT FROM SPRAY BOOTH (Inadequate air flow through booth)	Broken or clogged filter cartridges	▪ Clean or replace filters ▪ Check air pressure ▪ Check for moisture/oil in air supply
	Final filters clogged	▪ Check cartridges for leakage. Repair or replace as needed

POWDER APPLICATION

PROBLEM	CAUSE	REMEDY
DIFFICULTY PENETRATING FARADAY CAGE AREAS	Insufficient grounding for materials	▪ Check grounding of parts. All contact areas must be free of powder buildup and other insulat-ing materials
	Excessive voltage	▪ Decrease voltage setting so that the surfaces closest to the gun do not repel powder
	Powder flow too low	▪ Increase powder flow rate
	Nozzle not adapted	▪ Adjust powder spray pattern and choose the right nozzle to pene-trate the recesses
INADEQUATE POWDER THICKNESS OR COVERAGE	Electronic equipment not providing high enough KV	▪ Make sure high voltage source is on. Recheck electrical continuity throughout ▪ Replace missing or broken electrode ▪ Clean electrode insulated by powder buildup or impact fusion ▪ Reduce gun to part distance
	Poor grounding	▪ Check ground from part to track. All contact areas must be free of all insulating materials
	Powder flow too high	▪ Do not force too much powder through the electrostatic cloud
	Excessive air pressure blowing the painted pieces	▪ Reduce air setting and/or increase gun to part distance
	Powder attracted to adjacent parts	▪ Reduce the number of hanging pieces and increase the distance
	Excessive moisture in powder application area. High moisture in air will tend to dissipate the charge on the powder particles	▪ Control the humidity in the powder application area
INADEQUATE SPRAYING	Worn spray gun parts	▪ Replace worn feed tubes, venturi pump, deflectors and covers
	Impact fusion on guns	▪ Clean areas of concern
	Powder flow too low	
BACK IONIZATION: Powder is repelled from part	Gun positioned too close	▪ Change gun placement
	Poor grounding	▪ Check ground
	KV/uA are too high	▪ Reduce voltage and/or uA settings
	Excessive powder thickness	▪ Reduce coating thickness

At Sherwin-Williams, powder is not just a technology.

Sherwin-Williams powder coatings offer the breadth and flexibility you need for your finishing requirements, with a wide assortment of in-stock colors and textures, as well as special effect finishes and custom colors available just-in-time.

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POWDER APPEARANCE

PROBLEM	CAUSE	REMEDY
GLOSS TOO LOW	Incompatibility between powders	▪ Clean application equipment before switching to a different powder
	Micro-pinholing from outgassing	▪ Check substrate for cleanliness and porosity ▪ Check powder and substrate for moisture
	Overcuring of parts	▪ Check oven temperature and dwell time
GLOSS TOO HIGH	Undercured	▪ Increase cure temperature or dwell time in oven
SMOOTH POWDER PAINT	Back ionization	▪ Increase distance from the gun to the part
	Excessive KV settings	▪ Reduce voltage micro amps
EXCESSIVE ORANGE PEEL	Film thickness out of design range	▪ Adjust film thickness as needed
	Excessive KV settings	▪ Reduce voltage and/or micro amps
CONTAMINATION: Other colors in cured film	Poor clean-up between color changes	▪ Clean feed and spray systems thoroughly
OFF COLOR	Insufficient oven programming	▪ Check exhaust vent fans
	Oven dwell time too long, or excess oven temperature	▪ Ensure parts are not in oven longer than desired ▪ Lower oven temperature
	Variations in film thickness, which result in poor opacity in the areas where film build is difficult	▪ Re-examine application procedures
	Powder	▪ Check with your Sherwin-Williams representative
FILM THICKNESS TOO LOW	Improper application	▪ Re-examine application procedures
	Air flow in booth disturbing spraying	▪ Consult your equipment supplier
	Inconsistent powder flow	▪ Check that the powder flow is correct without interruption
PINHOLING ON COATING SURFACE	Air being trapped in porous surfaces	▪ De-gass parts before applying powder ▪ Bake at a slower rate (lower temperature for longer time)
	Film thickness too high	
	Guns too near to the pieces	
PULL-AWAY, VOIDS OR CRATERING	Poor metal preparation or dry off	▪ Check pre-treatment system, dry-off oven and part damage

PHYSICAL PROPERTIES OF THE FINISH

PROBLEM	CAUSE	REMEDY
POOR HARDNESS OR ABRASION RESISTANCE	Undercured	▪ Increase oven temperature or extend cure time in oven
POOR ADHESION	Poor cleaning of parts	▪ Check pretreatment system ▪ Check substrate for changes
	Undercured	▪ Increase oven temperature or extend cure time in oven
POOR PROTECTION FOR CORROSION OR CHEMICAL RESISTANCE	Poor cleaning	▪ Check pretreatment system
	Inadequate film thickness	▪ Adjust application process to ensure specified thickness
	Undercured	▪ Increase oven temperature or extend cure time in oven
POOR FLEXIBILITY AND/OR IMPACT RESISTANCE	Undercured	▪ Increase oven temperature or extend cure time in oven
	Poor cleaning	▪ Check pretreatment system
	Excessive film thickness	▪ Adjust application process to ensure specified thickness

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