

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

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

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

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

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 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