PROBLEMS IN ANTIQUING - TROUBLE SHOOTING

Regardless of the metal involved, a number of problems arise in antiquing operations due mainly to poor housekeeping techniques. They are as follows:

Fingerprints

Mi-Tique® finishes and the base meta Is, left unprotected are highly susceptible to staining from fingerprints and natura1 body oils. Gloves must be worn by antiquing personnel from the moment the part is immersed into the cleaner, and left on until the lacquer or other final finish has set.

Mass Finishing Equipment

Equipment such as racks should be constructed to prevent the nesting of parts on one another. This nesting of parts causes bare "unoxidized" or off colored partially "oxidized" areas on the surface of the metal which will not be removed during highlighting. Similarly, baskets and barrels must be agitated and rotated respectively, to insure solution contact with each part and prevent nesting. (Maximum speed for rotating barrels is 6 rpm).

Plating

The most common problems in antiquing plated surfaces center around the plate being too thin, or being buffed through during polishing operations. Dilute ***Mi-Tique®*** solutions and/or specifically formulated ***Mi-Tique®*** 1791-LB should be .used in these situations, although success is determined by plate thickness. Visual evidence of stripped plating includes gassing of the part in solution, or the formation of blue colors on the surface of the part during "oxidizing".

Another, more difficult problem to spot deals with actual defects in the plating-nicks, pinholes, etc. These areas may not color or may give off colors during the antiquing cycle. The remedy includes inspecting the pieces immediately after plating. Look for the problem areas, and scribe around them. Finally, send these parts through the antiquing cycle and see if the scribed area is the problem area.

Pickling

Necessary for removing surface oxides and for neutralizing residual alkaline plating and cleaning solutions. Excessive concentrations and times can strip plated surfaces.

Recommended pickles include the following:

For copper and brass surfaces:

Muriatic Acid	(1/2 % to 50% by volume)
Quick Pik #5	(1/4 oz. to 2 lb. per gallon)
Quick Pik #20	(1/2 % to 25% by volume)

For pewter, tin, and lead alloy surfaces:

Muriatic Acid	(1/2% to 50% by volume)
Quick Pik #5	1/4 oz. to 2 lb. per gallon)

For nickel and silver surfaces:

See Problem Metals section

Note that in laboratory tests, the pickles described above do not appear to change antiquing times, colors, or other parameters.

Rinsing

Thorough rinsing is essential in the antiquing procedure, both before and after use of the ***Mi-Tique®*** solutions. Thorough cold water rinsing beforehand removes residual plating, cleaning or pickling solutions which could contaminate the ***Mi-Tique®*** solution; afterwards, complete cold water rinsing removes the ***Mi-Tique®*** solution from the surface of the part, thereby stopping any further reaction. This cold water rinse is extremely important, and must be included if a hot water rinse is used subsequently to accelerate drying. Otherwise, if just a hot water rinse was used, further "oxidizing" reactions would occur, resulting in staining. Bottom-fed, overflowing rinse tanks are strongly recommended.

Mi-Tiquing

In trouble shooting the antiquing solution, always titrate the bath to determine its strength (refer to the General Maintenance of ***Mi-Tique®***. Solutions section for discuss ion). If some other unknown type of contamination is suspected, prepare a new ***Mi-Tique®*** solution on the side and process samples.

In comparing ***Mi-Tique®*** with other antique finishes, bear in mind that the ultimate color will be influenced and enhanced by the final finish and, therefore, this topcoat must be applied before judging the depth of color. The natural color of the metal surface and the mechanical finish on this surface will also affect the final color of "highlighted" finishes.

Drying

Parts should be force dried in heated spin driers, ovens, or cobmeal. Large architectural panels should be wiped dry or blown dry with compressed air. Small parts do not have to be dried if they are barrel or vibratory burnished immediately after rinsing.

If force drying methods are unavailable, a hot water rinse should be used to accelerate drying. In this instance, parts should be racked in such a way that any stains produced from water accumulation, in areas that take the longest to dry, can be buffed out during highlighting.

Ease of Relieving

While by no means a drawback, many potentia1 customers feel that the ***Mi-Tique®*** finishes are too "soft". This is because they are accustomed to struggling with the relieving of typical hot bath processes such as Black Magic for Copper and Brass and Liver of Sulphur or conventional electrodeposited processes.

In effect, the ease of relieving the ***Mi-Tique®*** finishes is a huge advantage: Hand buffing lines require one-half the pressure; the consumption of buffing compound and buffing wheels will be drastically reduced - as much as 50%; the dwell time in the media of burnishing barrels and vibrators will also be greatly reduced - at least 50 to 75%. Overall, this ease of relieving results in increased productivity for the antiquer.

Atmospheric Contamination

Although extremely stable and colorfast, unprotected, unsealed antiqued finishes are susceptible to spotting, staining, etc. in highly corrosive environments. Care should be taken to avoid these surroundings or, at best, to topcoat as soon as possible

Sealing the Antiqued Finish

Problems also arise in use of lacquers or oils for final finishes. For adherency, lacquers must be applied to a clean, oil-free surface. Even with this properly performed the lacquer finish may have dull flat areas marring the glossy surface. This problem is known as "seeding":

On occasion, the nozzle of the sprayer may build up an excess of semi-dry lacquer. Through pressure, this excess is blown-off the nozzle and deposited on the surface of the part. As the part is then placed in an oven to cure the lacquer, this deposit or "seed" melts and spreads out over the surface resulting in an unattractive appearance.

Oily U.S. 10B final finishes can also present problems if the oil discolors or stains the antiqued surface. Mitchell-Bradford's Rust Pel #41, #41, and #45 eliminates this problem.

GENERAL MAINTENANCE OF Mi-Tique® SOLUTIONS

Bath Strength

Mi-Tique® solutions are gradually depleted through use, but may be replenished indefinitely with periodic additions of concentrate. The strength of the solution and the amount of concentrate to be added can be determined by titrating with sodium thiosulfate as outlined in "Chemical Control Procedure CC-l".

The strength of the solution can also be maintained by recording the time of immersion. Thus, when the time required to produce the desired color increases, add sufficient concentrate to reduce the time to the established standard. For optimum results, the solution should be maintained at 85% of its original strength, or greater, through small periodic additions.

Precipitation

During antiquing a solid by-product (precipitate) is formed which gradually accumulated at the bottom of undisturbed ***Mi-Tique®*** tanks. If allowed to remain, agitation of the solution through processing will suspend these solids in the tank with the possibility of deposition on the surface of the work. This will result in spotted finishes. To avoid this spotting, and to increase the life of the solution and the coverage, continuous circulation and filtration is needed. An alternate to this is to allow the solid by-products to settle to the bottom of the tank. Next, transfer the clear solution to a clean plastic-lined drum to be retained for recharging after the tank is cleaned.

Temperature

The reaction rate of the ***Mi-Tique®*** solutions is directly proportional to bath temperature. Temperatures of 90° F. or more result in more rapid color development. Temperatures below 60° F. impede the "oxidizing" reaction.

Concentration

Like temperature, the reaction rate of the ***Mi-Tique®*** solutions is also directly proportional to concentration. More concentrated solutions produce rapid and complete color development. More dilute solutions slow the reaction rate.

Time

Longer times in the ***Mi-Tique®*** solutions produce darker colors than abbreviated times. An exception to this is the blackening of nickel plate with ***Mi-Tique®*** 1793, where immersing parts longer than necessary will cause the black finish to fade out.

Hubbard-Hall Inc. **Waterbury, CT 06720**
www.hubbardhall.com
info@hubbardhall.com

Solution Life & Coverage

To repeat, if properly maintained, ***Mi-Tique®*** solutions will function indefinitely if they are:

1. Maintained at 85% or greater of their original strength through small periodic additions of concentrate;
2. Kept free from external contamination, and
3. Continuously filtered or decanted to remove precipitated by-products.

Optimum coverage resulting from the above would be approximately 400-500 sq. ft. for dark chocolate brown and black colors; 800-1000 sq. ft. for lighter brown shades, per gallon of concentrate.