NYCOTE LABORATORIES CORPORATION

# THE AIRCRAFT PAINTER'S FIELD GUIDE TO TROUBLESHOOTING
# PAINTING & COATING ISSUES

When you're painting an aircraft there is no room for error. This guide is designed to help aircraft painters and quality control professionals identify, troubleshoot, and quickly resolve common appearance issues on the fly.

## BLUSHING OR BLOOMING

*Blushing or blooming is a defect in the paint or coating film that occurs during the curing process where the coating or paint dries and leaves a milky appearance that remains sticky.*

### COMMON CAUSES

Blushing is a defect caused by rapid evaporation of the solvent within the coating or paint, and moisture collects on the coating surface which looks like the surface is sweating.

### HOW TO FIX

To prevent these defects, avoid spraying on rainy or humid days. Use the correct grade thinner (check the manufacturer's SDS), and reduce compressed air pressure on the sprayer to minimize the cooling effect. Finally allow the solvent release to take place naturally.

## CLOUDY MATTE (DULL FINISH)

*A cloudy matte or dull finish is when the surface lacks shine or has a microscopic roughness.*

### COMMON CAUSES

Potential causes of a dull finish include poor quality of thinner, use of additives in the paint, incorrect preparation, poorly applied paint, high humidity, or low temperature. It can also occur if the topcoat is applied over the primer before dry or over a damp or cold substrate. Surface contamination can also occur due to wax, grease, oil, soap, or water.

### HOW TO FIX

Rectification may be possible by rubbing down the surfaces with an abrasive compound, polishing or rubbing down the topcoat, and repainting the surface. Cloudy matte finishes can be prevented by the use of recommended thinner and approved additives. Stir the paint and prepare the substrate thoroughly, and ensure the paint dries under warm, dry conditions with good exposure to free air.

## COBWEBBING, SPIDER-WEBBING & COTTON CANDY

*Cobwebbing, spider-webbing and cotton candy paint defects occur when paint or coating form small droplets that contain too little solvent or thinner resulting in paint particles that leave the spray-tip in a stringy, web-like, filament-like appearance.*

### COMMON CAUSES

The causes for cobwebbing range from improper atomization, pressure of spray-gun settings that are either too high or too low, or the distance between the spray tip and the substrate is too high.

### HOW TO FIX

To remedy cobwebbing, increase the amount of thinner to coating ratio, typically up to 1:1 (coating to thinner). Because some coatings have low vapor pressure by design to reduce the amount of drying and cure time, adjusting to a lower pressure should produce an even wet appearance and eliminate the webbing. When the atomization pressure is set too high it can "boil" the solvent or thinner mix due to their low vapor pressure.

## FISHEYES OR CRATERS


*Fisheyes or craters, look like small circular openings or indentations and appear shortly after application.*

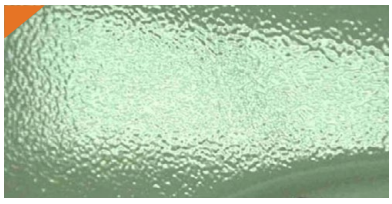
### COMMON CAUSES

Fisheyes or Craters occur when surfaces are not prepared correctly and dirt, oils, wax, greases and other debris become trapped underneath the paint or surface coating.

### HOW TO FIX

To remedy fisheyes, remove the wet paint with a solvent, clean the surface and refinish. If the paint has dried, sanding, cleaning and refinishing will be required.

## ORANGE PEEL FINISH



*An orange peel defect is a poor surface texture of the paint or coating that resembles the small, bumpy and rough dimples or pebbled surface of an orange peel.*

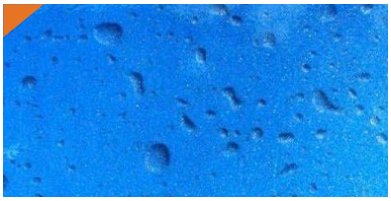
### COMMON CAUSES

Orange peel finish defects appear when the sprayer is held too far from the substrate, the spray pressure is set too low, the paint or coating viscosity is too thick, the spray nozzle is too small, or the flash-off time between coats was too long.

### HOW TO FIX

To remedy this defect, keep the spray gun within the recommended distance from the object, ensure the spray pressure is optimized for the type of compound you are spraying (refer to the product TDS), and allow a long enough flash-off between coats.

## OUTGASSING



*Outgassing appears as small defects like bubbles, bumps, pinholes, and craters in the coating or paint. Outgassing is difficult to troubleshoot because the defect can appear in a random part of the substrate, or only on a specific spot.*

### COMMON CAUSES

Outgassing occurs when gas generated under the coating or paint film migrates to the surface during the curing process. This can be caused by contaminants or moisture on the substrate or improper surface preparation. On surfaces that are porous, extra care must be taken to prevent this defect. Outgassing can also be problematic when heat is applied to force the cure time. In this case be sure to ask the manufacturer for a force-cure time table.

### HOW TO FIX

To resolve outgassing, bake metal parts prior to regular pretreatment and paint and coating applications. The hot temperatures condition the part to bring the contaminants to the surface and eliminate the trapped gas.

## PEELING OR BLISTERING

*Peeling or blistering is the lifting of the paint from the surface. This can also appear to be paint bubbles, which is fluid between dried paint.*

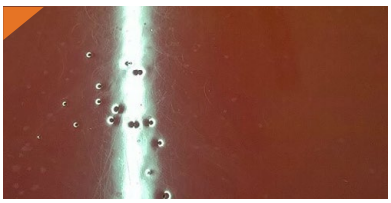
### COMMON CAUSES

Paint peeling or blistering is caused by painting in direct sunlight, on hot surfaces, or exposure to high humidity environments. Oil-based or alkyd paint applied over a damp surface can also result in peeling.

### HOW TO FIX

One solution to peeling or blistering includes applying proper paint in dry, cool areas. Blisters can be removed by scraping, sanding, or pressure-washing the surface, and then priming the surface with a high-quality primer and repainting.

## PINHOLE



*Pinholes are small cavities, generally less than one millimeter in diameter, that appear over the stopper, filler or other coating.*

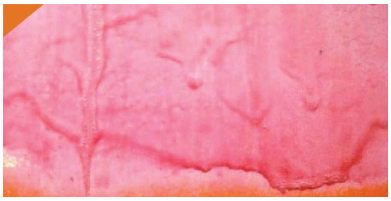
### COMMON CAUSES

Pinholes can be caused by too high of an absolute humidity, viscosity of the paint, or paint film thickness. Other causes include an insufficient flash off between coats and solvent entrapment from air flow, resulting in premature skinning.

### HOW TO FIX

To prevent pinholing, allow primers or other coatings to thoroughly dry before applying another coat. Use only recommended thinner and approved additives. Prior to application, ensure the paint is stirred completely and prepare the substrate thoroughly. Ensure the painter uses proper spraying techniques, the paint dries under warm and dry conditions, and the surfaces are exposed to free air. Finally, adhere to the TDS recommendation regarding flash off, cure times, and air pressure.

## SAGS, RUNS, & CURTAINS



*Sags, runs, and curtains are commonly found on vertical or curved surfaces when the downward movement of paint and coatings pool immediately after application. If the paint or coating is allowed to dry with these defects they result in cracking and peeling.*

### COMMON CAUSES

Sags, runs, and curtains are the result of the wet film thickness being too high and causing the finish to continue to move downward on the vertical surface and pool in curved surfaces. Most often sagging and running result from improper technique.

### HOW TO FIX

To remedy these defects, check the required dry-film thickness and pot-life requirements on the TDS, reduce the product to the recommended ratio, assure your substrate is not cold, and apply the paint or coating evenly at the appropriate distance from the substrate.

## UNEVEN COLOR

*Uneven color occurs when painted surfaces appear to have different tints, tones, and shades. This may include streaks, splotches, lines, or other imperfections.*

### COMMON CAUSES

Uneven color can be caused by lack of preparation in cleaning the surface or mixing paint, inconsistent application, or the use of improper tools.

### HOW TO FIX

To achieve consistent coloring, mix your paint thoroughly and select high-quality paint and primer. Complete the same number of coats on all areas, starting with a base coat, and allow surfaces to dry for 2 to 3 hours minimum in a dry, consistent environment.

## UNLEVEL FILM THICKNESS

*Unlevel film thickness is when the surface appears unevenly painted, preventing a straight, uniform surface.*

### COMMON CAUSES

Unlevel film thickness can be caused by painting over dirt particles or using different amounts of force to apply paint. Another potential cause could be applying different numbers of coats.

### HOW TO FIX

Ensure the surface is properly cleaned and prepared before applying paint. Track the number of coats, and pay close attention to any imperfections.

# ABOUT NYCOTE LABORATORIES CORPORATION

***Nycote Laboratories Corporation*** has provided safety coatings to the aerospace industry for decades. The product line consists of several easy-to-use, one-and-two-part systems that provide corrosion protection, electrical insulation, friction reduction and no microbial growth through their self-leveling, pinhole-free nylon epoxy technology.

Nycote is the only coating manufacturer designing coatings with this proprietary technology, and that is why OEM's like Boeing, Airbus, Embraer, Collins Aerospace, Honeywell, Raytheon, and many more trust Nycote's coatings.

For 60 years NLC has been on the cutting edge of Nylon technology. Nycote can provide customized formulations that adhere to all surfaces, and frequently collaborate with major aerospace engineering teams to design coatings to their specification.

Not only does Nycote provide superior coating technology, the company focuses on high-level customer satisfaction by providing end-users access to experienced technical advisors who've tested and applied the products first-hand. This ensures OEM Engineers can collaborate with skilled painting and coating professionals to eliminate issues before they begin.

Contact *sales@nycote.com* to speak with a technical specialist today.

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