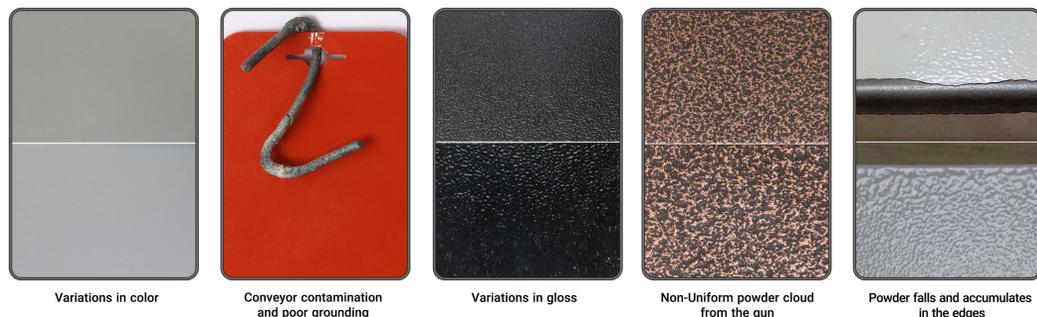


No.	Problem	Probable Reason	Suggestion
1	Hardening of powder / lumps in powder	<ul style="list-style-type: none"> Unfavorable storage condition (High heat / humid area) Storage has exceeded the shelf life of powder 	<ul style="list-style-type: none"> Sift the powder using sieve number 200-300 microns Check optimal powder storage conditions in technical data sheet Store powder at less than 25 °C Use a fresh batch of powder
2	Poor powder fluidization	<ul style="list-style-type: none"> Air Pressure is too low or too high Powder settled at the hopper bottom (old powder or poor storage conditions) Oil or moisture in compressed Air Powder is moist or is too fine Air channels of the flow plate are clogged 	<ul style="list-style-type: none"> Control and adjust the air pressure Replace hose or use a hose with larger diameter Check air filtration system (filter, pipes and air) and make sure hoses or filters are not clogged Stir the powder or sift it using sieve number 200-300 microns Check optimal powder storage conditions in technical data sheet Store powder at less than 25 °C Use a fresh batch of powder Check air for oil & moisture (Filters and Moisture Traps in the air system) Increase virgin powder or change the powder Check optimal powder storage conditions in technical data sheet Empty the hopper, clean the pores of the fluidizing plate & if necessary replace the fluidizing plate
3	Powder overflow from hopper	<ul style="list-style-type: none"> The hopper air pressure is high The powder quantity is more than 3/4th of hopper capacity Recycle to virgin powder ratio is more than recommended 	<ul style="list-style-type: none"> Reduce the hopper inlet air pressure Reduce powder quantity to 3/4th of the hopper capacity Add virgin powder to hopper and always limit reclaimed powder up to 20%
4	Gun hose clogged by powder causing spitting	<ul style="list-style-type: none"> Inappropriate hose material Moisture or oil in compressed air The air injector components are worn Feed hose is too long or diameter is wrong Air pressure is too low or too high compared to powder quantity Inappropriate hose mounting 	<ul style="list-style-type: none"> Replace hose with appropriate type (silicone, polyurethane etc.) Check air for oil & moisture (Filters and Moisture Traps in the air system) Replace nozzle Adjust the length and the diameter of the hose appropriate for the powder flow Reduce or increase the pressure according to powder quantity Mount hoses properly to prevent kinking
5	Non-uniform powder cloud from the gun (Powder Spitting)	<ul style="list-style-type: none"> The gun or powder system is choked with fine powder particles (recycled powder content is high) 	<ul style="list-style-type: none"> Reduce reclaimed powder and/or increase virgin powder quantity Clean the Spray gun regularly and more frequently Sift the reclaimed powder before using
6	Spray booth generating excessive dust	<ul style="list-style-type: none"> Unnecessary excessive opening of the paint booth doors Clogged filters inside the paint booth Excessive powder from the spray gun (more than standard) 	<ul style="list-style-type: none"> Keep the spray booth doors closed Switch and adjust inlet and outlet openings based on the size of parts being painted Increase Spray booth ventilator suction Clean filters and replace them if required Reduce the number of guns or decrease the powder from the gun
7	Poor penetration (Missing corners and recesses)	<ul style="list-style-type: none"> Air velocity is too high causing the powder to disperse Distance between gun and part is inadequate or improper painting technique Powder feed is too high or too low Poor or weak grounding Spraying gun voltage is too low or too high Improper Spray Equipment Powder is too fine 	<ul style="list-style-type: none"> Decrease the air pressure of spray gun Adjust the distance between spraying gun and part (approximately 6 to 8 inches) Adjust amount of powder from the spray gun Check and secure ground (up to 1 megaohm) Adjust voltage to have appropriate coverage in corners and to avoid repelling Change spraying nozzle type to a smaller or flat nozzle Increase virgin powder or decrease recycling powder
8	Starburst / Metallic effects and/or Micro Pinholes on final surface	<ul style="list-style-type: none"> High film thickness Powder is wet Powder is contaminated with other materials Part surface is too rough Voltage is too high Changes in the process of powder manufacturing 	<ul style="list-style-type: none"> Decrease the paint thickness Sift and dry the powder and decrease the ambient temperature of the paint system Clean the hopper, paint booth and hoses again Modify the cleaning and surface preparing procedure of the part Reduce voltage Consult with powder manufacturer and follow their recommendations

No.	Problem	Probable Reason	Suggestion
9	Color variation on the surface of the coated part due to non-uniform paint thickness	<ul style="list-style-type: none"> Poor charging of powder The spray gun voltage is unnecessarily high The spray gun and the parts are either too close or too far (gun to part distance is more or less than recommended) Poor or weak earth connection Time of the part in the booth is too short Spray Booth airflow disrupts spraying Inappropriate air humidity in the spray booth The parts are complex in design or are not hung properly Parts from dry off oven are too hot Powder delivery hose is too long or clogged with powder deposits Foreign particles (Cloth Fibers / Dust etc.) clogging the powder transport system 	<ul style="list-style-type: none"> Test and adjust spray gun voltage Adjust the distance between the gun and the part (standard distance is 6 to 8 inch) Check and secure the earth connection Reduce line speed, increase powder from the gun or increase the number of the guns in the spray booth Test and adjust system configuration and contact spray booth supplier if necessary Change the way parts are hung Increase / Decrease gun to part distance Change gun setting Adjust dry off oven temperature or let the parts cool for longer Make sure diameter and length of the hoses is proper and that there are no kinks Cleaning and maintenance of the transport system should be regular and more frequent
10	The powder does not adhere and falls of the work piece	<ul style="list-style-type: none"> Poor grounding Voltage is too low / powder does not charge properly Too much powder output from the gun Powder is too fine or too coarse Conveyor / Racks have too much vibration 	<ul style="list-style-type: none"> Check and secure ground at contact and in the booth Check the gun, cables and electrodes Measure gun voltage and make sure the readings match on spraying equipment display Reduce powder and / or air flow Decrease the amount of the recycled powder (if applicable) Contact powder manufacturer to consult about the appropriate powder gun Check the system to prevent jerks and shocks to the parts
11	Poor flow (Orange Peel)	<ul style="list-style-type: none"> Film thickness is too low or too high Parts do not heat up quickly (Heat up cycle is too slow) Voltage or Air pressure is too high Inappropriate painting technique Contamination with other powders 	<ul style="list-style-type: none"> Measure film thickness with a thickness gauge and make sure to follow recommendations of the paint manufacturer Conduct oven profile (e.g. datapaq) and confirm recommended cure parameters May consider preheating the heavy / thick parts Adjust air pressure and voltage of the spray gun Adjust gun to part distance Train painter for gentle passes / strokes of powder Clean booth, guns and hoses Consult with powder coating manufacturer for incompatibilities
12	Variations in Gloss	<ul style="list-style-type: none"> Contamination of powder with other materials and powders of different specifications Over or under curing Uneven gloss due to varying thickness of the parts 	<ul style="list-style-type: none"> Clean the coating booth, spraying gun and hoses properly before replacing with new powder Avoid using powder coatings from multiple manufacturers in the oven at the same time Follow powder coating manufacturer recommendations Adjust the oven heat or time parts spend in the oven Adjust oven temperature and the time parts spend in the oven
13	Inadequate coverage and the substrate shows through metal surface	<ul style="list-style-type: none"> Film thickness is too low Different substrates and / or colored materials Faulty spray gun Poor ground and / or Low Voltage 	<ul style="list-style-type: none"> Follow manufacturers recommendations for film thickness range Compare same substrates Consult with powder coating manufacturer for similar hiding on all substrates Contact spray gun manufacturer Check and secure ground and increase voltage
14	Wrinkle and textured colors become smooth	<ul style="list-style-type: none"> Oven temperature is too low The powder is contaminated with smooth powders in the hopper Powder has expired Storage conditions are not favorable 	<ul style="list-style-type: none"> Adjust and increase the oven temperature per technical data sheet Clean the hopper / paint booth and hoses of other powders Check the expiration date Check storage conditions (Temp and Humidity)

No.	Problem	Probable Reason	Suggestion
15	Variations in Color	<ul style="list-style-type: none"> Over or under curing Varying film thickness on different areas Improper Oven Exhaust Uneven color due to varying thickness of the parts Paint booth is not properly cleaned of the previous color causing haziness or variation in color Powder is too old or has expired 	<ul style="list-style-type: none"> Follow Powder Coating manufacturer recommendations Adjust the oven heat or time parts spend in the oven Apply the powder to the surface evenly and follow manufacturer recommendations Check for blockage of the exhaust Make sure oven fan is working properly Adjust oven temperature and the time parts spend in the oven Clean the booth thoroughly before changing or adding new colors Use a fresh batch of powder
16	Craters or Pinholes on the finished surface	<ul style="list-style-type: none"> Paint booth is not properly cleaned of the previous color and the contents are incompatible Poor washing that left oil contaminants on the work piece Moisture or oil in compressed air Moisture on the work piece Parts are rusty Surrounding air is contaminated Silicone from the lubricants or sprays The part is porous and outgassing In rough textures, pinholes appear instead of the rolling texture 	<ul style="list-style-type: none"> Clean the paint booth properly before painting and with every color change Test the washing system and make necessary adjustments (contact supplier) Check the system for oil and moisture. Replace filters regularly Increase dry off oven temperature or the time parts spend in the dry off oven Make sure parts do not have rust before painting Store parts inside the shop unless painted Use mechanical pretreatment like sandblasting or buffing Avoid using powder coatings from multiple manufacturers at the same time Prevent cross air drafts Use silicone free lubricants Preheat and outgas the parts before painting Use outgas forgiving products Increase film thickness (3.5 - 4.5 mils). Consult powder manufacturer
17	Powder puffs on the part on finished surface	<ul style="list-style-type: none"> Contaminants from Oven, Booth or Conveyor system Air pressure or voltage too low Feed hose is too long or diameter is wrong Oil and moisture in the compressor air 	<ul style="list-style-type: none"> Check cleaning procedure and increase cleaning frequency Check the paint line for dust contamination and burnout of furnace insulation etc. Adjust air pressure and voltage of the spray gun Use appropriate length and diameter for the hose Check air and oil filters and assure regular replacement
18	Poor mechanical properties like impact and flexibility	<ul style="list-style-type: none"> Film thickness is too high Undercuring Inadequate or incompatible cleaning or pretreatment 	<ul style="list-style-type: none"> Lower the powder or reduce the number of guns to adjust the film thickness to 2.5 to 3.5 for smooth and 3.5 to 4.5 for textured finishes Follow manufacturers recommendation. May need to run oven profile to determine suitable baking schedule based on the substrate and parts thickness Test the washing system and make necessary adjustments (contact supplier)
19	Cured films peels off the parts after baking (lack of adhesion)	<ul style="list-style-type: none"> Inadequate washing and / or poor surface preparation Insufficient baking Very High film thickness Parts are rusty Lack of adhesion between 2 coats (primer & topcoat for example) 	<ul style="list-style-type: none"> Test the washing system and make necessary adjustments (contact supplier) Increase the temperature or baking time Adjust paint thickness based on Manufacturer Standard Make sure parts do not have rust before painting Store parts inside the shop unless painted Use mechanical pretreatment like sandblasting or buffing Half bake first coat, apply second coat and then fully bake afterwards For heavy parts, preheat the parts and apply both coats back to back and then put in the oven for a final bake
20	Powder dripping or running off the part	<ul style="list-style-type: none"> Film thickness is too high Substrate temperature is too high (causing a high film build) Powder paint moves to the edges Inappropriate curing conditions (Heat-up rate is too high) Powder falls and accumulates at the bottom of the part 	<ul style="list-style-type: none"> Decrease the powder from the gun to reduce film thickness Increase cooling time between dry off and paint booth, Adjust film thickness as necessary Check and secure ground and/or decrease the voltage Adjust heat up speed. Check the oven and adjust temperature Check and secure proper grounding



Note

- Avoid transporting / shipping powders during hot weather and over long distances
- Protect powder with water proof covers during rainy days
- Notice the markings on the box
 - Protect from sunlight
 - Keep upright
 - Do not stack more than 5 boxes
 - Store at 25 °C
 - Protect from water and moisture
- It is better not to increase the gun voltage unnecessarily. For Hammertones and textured colors the voltage should be 60 to 70 KV
- The distance between the powder gun and the part should be between 10 to 20 cm as a standard but can vary based on part configuration
- After coating the part you should empty the contents of the hopper and keep the rest of the powder in the box. Keeping the powder in the tank for long time will cause sediments and decrease in gloss level
- Follow the baking schedule provided with the powders. Oven temperature should be above 130 °C (266 °F) for hammertone and textured powders when you put the parts in the oven
- Compressor air contamination is one of the major reasons of fisheyes, pinholes on powder, hardening of powder, powder overuse and wearing of gun parts. Check compressor regularly and setup oil filters and moisture traps close to the air system

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