

Troubleshooting the powder-coated finish

Problem: Color deviations

Cause

Film thickness varies greatly
Differing substrates and substrate colors (steel, aluminum, brass, glass)
Differing surfaces and reflections (polished, blasted, chromated)
Film thickness too thin (poor coverage)
Color deviations due to curing technique or oven atmosphere (for example, direct-fired gas oven, infrared oven); use of room air for burner
Overcuring of powder coating (especially with organic pigments)
Differing curing parameters with same parts
Differing curing parameters with greatly varying parts (different wall thickness)
Several powder manufacturers-suppliers
Varying film thickness with overcoating
Bleeding of first coat with overcoating
Uneven pretreatment of parts
Metamerism, color deviations with differing light sources
Rough texture too pronounced

Problem: Cloud formation

Cause

Gun distance from part too great or small
Uneven powder transport
Manual touch-up
Uneven charging
Uneven grounding of parts
Strongly varying film thickness (especially with matte finishes)
Separation of matte finish powders in reclaim system; uneven parts of virgin and reclaim powder

Problem: Insufficient coverage

Cause

Film thickness too low
Film thickness varies greatly from part to part
Differing materials and material colors (steel, aluminum, brass, glass)
Differing surfaces and reflections (polished, blasted, chromated)
Mechanical treatment shows through (for example, polishing)

Solution

Assure constant film thickness
Use substrates of same type for comparisons
Use surfaces of same type for comparisons
Apply higher film thickness (same as samples)
Use suitable powder coatings control oven; use outside air supply for burner
Observe curing parameters of powder manufacturer
Observe powder manufacturer's curing parameters
Observe curing parameters of powder manufacturers and adjust to wall thickness
Use powder coatings from the same manufacturer or check compatibility
Assure even film thickness
Check suitability of first coat when overcoating
Assure more even pretreatment of parts
Judge workpieces in daylight, not direct sunlight; use daylight cabinet
Assure appropriate film thickness; use suitable powder coating

Solution

Test distance
Introduce sufficient virgin powder; test for deviations in air pressure
Precoat if possible
Test application
Test grounding
Optimize film thickness by adjusting air pressure
Assure consistent powder quality; adhere to the recommended percentage of virgin and reclaim powder

Solution

Assure appropriate minimum film thickness, especially with critical colors (for example, red, orange, yellow)
Optimize system parameters; lower powder output
Use same materials for comparison
Use same surfaces for comparison
Assure minimum film thickness is reached