

# Clancy's Commercial

HIGH PERFORMANCE COATINGS

## PROBLEM SOLVING GUIDE

### COMMON WOOD FINISHING PROBLEMS

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## PROBLEM SOLVING

Should finishing problems occur, a careful investigation should be made for the purpose of determining the exact cause of the problem. Every factor that may have a bearing upon the finishing or coating operation from the wood or surface on through to the finishing coats should be taken into account. To solve problems, consider the following factors which impact the end result of your finishing operation.

1. Type of surface
2. Preparation of the surface
3. Type and brand of washcoat or sealer
4. Type and brand of stain or filler
5. Type and brand of thinner used
6. Percentage of material reduction for each coat
7. Type and brand of topcoats
8. Method of application
9. Drying time between coats and method of drying
10. Number of coats in each operation
11. Mixing procedures of material prior to application
12. Appearance of the goods in the package
13. Shop conditions
  - a. Cleanliness
  - b. Atmospheric conditions, shop temperature and humidity both in application area and drying area
  - c. Knowledge of finishing practice
14. The manufacturing dates, product identification numbers or reference and other identification marks stamped on the packages of the material in question.

An unclean surface, insufficient drying time for each coat, sealing in moisture, failing to stir the material thoroughly and unfavourable shop conditions, are the usual causes of trouble. Also make sure the environmental conditions, ventilation, temperature and humidity are suitable to insure proper application. Check the spray equipment to make sure that the gun and compressor are working properly and that neither oil nor moisture is passing through the air or material lines.

## BLEEDING

### CAUSE

**A.** Organic red pigments or various dyes used in stain or undercoats and have not been sealed properly.

### REMEDY

**A.** Best remedy is to avoid use of bleeding colours. Where bleeding colours have been used, a vinyl-type sealer usually tends to seal the bleeding better than lacquer sanding sealers.

## BLISTERING

### CAUSE

**A.** Sometimes strong solvents tend to react with preceding coat. Also air or gasses in film, can be trapped as it dries due to temperature, air movement or fast solvents being used.

**B.** Butyl cellosolve used as a retarder

### REMEDY

**A.** Be sure that the undercoats are thoroughly dry. Use primer recommended. Use thinner with weakest solvent strength which will still act as steady diluent. If you are using heat lamps or oven drying, be sure adequate flash-off time is used before putting finished part in over.

**B.** Butyl cellosolve is a heavy solvent and if too much is used, it will sink to the bottom of the film and if top if film skins over before complete film drying, solvent pop can occur.

## BLUSHING

### CAUSE

**A.** Combination of factors tends to cause blushing and likewise, a combination of factors may be used to remedy the difficulty.

- Humid Weather
- Drafts
- Poor thinner (too hot)
- Lacquer sprayed when cold
- Damp spray room (generally concrete floors at ground level)
- Moisture in spray equipment

### REMEDY

**A.** Add up to 13 oz. per gallon of a slow evaporating lacquer reducer; like Chemcraft Lacquer Retarder. Retarder should always be added to solvent lacquers when humidity is over 50%.

- Humid weather, add retarder to thinner or use a higher quality thinner. For drafts, find source.
- Bring the lacquer to room temperature.
- Blushing caused by condensation of water and subsequent evaporation from cold spray rooms can be avoided by warming up the room.
- Film has a white haze in areas. The film has dried too fast and entrapped moisture in the film. Blushing problems are mostly related to humidity.

## BRITTLENESS

### CAUSE

A. It is often difficult to differentiate between “lack of adhesion” and brittleness when evaluating some film failures. Other than inherent brittleness or lack of adhesion in the finish, the cause for either difficulty will be the same.

### REMEDY

A. See “*Lack of Adhesion*”.

## BROWN SPOTS

### CAUSE

A. Oil coming through “separator” of supply line.

### REMEDY

A. Cleanliness. Bleed the line at least once every shift, or every eight hours.

## BUBBLES (On open-pore wood)

### CAUSE

A. Air, gas or vapour is entrapped in the pores of open-grains wood (oak) and the finish dries before bubbles can dissipate.

### REMEDY

A. Apply a thin, wash coat of sealer (5 to 1 reduction) as a first coat. Bubbling is a difficult problem as it seems to be related to the quality of the wood used, and its occurrence is very spotty. A retarder (slow solvent) can also be used to slow the drying. Bubbles can also be caused by air leakage in gun or hoses.

## BUBBLING OF COATING (Latex)

### CAUSE

- A. Temperature too high for application.
- B. Excessive air pressure.

### REMEDY

- A. Lower temperature. Use flow additive.
- B. Reduce air pressure.

## CHANGES IN LUSTER DURING APPLICATION

### CAUSE

**A.** After several hours of application, the material will dry to a lower luster than when the application started.

### REMEDY

**A.** Stir material thoroughly at the start of the job being sure all flatting agent is well distributed. Thoroughly stir low solids products and stains before and during the application process.

## CRACKING OR CRAZING OF FILM

### CAUSE

**A.** Excessive coating weight can cause cracks and checks in the film when aging (first twelve months). Excessive coating weight is not usually a problem with nitrocellulose lacquers but is critical when using acid catalyzed products like pre-catalyzed lacquers and catalyzed varnishes.

**B.** Mud cracking.

### REMEDY

**A.** Use a wet mil gauge during application. Follow manufacturer's recommendation for number of coats and wet mil application per coat.

**B.** Occurs when latex is applied in excess film thickness or encounters of air too soon after application.

**Note:** Normally 4 to 5 dry mils after sanding is recommended for proper coating weight. Film cracking can be identified by cracks across grain. Cracks that run with the grain indicate substrate cracking

## CRATERING (The formation of small depressions in the coating)

### CAUSE

**A.** Cratering (crawling) is the tendency of a wet film to crawl away from certain areas of the substrate. Cratering is caused by contamination of the surface, equipment or coating with silicon, wax, oil or other contaminants. Cratering is a prevalent problem in refinishing shops. Temperature too high for application.

**B.** Old work (refinishing).

### REMEDY

**A.** Locate source of contamination and eliminate it. Check wipers, belt dressings, lubricating greases and oils, hand creams, metal and wood polishes, etc., as possible sources.

**B.** Add an anti-cratering additive (silicon) to the finish. **Caution:** Anti-cratering additives will contaminate all equipment.

## DELAMINATION OF FINISH OVER STAIN

### CAUSE

**A.** Clear finish is peeling or shows poor adhesion and when removed, finish shows stain adhering to the back of the chip.

### REMEDY

**A.** This usually occurs when the finisher is trying to obtain a very deep stain colour such as a mahogany or a white, white.

The application of a too heavy of a coat of stain without wiping, can leave a loose surface film of pigment when the clear coating is applied over the pigment it only adheres to the pigment and does not get good adhesion to the wood, therefore leading to peeling.

Dark stains colour should be obtained by using toners as a first coat before stain application. All heavy application of stains should be wiped before finish is applied. In addition, stain should be allowed to dry to the manufacturer's recommended time.

## DIRTY OR SEEDY FINISH

### CAUSE

**A.** Unclean conditions of application areas.

- 1. Dust in paint room
- 2. Dirt in air or paint line of spray application.

**B.** Improper solvent which tends to throw resin out of solution.

**C.** Material has been subjected to extreme cold which tends to throw some particles out of solution.

### REMEDY

**A.** Cleanliness. Bleed the line at least once every shift, or every eight hours.

**B.** Use the proper recommended thinner.

**C.** Allow material to reach 75°F. before applying. If still seedy, consult your coatings supplier.

**Note:** Always check coating with a magnifying glass to be sure it is dirt in film, and not small air bubbles. Pour coating on a clean surface like glass to assure finish is not seedy or has dirt in finish. Let it dry in a dust free area. Any contamination will show up when glass is held up to light.

## DISCOLOURATION

### CAUSE

- A. Presence of foreign vapors/fumes.
- B. Waterborne coatings will rust steel parts or oxidize aluminum in application equipment and can contaminate coatings.
- C. Improper drum liner.
- D. Using old nitrocellulose products.
- E. Tannin bleed when using water base coatings.

### REMEDY

- A. Investigate the nature of vapors which might be present. It will then be necessary to shield off the vapors from contact with the finish.
- B. Change to stainless or plastic parts.
- C. Make certain correct liner is being used.
- D. Nitrocellulose finishes tend to amber in colour as they age, even in a closed container. Always use as fresh material as possible.
- E. Use undercoater as first coat to stop tannin bleed.

## EXCESSIVE BODY (Material Too Thick)

### CAUSE

- A. Any material which will dry in the presence of air at normal temperatures will tend to take on body by virtue of the evaporation of solvent (oxidation) which takes place.
- B. In the more advanced stages of oxidation, a living action often occurs which is aggravated by the too-swift addition of extra thinner. It should be remembered that thinner should always be added slowly and the mixture stirred at the same time.
- C. Use of improper solvent.
- D. Freezing (Latex)

### REMEDY

- A. If body of the material has not proceeded to the point where there is living action, it is often possible to bring the thickened particles back into solution by addition of a stronger solvent of the same general type or class.
- B. If a definite living has occurred, it is not easily feasible to reclaim the material. A sample should be obtained for evaluation.
- C. Use recommended thinner.
- D. Store inside or above 32°F. If material has freeze/thaw stability, do not agitate material when frozen. Allow it to return to the unfrozen state undisturbed.

**Note:** The primary cause of excessive bodying is, in most cases, using old material, improper handling of dip tank or other storage facilities. A method for keeping all storage tanks tightly sealed should be arrived at and carefully adhered to.

## EXCESSIVE MARRING

### CAUSE

- A. Film not completely dried.
- B. Cold application (latex).
- C. Cold drying area (crosslink/catalyzed coatings).
- D. Catalyzed finishes used too quickly after application
- E. Catalyzed finishes or precatalyzed finishes used after shelf life or pot life has expired.

### REMEDY

- A. Allow for more complete air drying.
- B. Most latex coatings will not coalesce below 50°-60°F. Film that has not coalesced properly will be powdery or exhibit very poor film integrity.
- C. Catalyzed coatings drying area should be 68°-70°F. or cold cure (improper crosslinking) can occur.
- D. Catalyzed finishes reach 90% of their hardness within 24 hours. They then take 15-25 days to reach final cure. If used in harsh environment (i.e. restaurants, schools), allow 5-7 days curing before use.
- E. Follow manufacturer's usage schedule for pot or shelf life.

## EXCESSIVE MATERIAL USAGE

### CAUSE

- A. Not triggering the gun at each stroke.
- B. Gun held at wrong angle to surface.
- C. Gun held too far from surface.
- D. Wrong air cap or fluid tip.
- E. Depositing material film of irregular thickness.
- F. Air pressure too high.
- G. Fluid pressure too high.

### REMEDY

- A. It should be a habit to release trigger after every stroke.
- B. Hold gun at right angle to surface.
- C. Work gun 6 to 10 inches from surface.
- D. Use correct combination.
- E. Learn to calculate depth of wet finish film.
- F. Use least amount of air necessary.
- G. Reduce pressure.

## EXCESSIVE SETTLING

### CAUSE

- A. Over reduction or improper thinner.
- B. Too rapid thinning.

### REMEDY

- A. Follow thinning instructions.
- B. Add thinner gradually, stirring constantly.

## EXCESSIVE SPRAY FOG

### CAUSE

- A. Wrong solvent blend.
- B. Atomizing air pressure too high.
- C. Over reduction of material.
- D. Gun held too far from surface.
- E. Spraying past surface of the product.
- F. Wrong air cap or fluid tip.
- G. Fluid pressure too low.

### REMEDY

- A. Usual remedy is to choose a slower evaporating thinner.
- B. Use last amount of compressed air necessary.
- C. Use less reduction. Add fresh material to that which has already been over reduced.
- D. Hold gun at proper distance from work. (usually 6 to 10 inches).
- E. Release trigger when gun passes target.
- F. Ascertain and use correct combination.
- G. Increase fluid pressure.

## FINISH PRINTING

### CAUSE

- A. Insufficient drying time.
- B. Too heavy a coat.
- C. Slow drying or poor drying conditions.
- D. Improper coating selection.
- E. Improper catalyzation.
- F. Catalyzed material past pot life.
- G. Catalyzed material dried in a cold area, less than 70°F. (cold cure).

### REMEDY

- A. Allow longer air drying.
- B. Apply lighter coats.
- C. See reference to non-drying or poor drying.
- D. Check with your coatings supplier for proper selection.
- E. Check with your coatings supplier for proper catalyst amount.
- F. Follow manufacturer's recommended time for pot life.
- G. Make sure drying area is 70°F.

## FINISH SANDING NEW WOOD (Closed Grain Hardwoods (Maple, Birch, Beech, etc.))

- Finish sand with 120 grit paper, be sure sanding belts are not worn.
- Thin first coat 10–15 %, or use a vinyl sealers as first coat.

**Note:** It is important that on closed grain hardwoods, there is a good wood profile for the first coat of finish to anchor to.

## FLAT SPOTS

### CAUSE

- A. An absorbent-type putty used that has not been sealed in, causes the topcoat to strike in.
- B. Oily or dirty surfaces.

### REMEDY

- A. Seal the putty.
- B. Provide clean finishing surface.

## FOAMING (Waterborne Coatings)

### CAUSE

- A. Agitation too rapid.

### REMEDY

- A. Reduce the amount of agitation.

## GUN SPUTTERS CONSTANTLY

### CAUSE

- A. Fluid tip not tightened to spray gun.
- B. Leaky connection on fluid tube or fluid needle packing (suction gun).
- C. Lack of sufficient material in container.
- D. Tipping container at an acute angle.
- E. Obstructed fluid passageway.
- F. Material too heavy (suction feed).
- G. Clogged air vent in cup lid (suction feed).
- H. Dirty or damaged coupling nut on cup lid (suction feed).

### REMEDY

- A. Tighten securely, using a good gasket.
- B. Tighten connections and lubricate packing.
- C. Refill container with material.
- D. If container must be tipped, change position of fluid tube and keep container filled with material.
- E. Remove fluid tip, needle and fluid tube and clean.
- F. Thin material.
- G. Clean.
- H. Clean or replace.

I. Fluid pipe not tightened to pressure tank or pressure cup cover. I. Tighten, and check for defective threads.

## HAND MARKS / FINGERPRINTS ON FINISH COAT

### CAUSE

A. Oily hands in contact with finish during sanding operation.

### REMEDY

A. Employees should prior to sanding, clean hands thoroughly or wear gloves during the sanding process.

## HAZE

### CAUSE

A. Incorrect thinner (not necessarily an inexpensive one).

B. Over catalyzation of finish.

### REMEDY

A. Use the correct thinner as recommended by the manufacturer of the lacquers.

B. Finish must be removed. surface.

**Note:** Both blushing and haze can almost always be removed on finished articles, by spraying retarder thinner over the affected parts, if it is not caused by over catalyzation.

## LACK OF ADHESION BETWEEN COATS

### CAUSE

A. Stain or top coat not recommended for use together.

B. Primer surface may have picked up contamination.

C. Stain coat not wiped.

D. Stain coat not dry.

E. Catalyzed finishes allowed to dry too long between sanding and recoating.

### REMEDY

A. Use proper system. (A total system from one manufacturer is always recommended).

B. Clean surface. Apply finish coat in recommended sequence.

C. Always wipe stain coat to remove excess pigment.

D. Always allow stain coat to dry to manufacturer's recommendation.

E. Always sand catalyzed finishes within eight hours of recoating.

## LACK OF FLOW

### CAUSE

- A. Insufficient reduction.
- B. Use of solvents with high evaporation rates.
- C. Improper atomization of spray gun.
- D. Application of too thin a film.
- E. Draft condition.

### REMEDY

- A. Reduce according to instructions.
- B. If fast evaporation is due to local weather conditions, choose a slower evaporating solvent than originally recommended.
- C. Adjust spray equipment.
- D. Apply more material to surface.
- E. Find reducing solvent or blend to provide proper flow in a draft or eliminate the draft.

## LACK OF HIDING

### CAUSE

- A. Over reduction.
- B. Application on very hot, or smooth surface which tends to cause film to flow off.
- C. Pigment not properly stirred into suspension.
- D. Slow evaporating solvent, causing too much flow.
- E. Improper atomization.
- F. Low film thickness.
- G. Edges show through.
- H. Wood sanded too smooth.

### REMEDY

- A. Add fresh, unreduced material to that which has been reduced.
- B. Use a faster evaporating solvent. Sand surface to be finished with 120 grit sandpaper.
- C. Stir thoroughly to properly distribute pigment.
- D. Use faster evaporating solvent.
- E. Adjust spray equipment.
- F. Apply more paint via more passes with spray gun, higher solids (less reduction), or faster thinner.
- G. Edges too sharp – round by sanding. Surface sanded too smooth – use 120 grit sandpaper.
- H. Always pre-sand wood with 120-140 grit sandpaper.

## MATERIAL LEAKS FLUID NEEDLE PACKING NUT

### CAUSE

- A. Loose packing nut.
- B. Dry fluid needs packing.

### REMEDY

- A. Tighten packing nut.
- B. Remove and soften packing with a few drops of

light oil.

## **MATERIALS LEAK FROM SPRAY GUN**

<b>CAUSE</b>	<b>REMEDY</b>
<b>A.</b> Fluid needle packing too tight.	<b>A.</b> Loosen nut, and lubricate packing.
<b>B.</b> Fluid needle packing dry.	<b>B.</b> Lubricate needle and packing frequently.
<b>C.</b> Foreign particle blocking fluid tip.	<b>C.</b> Remove tip and clean.
<b>D.</b> Damaged fluid tip or fluid needle.	<b>D.</b> Replace fluid needle with correct size for fluid tip being used.
<b>E.</b> Broken fluid needle spring.	<b>E.</b> Remove and replace.

## **MATERIALS WON'T FLOW FROM SUCTION CUP**

<b>CAUSE</b>	<b>REMEDY</b>
<b>A.</b> Dirty air cap or fluid tip.	<b>A.</b> Remove air cap and fluid tip and clean thoroughly.
<b>B.</b> Clogged air vent on cup cover.	<b>B.</b> Remove obstruction.
<b>C.</b> Wrong air cap.	<b>C.</b> Ascertain and use correct set-up.
<b>D.</b> Leaky connections on fluid tube, air cap, or fluid tip.	<b>D.</b> Check for leaks and repair.

## **MATERIALS WON'T PUMP FROM PRESSURE TANK OR PRESSURE CUP**

<b>CAUSE</b>	<b>REMEDY</b>
<b>A.</b> Lack of proper air pressure in pressure tank or cup.	<b>A.</b> Check for a leaks or lack of air entry, and adjust pressure for sufficient flow.
<b>B.</b> Air in-take opening inside pressure tank or cup lid clogged by dried up paint. This is a common problem.	<b>B.</b> Clean air in-take opening periodically.
<b>C.</b> Leaking gasket on tank cover or pressure cup lid.	<b>C.</b> Replace with new gasket.

## MATERIALS WON'T SPRAY FROM SPRAY GUN

CAUSE	REMEDY
<b>A.</b> Exhausted paint supply.	<b>A.</b> Add paint.
<b>B.</b> Grit, dirt, paint skin, etc., blocking air cap, fluid tip, fluid needle, or strainer.	<b>B.</b> Clean spray gun thoroughly and strain paint. Always strain paint before using.

## NON-DRYING OR POOR DRYING

CAUSE	REMEDY
<b>A.</b> Humid weather.	<b>A.</b> If possible, place in heated and/or dehumidified drying room.
<b>B.</b> Cold weather.	<b>B.</b> Maintain a temperature in drying area of at least 70°F. to 75°F.
<b>C.</b> Greasy, waxy or otherwise unclean wood surface.	<b>C.</b> Clean surface carefully with volatile solvents. Dry completely.
<b>D.</b> Failure to stir all pigmented finishes into proper suspension before application.	<b>D.</b> Stir the material thoroughly so that liquids and pigments will be evenly disbursed.
<b>E.</b> If application is over a stained surface, there may be some dye in the stain used which tends to prohibit drying.	<b>E.</b> Use the proper stain.
<b>F.</b> Improper ventilation.	<b>F.</b> Provide ventilation – i.e. air movement.
<b>G.</b> An attempt to fill open grain wood by applying a heavy coat, or apply a heavy coat to flat surfaces such as table tops, retards thorough drying.	<b>G.</b> Apply only over a normal wet coat, 4 – 5 wet mils.

## OIL BLOOM

CAUSE	REMEDY
<b>A.</b> Rubbing down with oil before lacquer is thoroughly dry. Absorbed oil floats to the surface later.	<b>A.</b> Allow longer drying time. Bloom can sometimes be removed by washing with gasoline or spraying thin coat of clear. Allow to dry and re-rub.

## ORANGE PEEL

### CAUSE

- A. Material not thinned out sufficiently.
- B. Failure to deposit a wet coat.
- C. Spray gun stroke too rapid.
- D. Insufficient air pressure.
- E. Using wrong air cap.
- F. Spray gun too far from surface.
- G. Spray gun too close to surface.
- H. Overspray striking a previously sprayed surface.
- I. Poor thinner, too hot
- J. Material not thoroughly dissolved.
- K. Drafts.
- L. Humidity too low.

### REMEDY

- A. Add the correct amount of solvent by measure.
- B. Check solvent, then use correct spread and overlap of stroke.
- C. Take deliberate, slow stroke.
- D. Increase atomizing pressure or reduce fluid pressure.
- E. Select correct air cap for the material and feed.
- F. Stroke the spray gun 6 to 10 inches from surface.
- G. Spray gun should be worked 6 to 10 inches from surface
- H. Spray detail parts first, and end with wet coat. Hold spray gun so over-spray hits unsprayed work.
- I. Use better grade of thinner for material or add retarder to allow flow-out.
- J. Mix material thoroughly.
- K. Eliminate excessive drafts.
- L. Raise humidity of room.

## PINHOLES OR BUBBLING

### CAUSE

- A. Drafts which causes surface frying before the solvent can break through that surface film in order to evaporate.
- B. Fine drops of moisture coming through separator in spray apparatus.
- C. Air trapped in open pores of woods such as red oak.
- D. Fine bubbles after force drying.

### REMEDY

- A. Find source of drafts, open windows, door etc.
- B. Cleaning spraying equipment.
- C. Spray a thin wash coat as first coat, or add retarder to finish.
- D. Be sure adequate solvent flash off time is used before putting the finished part in oven.

## POOR ADHESION OF FILM

CAUSE	REMEDY
<b>A.</b> Unclean surface.	<b>A.</b> Clean carefully with volatile solvent.
<b>B.</b> Sometimes the finish primer coat is not meant to be used together, and the solvent in the finish coat lifts the primer from the surface. Even though the film will dry and have good appearance, primary adhesion has been ruined.	<b>B.</b> Make sure that the proper recommended primer and finish coat are used together.
<b>C.</b> Wood sanded too smooth. Especially closed grain hardwoods like Maple and Birch.	<b>C.</b> Always finish sand closed grain hardwoods with 120 grit sandpaper before finishing process.

## POOR ADHESION OF HIGH SOLIDS COATINGS

CAUSE	REMEDY
<b>A.</b> High solids coatings (40% solids or more) show delamination.	<b>A.</b> Inspect the wood sanding process prior to finishing. High solids coatings need a better wood profile to anchor to, than low solids coating that contain more thinner. Many times in sanding (especially hardwoods like Maple), the finishers will over sand and polish the wood to where there is not enough profile to produce good adhesion with the top coat. This problem can also be caused by the shop using worn sanding belts. When utilizing high solids coatings (40%+), a final sanding on hardwoods should be done with 120-140 grit paper to assure good adhesion to the wood.

## PROPER SANDING (Prior to Application of Stain or Finish)

	FINISH SAND
• Close Grain Hardwoods – Maple, Birch, Beech	120 Grit
• Open Grain Hardwoods – Oak, Ash, Walnut	120 – 140 Grit
• Softwoods – Pine, Fir, Poplar	120 – 140 Grit
• MDF – Routed Areas	400 – 600 Grit
Face Area	320 Grit
UV Filled Board	180 Grit

## PUMP FREEZE-UP (Latex)

### CAUSE

- A. Heat build-up in pump causes latex to coalesce.

### REMEDY

- A. Switch to diaphragm pump.

## RECOMMENDED MOISTURE CONTENT FOR WOOD PRIOR TO FINISHING

- Hardwoods 6-8 percent -- Softwoods 10-12 percent. Always use a moisture gauge to random check woods moisture contents. Store lumber in a warm dry room. Wood shrinks when it loses moisture and expands when it absorbs moisture.

## SAGGING OF FILM (Curtaining)

### CAUSE

- A. Sagging is caused by either over reduction or by use of a solvent that evaporates too slowly.
- B. Heavy application of a coating.
- C. Draft condition.
- D. Strong sunlight causing top drying and consequently, late slippage of film on vertical surfaces.
- E. Jerky operation of mechanical equipment from withdrawal from dip tank.
- F. Cold weather.
- G. Dirty air cap and fluid tip.
- H. Gun manipulated too close to surface.
- I. Failure to release trigger at end of stroke (when stroke does not go beyond object).
- J. Gun manipulated at wrong angle to surface.
- K. Fluid pressure too high.
- L. Operation too slow.
- M. Improper atomization.

### REMEDY

- A. Use the proper solvent consistent with the general nature and temperature of the surface to be coated.
- B. Control amount of material applied to surface.
- C. Eliminate draft.
- D. Avoid application in strong sunlight.
- E. Repair or redesign equipment.
- F. Use faster evaporating reducing thinner (caution, may cause blush) or bring room temperature up to 70°F.
- G. Remove cap and fluid tip and clean.
- H. Hold the gun 6 to 10 inches from surface.
- I. Release trigger after every stroke.
- J. Work gun at right angles to surface.
- K. Reduce fluid pressure.
- L. Speed up movement of gun across surface.
- M. Use larger air cap (internal mix). Increase volume of air through horns (external mix).

## SANDING / FINISHING TIPS

- Sanding should be done as close to finishing as possible to assure a wood profile remains for finish adhesion.
- The courser the sandpaper grit used, the darker the stain colour produced due to penetration.
- **Caution:** Sanding belt will polish the wood as grit is worn off. Worn sanding belts can cause intense heat (up to 400°F.) and produce a burned surface that restricts finish penetration.
- To avoid scratches in the wood, always use a series of grits when sanding and each subsequent sanding grit should be just one grit finer than the previous paper used, a sequence could be 100 grit, followed by 120 and 140.
- Most fine woods are not sanded beyond the 140 grit before finishing. When using solid wood and veneers on the same project, the veneers are traditionally sanded with one finer grit than you sand the solid wood. This will tend to give you better uniformity of stain colours.
- Sanding new (white) wood, should be done with an open coat type paper that is made with silicone carbide or aluminum oxide. Never use silicon papers on unfinished wood. These papers are recommended for the sanding of finishes only.

## SEPARATION OF LIQUID (Partial precipitation out of solution of the coating)

CAUSE	REMEDY
A. Wrong solvent used	A. If the separation is slight, addition of the proper solvent, along with constant agitation, may affect a good result.
B. Material subjected to unusual condition of heat or cold	B. Keep material at a temperature form 70°.- 75°F. If separation occurs because of extreme heat or extreme cold, the treatment is similar to <i>Remedy E.</i>
C. Over reduction	C. Follow directions for proper reduction. If material is already over reduced, addition of fresh material will often bring the production batch back to the proper state.
D. Reducer added too quickly without sufficient stirring	D. Add reducer slowly, stirring constantly.
E. Natural evaporation of solvent if material allowed to remain open to the air over a period of time.	E. Addition of proper amounts of solvent, plus addition of fresh material will put batch into condition if oxidation has not proceeded too far.

**Note:** If the separation is too pronounced, it may not be possible to put the material back into condition satisfactorily for use.

## SKINNING OF LIQUID

### CAUSE

**A.** While it has been possible (to a large extent) to minimize skinning, it is something which will occur to a varied degree whenever any air-drying material is exposed to air.

### REMEDY

**A.** Make sure that containers in which the material is stored are sealed airtight. Dipping tanks should preferably have an oil or water-sealer cover, and cover should be in place whenever tank is not in use.

**Note:** To avoid skinning during storage of open containers or during long disuse of dip tank, follow the prescribed procedures.

1. Oil-Type Materials: Cover remaining contents of partially filled container with small amount of turpentine before sealing.
2. Synthetic Type: Cover remaining contents of partially filled container with small amount of synthetic reducer before sealing.
3. Waterborne: Float water on surface.

## SPOTTY DRYING

### CAUSE

**A.** Unclean surface.

### REMEDY

**A.** Carefully clean wood surface with volatile solvent prior to coating.

## SPRAY PATTERN HEAVY AT CENTRE

### CAUSE

- A.** Spreader adjustment value set too low.
- B.** Atomizing pressure too low.
- C.** Material of too thick viscosity.
- D.** Fluid pressure too high for air cap's normal capacity (pressure feed).
- E.** Fluid tip too large for material used.

### REMEDY

- A.** Increase volume of air by opening spreader adjustment valve.
- B.** Increase pressure.
- C.** Thin material with suitable thinner.
- D.** Reduce fluid pressure.
- E.** Use smaller fluid tip.

## **SPRAY PATTERN BOTTOM HEAVY**

### **CAUSE**

- A.** Horn holes partially clogged (external mix).
- B.** Obstruction on bottom side of fluid tip.
- C.** Dirt on air-cap seat of fluid-tip seat.

### **REMEDY**

- A.** Remove air cap and clean.
- B.** Remove and clean tip.
- C.** Remove and clean seat.

## **SPRAY PATTERN HEAVY TO LEFT**

### **CAUSE**

- A.** Left side of air holes partially clogged.
- B.** Dirt on left side of fluid tip.

### **REMEDY**

- A.** Remove air cap and clean air holes.
- B.** Remove fluid tip and clean.

## **SPRAY PATTERN HEAVY TO RIGHT**

### **CAUSE**

- A.** Right side of air holes partially clogged.
- B.** Dirt on right side of fluid tip.

### **REMEDY**

- A.** Remove air cap and clean air holes.
- B.** Remove fluid tip and clean.

## **SPRAY PATTERN SPLIT**

### **CAUSE**

- A.** Air and fluid not balanced.
- B.** Air cap or fluid tip dirty.

### **REMEDY**

- A.** Reduce width of spray pattern.
- B.** Remove and clean.

## SPRAY PATTERN TOP-HEAVY

### CAUSE

- A. Horn holes partially plugged (external mix).
- B. Obstruction on top side of fluid tip.
- C. Dirt on air-cap seat of fluid-tip seat.

### REMEDY

- A. Remove air cap and clean.
- B. Remove and clean.
- C. Remove and clean seat.

## STREAKS

### CAUSE

- A. Dirty air cap and fluid tip.
- B. Failure to overlap strokes correctly or sufficiently.
- C. Gun moved too quickly across surface.
- D. Gun held at wrong angle to surface.
- E. Gun held too far from surface.
- F. Air pressure too high.
- G. Split spray.
- H. Tipping gun.

### REMEDY

- A. Remove cap and fluid tip and clean.
- B. Follow previous stroke.
- C. Take deliberate, slow strokes.
- D. Work gun at right angles to surface.
- E. Stroke 6"– 20" from surface.
- F. Use least amount of air pressure necessary.
- G. Reduce air adjustment or change air cap.
- H. Spray pattern should strike surface at right angles.

## TOO LITTLE COATING WEIGHT

### CAUSE

- A. Too little coating weight will directly affect the durability of all types of coatings. Too little coating will allow wood fibers to penetrate the film and wick moisture into the wood causing early film failure.

### REMEDY

- A. Do not over-thin coating! Use wet mil gauge during application, and follow the manufacturer's application spreading rates. Assist new spray personnel in establishing a pattern for proper application.

**Note:** Normally 4 – 5 dry mils, after sanding is recommended for proper coating weight.

## WHITE SPOTS

### CAUSE

- A. Water mixing with the lacquer either through the “separator” or by not having the surface dry.
- B. Flattening paste not mixing in.

### REMEDY

- A. Clean air line and “separator”. Be sure surface to be finished is dry. Bleed the line at least once every shift, or every eight hours.
- B. Stir thoroughly and strain material, if necessary.