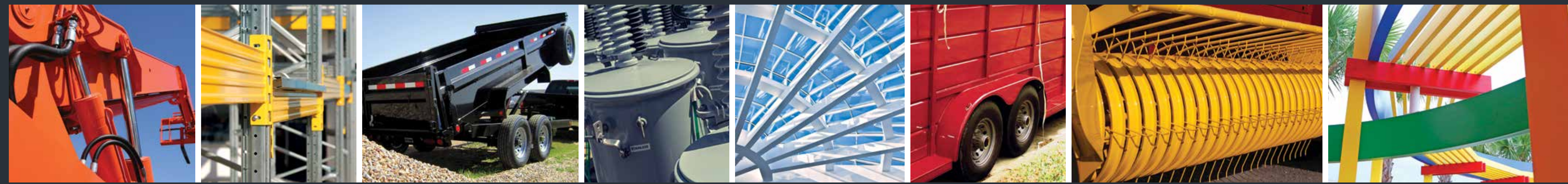


# POWDER COATINGS TROUBLESHOOTING GUIDE



POWDER FEED – POOR FLUIDIZATION		
PROBLEM	CAUSE	REMEDY
<b>FLUIDIZED BED:</b> no air circulation through the powder paint; no surface air circulation	Insufficient air pressure	<ul style="list-style-type: none"> <li>Check air supply. Increase air pressure to fluidizer</li> </ul>
	Inefficient container membrane; does not allow correct fluidization	<ul style="list-style-type: none"> <li>Check fluidizing membrane for plugged pores from oil in air supply</li> <li>Check that the agglomerates tube in the carton is free of agglomerate; turn on the vibrator</li> </ul>
	Agglomeration: Lumps in the powder caused by humidity or heat	<ul style="list-style-type: none"> <li>Mix the powder manually before operating</li> </ul>
<b>RAT-HOLING:</b> The powder coating does not fluidize evenly and forms volcanoes and air holes	Powder level in hopper too low	<ul style="list-style-type: none"> <li>Add powder until hopper is 60-70% full when fluiding air is on</li> </ul>
	Packed or moist powder	<ul style="list-style-type: none"> <li>Manually stir powder with paddle or clean, dry air. If powder is moist, add fluidising additive</li> </ul>
	Problem with membrane	<ul style="list-style-type: none"> <li>Check bottom of bed for obstructions, plugged pores or damage to membrane</li> </ul>
<b>DUSTING:</b> Powder blowing out of hopper	Excessive air pressure on the fluidizer	<ul style="list-style-type: none"> <li>Adjust air regulator to lower pressure to fluidizer</li> </ul>
	Powder too fine	<ul style="list-style-type: none"> <li>Decrease the recovery powder and increase the virgin powder</li> <li>Contact your Sherwin-Williams representative to have the particle size distribution checked</li> </ul>

POWDER FEED – TRANSPORT HOSES AND CONNECTED PUMP		
PROBLEM	CAUSE	REMEDY
<b>POOR POWDER FEED</b>	Damaged feed hoses. Avoid hoses that are too long, kinked or flattened	<ul style="list-style-type: none"> <li>Repair or replace as needed</li> <li>Avoid sharp bends</li> </ul>
<b>DISCONTINUOUS FLOW OR INTERRUPTION OF THE FLOW</b>	Insufficient air pressure or volume	<ul style="list-style-type: none"> <li>Check air supply. Ensure adequate air supply is constant</li> </ul>
	Kinked powder hoses	<ul style="list-style-type: none"> <li>Check powder feed hoses</li> </ul>
	Pump, venturi tubes, hoses or guns clogged with powder	<ul style="list-style-type: none"> <li>Adequately clean each area of passage of the powder coating</li> <li>Check air supply for oil or moisture, which causes powder compaction</li> </ul>
	High humidity in powder application area	<ul style="list-style-type: none"> <li>Check and adjust humidity as needed</li> </ul>
<b>IMPACT FUSION:</b> Fusion of powder in pipes and guns	Excessive buildup	<ul style="list-style-type: none"> <li>Clean and replace parts</li> </ul>
	Air pressure	<ul style="list-style-type: none"> <li>Turn air settings down on pumps and guns</li> </ul>
	Oil or moisture in air supply	<ul style="list-style-type: none"> <li>Check air supply for clean, dry air</li> </ul>
	Worn venturi tubes	<ul style="list-style-type: none"> <li>Replace as needed</li> </ul>
	Powder too fine	<ul style="list-style-type: none"> <li>Reduce recovery: change the ratio between virgin and recovery</li> <li>Contact your Sherwin-Williams representative to have the particle size distribution checked</li> </ul>

APPLICATION BOOTH		
PROBLEM	CAUSE	REMEDY
<b>POWDER COMES OUT FROM SPRAY BOOTH</b> (Inadequate air flow through booth)	Broken or clogged filter cartridges	<ul style="list-style-type: none"> <li>Clean or replace filters</li> <li>Check air pressure</li> <li>Check for moisture/oil in air supply</li> </ul>
	Final filters clogged	<ul style="list-style-type: none"> <li>Check cartridges for leakage. Repair or replace as needed</li> </ul>

POWDER APPLICATION		
PROBLEM	CAUSE	REMEDY
<b>DIFFICULTY PENETRATING FARADAY CAGE AREAS</b>	Insufficient grounding for materials	<ul style="list-style-type: none"> <li>Check grounding of parts. All contact areas must be free of powder buildup and other insulating materials</li> </ul>
	Excessive voltage	<ul style="list-style-type: none"> <li>Decrease voltage setting so that the surfaces closest to the gun do not repel powder</li> </ul>
	Powder flow too low	<ul style="list-style-type: none"> <li>Increase powder flow rate</li> </ul>
	Nozzle not adapted	<ul style="list-style-type: none"> <li>Adjust powder spray pattern and choose the right nozzle to penetrate the recesses</li> </ul>
<b>INADEQUATE POWDER THICKNESS OR COVERAGE</b>	Electronic equipment not providing high enough KV	<ul style="list-style-type: none"> <li>Make sure high voltage source is on. Recheck electrical continuity throughout</li> <li>Replace missing or broken electrode</li> <li>Clean electrode insulated by powder buildup or impact fusion</li> <li>Reduce gun to part distance</li> </ul>
	Poor grounding	<ul style="list-style-type: none"> <li>Check ground from part to track. All contact areas must be free of all insulating materials</li> </ul>
	Powder flow too high	<ul style="list-style-type: none"> <li>Do not force too much powder through the electrostatic cloud</li> </ul>
	Excessive air pressure blowing the painted pieces	<ul style="list-style-type: none"> <li>Reduce air setting and/or increase gun to part distance</li> </ul>
	Powder attracted to adjacent parts	<ul style="list-style-type: none"> <li>Reduce the number of hanging pieces and increase the distance</li> </ul>
	Excessive moisture in powder application area. High moisture in air will tend to dissipate the charge on the powder particles	<ul style="list-style-type: none"> <li>Control the humidity in the powder application area</li> </ul>
<b>INADEQUATE SPRAYING</b>	Worn spray gun parts	<ul style="list-style-type: none"> <li>Replace worn feed tubes, venturi pump, deflectors and covers</li> </ul>
	Impact fusion on guns	<ul style="list-style-type: none"> <li>Clean areas of concern</li> </ul>
	Powder flow too low	
<b>BACK IONIZATION:</b> Powder is repelled from part	Gun positioned too close	<ul style="list-style-type: none"> <li>Change gun placement</li> </ul>
	Poor grounding	<ul style="list-style-type: none"> <li>Check ground</li> </ul>
	KV/uA are too high	<ul style="list-style-type: none"> <li>Reduce voltage and/or uA settings</li> </ul>
	Excessive powder thickness	<ul style="list-style-type: none"> <li>Reduce coating thickness</li> </ul>



**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
<b>GLOSS TOO LOW</b>	Incompatibility between powders	<ul style="list-style-type: none"> <li>Clean application equipment before switching to a different powder</li> </ul>
	Micro-pinholing from outgassing	<ul style="list-style-type: none"> <li>Check substrate for cleanliness and porosity</li> <li>Check powder and substrate for moisture</li> </ul>
	Overcuring of parts	<ul style="list-style-type: none"> <li>Check oven temperature and dwell time</li> </ul>
<b>GLOSS TOO HIGH</b>	Undercured	<ul style="list-style-type: none"> <li>Increase cure temperature or dwell time in oven</li> </ul>
<b>SMOOTH POWDER PAINT</b>	Back ionization	<ul style="list-style-type: none"> <li>Increase distance from the gun to the part</li> </ul>
	Excessive KV settings	<ul style="list-style-type: none"> <li>Reduce voltage micro amps</li> </ul>
<b>EXCESSIVE ORANGE PEEL</b>	Film thickness out of design range	<ul style="list-style-type: none"> <li>Adjust film thickness as needed</li> </ul>
	Excessive KV settings	<ul style="list-style-type: none"> <li>Reduce voltage and/or micro amps</li> </ul>
<b>CONTAMINATION:</b> Other colors in cured film	Poor clean-up between color changes	<ul style="list-style-type: none"> <li>Clean feed and spray systems thoroughly</li> </ul>
<b>OFF COLOR</b>	Insufficient oven programming	<ul style="list-style-type: none"> <li>Check exhaust vent fans</li> </ul>
	Oven dwell time too long, or excess oven temperature	<ul style="list-style-type: none"> <li>Ensure parts are not in oven longer than desired</li> <li>Lower oven temperature</li> </ul>
	Variations in film thickness, which result in poor opacity in the areas where film build is difficult	<ul style="list-style-type: none"> <li>Re-examine application procedures</li> </ul>
	Powder	<ul style="list-style-type: none"> <li>Check with your Sherwin-Williams representative</li> </ul>
<b>FILM THICKNESS TOO LOW</b>	Improper application	<ul style="list-style-type: none"> <li>Re-examine application procedures</li> </ul>
	Air flow in booth disturbing spraying	<ul style="list-style-type: none"> <li>Consult your equipment supplier</li> </ul>
	Inconsistent powder flow	<ul style="list-style-type: none"> <li>Check that the powder flow is correct without interruption</li> </ul>
<b>PINHOLES ON COATING SURFACE</b>	Air being trapped in porous surfaces	<ul style="list-style-type: none"> <li>De-gass parts before applying powder</li> </ul>
	Film thickness too high	<ul style="list-style-type: none"> <li>Bake at a slower rate (lower temperature for longer time)</li> </ul>
	Guns too near to the pieces	
<b>PULL-AWAY, VOIDS OR CRATERING</b>	Poor metal preparation or dry off	<ul style="list-style-type: none"> <li>Check pre-treatment system, dry-off oven and part damage</li> </ul>

PHYSICAL PROPERTIES OF THE FINISH		
PROBLEM	CAUSE	REMEDY
<b>POOR HARDNESS OR ABRASION RESISTANCE</b>	Undercured	<ul style="list-style-type: none"> <li>Increase oven temperature or extend cure time in oven</li> </ul>
<b>POOR ADHESION</b>	Poor cleaning of parts	<ul style="list-style-type: none"> <li>Check pretreatment system</li> <li>Check substrate for changes</li> </ul>
	Undercured	<ul style="list-style-type: none"> <li>Increase oven temperature or extend cure time in oven</li> </ul>
<b>POOR PROTECTION FOR CORROSION OR CHEMICAL RESISTANCE</b>	Poor cleaning	<ul style="list-style-type: none"> <li>Check pretreatment system</li> </ul>
	Inadequate film thickness	<ul style="list-style-type: none"> <li>Adjust application process to ensure specified thickness</li> </ul>
	Undercured	<ul style="list-style-type: none"> <li>Increase oven temperature or extend cure time in oven</li> </ul>
<b>POOR FLEXIBILITY AND/OR IMPACT RESISTANCE</b>	Undercured	<ul style="list-style-type: none"> <li>Increase oven temperature or extend cure time in oven</li> </ul>
	Poor cleaning	<ul style="list-style-type: none"> <li>Check pretreatment system</li> </ul>
	Excessive film thickness	<ul style="list-style-type: none"> <li>Adjust application process to ensure specified thickness</li> </ul>