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Troubleshooting Guide

PROBLEM: ADHESION

Causes:
- Surface Preparation/Insufficient Sanding
- Fast Dry
- Were there any oil-based products (wipes, glazes) underneath that did not get dry enough?
- Excessive and/or incorrect shading/toning

Solutions:
- Sand freshly prior to coating, using recommended grits for bare wood & inter-coat (Including substrate edges)
- Avoid dry coats
- Ensure proper dry/cure of all coats
- Ensure sufficient dry times for stains & glazes (See TDS)
- Avoid over shading/toning and ensure that shader/toner has sufficient binder to solvent ratio

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- Are the products being used compatible with each other?
- How long did the parts set between coats?
- Could the parts have been finished, polished or waxed and then recoated?
- If so, were they sanded before recoating?
- Were there any oil-based products (wipes, glazes) underneath that did not get dry enough?

PROBLEM: AIR ENTRAPMENT

Causes:
- Fast Dry
- High Viscosity
- Excessive Agitation or Pumping
- Application
- Over-atomization

Solutions:
- Slower Solvents
- Add Reducer/Thinner and Check Viscosity
- Correct Agitation and Application
- Adjust atomization

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- How strong is the air movement in the area where the parts are flashing off? (Might be driving off the faster solvents and capping over the top surface layer of the coating)
- Are there any pumps or guns leaking around the sealed area?
- Are the open pore areas of the substrate being filled or sealed off well enough?
- How high is the air pressure on the spray equipment?

PROBLEM: BENARD CELLS

Causes:
- Surface Tension Variations
- Excessive Application
- Solvents Used

Solutions:
- Additives
- Correct Viscosity and Application
- Lower Applied Film Thickness
- Faster Dry

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- How strong is the air movement in the area where the parts are flashing off?
- How high is the air pressure on the spray equipment?

PROBLEM: BLISTERS

Causes:
- Excessive or Premature Heat
- Slow Dry
- Application

Solutions:
- Check/Correct Cure Process
- Check/Correct Application Parameters
- Faster Solvent/Cure

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- How strong is the air movement in the area where the parts are flashing off?
- How high is the air pressure on the spray equipment?
- Has the line speed changed, or has there been a change in finishing procedures?
- Has the oven temperature been checked?

PROBLEM: BLOOM / HAZE

Causes:
- Incompatible Materials
- Incorrect Amounts of Additives
- Incorrect Amounts of Catalysts

Solutions:
- Eliminate Incompatible Material
- Use uncontaminated, properly prepared and formulated material

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- Has the product been catalyzed correctly?
- Is the product in use virgin material or has it been catalyzed in the past?
- What step in the finishing process did you first notice the bloom?

PROBLEM: BLUSH

Causes:
- High Humidity
- Moisture Contamination
- Solvent Imbalance
- Incompatible Materials

Solutions:
- Eliminate Moisture or Other Contaminants
- Add Suitable Slow Solvents
- Reduce Air Pressure

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- What is the temperature of the coating versus the ambient temperature?
- What is the humidity level in the spray and flash areas?
- Was the coating setting up too fast for the conditions it is being applied in?
- Are there any oil-based products (wipes/glazes) under the product that did not dry properly before being coated over?
- What step in the finishing process did you first notice the blushing?

PROBLEM: BUBBLING

Causes:
- Dry Too Fast or Too Slow
- Excessive Application
- Air Leakage in Spray Gun or Hose
- Substrate

Solutions:
- Correct Substrate Temperature and Moisture Content
- Correct Dry, Viscosity and Application
- Add Suitable Solvents
- Properly Maintain Spray Equipment and Hoses

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- How strong is the air movement in the area where the parts are flashing off?
- Are there any pumps or guns leaking around their sealed areas?
- Are there open pore areas of the substrate being filled or sealed off well enough?
- How high is the air pressure on the spray equipment?
- What step in the finishing process did you first notice the bubbling?

PROBLEM: CRACKING

Causes:
- Improper Cure
- Heavy Application
- Poor Inter-coat Adhesion
- Over-Catalyzation

Solutions:
- Correct Cure
- Correct Application
- Correct Adhesion
- Avoid Improper Catalyzation

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- How many coats of clears (sealers/topcoats) were applied? Can you estimate the number of total film mils applied?
- Where did the cracking occur? (Mostly on the tops indicates a heavier film build on top)
- Did the product go through wide temperature changes? (From warm plant to cold, unfinished home or warehouse. From a cold plant to a warm trailer for shipment to a warmer climate)

PROBLEM: CRATERS / FISH EYES

Causes:
- Contamination From Oil, Dirt, Gels, Moisture, Silicones, etc.

Solutions:
- Eliminate Contamination
- Check Filtration
- Flow Additives
- Check for Hand Creams and Lubricants
- Contamination from Oil, Dirt, Gels, Moisture, Silicones, etc.

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- Does anyone in the finishing area or sanding area use hand lotion (at home or work)?
- Have the regulators been drained to see if the lines have any water or oil in them?
- Have any guns or pumps been lubricated recently, if so, with what?
- Have the air make-up units had any maintenance done on them recently? Beware of aerosol lubricants.

PROBLEM: CURE

Causes:
- Too Much/Too Little Catalyst
- Wrong Additives/Solvents
- Old Material
- Incorrect Oven/Cure Conditions
- Ambient Humidity
- Temperature Variations
- Excessive Application

Solutions:
- Correct Oven/Cure Conditions
- Use Fresh Properly Prepared Material
- Use Correct Solvents
- Check Additives
- Correct Application

Things to Consider:
- Have any additions been made to the product? If so, what and how much? Has the material been properly agitated?
- Has there been a change in heat applied to the coatings?
- How many coats of sealer/topcoat were applied. Can you estimate the total number of wet mils applied?
- Is the material fresh, or recently produced?

PROBLEM: DIRT/SEEDING

Causes:
- Contaminants
- Gels Flocculated Pigment
- Over-spray
- Wrong Solvents
- Housekeeping

Solutions:
- Eliminate Contaminants
- Check Filtration
- Line Flushing
- Housekeeping
- Increase Humidity
- Eliminate Static

Things to Consider:
- Have any additions been made to the product? If so, what and how much? How old is the product being applied?
- Has there been any cleaning/sweeping in the area? Have the exhaust fans recently been turned on?
- Has there been any change made to the finishing schedule?

PROBLEM: DISCOLORATION

Causes:

- Iron Contamination
- Over-catalyzation
- Excess Heat/Vapors
- UV Exposure

Solutions:

- Eliminate Contaminant
- Use Stainless Steel or Lined Containers and Fluid Lines
- Check Additives

Things to Consider:

- Have any additions been made to the product? If so, what and how much?
- If waterborne or catalyzed products are in use, have they come in contact with any iron?
- Has there been any other contamination from other metallic products (metallic driers, cobalt catalysts, etc.)?
- Has there been maintenance done on the equipment or lines leading to the finishing area?

PROBLEM: FLOAT

Causes:

- Surface Tension
- Pigments
- Heavy Application
- Slow Dry
- Over-thinning

Solutions:

- Correct Application and Additive Levels
- Faster Solvents
- Correct Viscosity
- Surfactant Additives

Things to Consider:

- Have any additions been made to the product? If so, what and how much?
- Is the product fresh? Have proper thinning procedures been used? Have products been intermixed?

PROBLEM: FLOW/ORANGE PEEL

Causes:

- Surface Tension
- Improper Solvents Added
- High Viscosity
- Fast Dry
- Hot Substrate/Cold Coating Material
- Improper Application
- Dry/Thin Coats
- Excessive Air Movement
- Low Humidity/High Temperatures
- Contaminants
- Telegraphed Substrate/Sealer Imperfections

Solutions:

- Correct Application and Additive Levels
- Flow Additives
- Slow solvents/Adjust Viscosity Properly
- Wetter Coat
- Eliminate Contaminants
- Correct Substrate Preparation/Temperature
- Modify Ambient Conditions

Things to Consider:

- Have any additions been made to the product? If so, what and how much? Has the viscosity been checked? Adjusted?
- Have the products been left open? Was the product cold before attempted use (sitting outside in cold weather)?
- Is the spray equipment operating properly? Is the atomization all right?
- Is a good, even wet coat being applied? 3-4 mils per coat? Is the sanding sufficient between coats
- At what stage in the finishing process did you first notice the orange peel?

PROBLEM: LIFT

Causes:

- Under-cured Coatings
- Incorrect Solvents
- Poor Adhesion

Solutions:

- Check Cure Conditions/Ovens
- Coating Cure Response and Catalyzation
- Use Correct Solvents
- Use Fresh Paint

Things to Consider:

- Have any additions been made to the product? If so, what and how much?
- Has there been any product changes made? Was one product substituted for another?
- At what stage in the finishing process is the product lifting—back to the wood, at the stain, at the sealer, etc.?
- Has there been any change to the finishing schedule? Are there any airborne contaminants?
- Have the stains been properly wiped?

PROBLEM: OFF COLOR

Causes:
- Poor Agitation
- Incorrect Application/Amounts
- Substrate Preparation/Sanding

Solutions:
- Ensure Proper Agitation/Recirculation
- Apply Correct Amounts
- Sand Thoroughly

- Poor Agitation
- Incorrect Application/Amounts
- Substrate Preparation/Sanding

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- Have the products been agitated regularly?
- Is the product fresh?
- Has the product been uncovered for an extended period of time?
- Have products been intermixed? Have batches of the same product been intermixed?

PROBLEM: PINHOLING

Causes:
- Dry Spray Application
- Excessive Application at High Temperatures
- Substrate Preparation
- Improper Thinner

Solutions:
- Apply Proper Mil Thickness
- Monitor Viscosity, Adjust Accordingly
- Use Slow Thinners
- Avoid High Surface Temperatures on Substrate

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- During what step do you first see the pinholes?
- Does the substrate have large open grain areas or large tear-outs in the veneer?
- Are the distressed areas being properly sealed?
- What is being done to seal the pore of the wood? Have steps been skipped or changed?

PROBLEM: PRINT

Causes:
- Under-cured Coating
- Excessive or Premature Stacking

Solutions:
- Correct Cure/Stacking Conditions
- Use Fresh Properly Prepared Material
- Slip Additives

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- Is there any heat used to dry the product?
- How soon was the product boxed or stacked after finishing?
- Was the product stacked in a hot warehouse or trailer?
- How much weight was placed on tops of finished parts?
- How much total coating (sealer and topcoat) were applied? In what amounts were they applied?

PROBLEM: RUNS/SAGS

Causes:
- Excessive or Incorrect Application
- Slow Dry
- Thin Viscosity
- Environmental Conditions Too Cold
- Substrate Contamination (oil/grease)

Solutions:
- Correct Application Parameters
- Thinner Applied Film Thickness/Avoid Heavy Applications
- Faster Dry
- Proper Use of Solvents
- Proper Substrate Preparation

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- How much coating (wet mils) are being applied per coat? Especially vertical surfaces.
- Is the spray gun spraying an even pattern or is it heavier on one side of the spray pattern?
- Is the viscosity of the coating too low for the amount being applied? Has temperature affected the viscosity?

PROBLEM: SCRATCHES

Causes:
- Under-cured Coatings
- Premature Handling
- Improper Sanding, Rubbing

Solutions:
- Ensure Proper Cure and Finish Schedule
- Rub or Sand with Correct Grit

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- Have there been any changes in the finishing schedule—have the times been shortened between coatings?
- Has the proper sandpaper been used?
- Is the product being hand sanded or machine sanded?
- Has the proper amount of catalyst been used?

PROBLEM: SETTLING

Causes:
- Over-Thinning
- Too Rapid Thinning
- Improper Solvents

Solutions:
- Use Proper Thinning Techniques
- Use Proper Solvents

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- How old are the coatings?
- Have products been intermixed?
- Can the settled product be remixed in, or has the product settled too hard to use?
- Can an automatic mixer be used to agitate the product?
- Is the product being constantly stirred or mixed?

PROBLEM: SKINNING

Causes:
- Uncovered Coatings Reservoir
- Excessive Air Movement
- Paint Age or Storage

Solutions:
- Keep Coatings Reservoir Covered
- Minimize Head Space
- Minimize Age
- Minimize Drafts

Things to Consider:
- Have any additions been made to the product? If so, what and how much?
- How old is the material?
- How many times has this particular container been used?
- Does the lid fit securely on the container?
- Is the product being constantly stirred or mixed?