Success With Water Based Coatings

The purpose of this paper is elaborate on the concept that sophisticated multi-steps finishes can be achieved with Water Based Coatings. With the technology now available in Water Coatings, we can achieve almost any look that traditionally could only be done with NC coatings. The aesthetic value / feel / and color depth are all now able to be duplicated on finishing lines that were originally set up for NC. With simple modifications and an understanding of the parameters within which Water Based Coatings can be used, you can convert from solvent based finishes to Water Based finishes with relative ease. This paper will be a simple guideline to successfully achieve the look / feel and color desired with Water Based Coatings.

List of Requirements

Temperatures

1. Ambient Finish Room Temperature - Must be above 15C
2. Temperature of the Coatings (Spray Temp.) - Must be above 15C
3. Temperature of Substrate / Wood (In finish process) – Must be above 15C

Glue

On veneered surfaces, it is essential to ensure that the gluing of the veneer is carried out carefully and uniformly in order to avoid a number of serious problems.

- Limited uniformity of absorption of the surface for stains is the main problem

To avoid compromising the glue of the veneered surface when water based coatings are applied it is advisable to use glues that, once dried are completely insoluble in water. It is recommended that only class B3 glues (DIN 68602) of D3 (EN 204) are used.

If the veneer has not been properly glued, once it has absorbed water, small and unattractive blisters will form.

- Small clots of glue that have not entirely dissolved under the surface can result in the formation of flecks of white paint in the coating film.
Stainless Steel / Plastic / Rubber Spray equipment and parts

Because Water Based Coatings are used all spray equipment must be Stainless Steel with Plastic or Rubber parts. This is essential to prevent any corrosion contamination to equipment.

Dry Oven

Water Based Coating all need to have forced air dry ovens to cure in between coats and before packing.

- Clear Coats and Pigmented Basecoats will need 40 minutes @ 45C to cure for sanding and successive coats
- Final Lacquers will need 2 hours @ 45C, then 8 hours natural dry before packing.

The above requirements are the minimum that is needed to use Water Based Coatings. If your finishing environment can meet these, then you’re ready to consider using Water Based Coatings.

The Actual Finish

There is much discussion about Water Based finishes not being able to achieve the brightness and clarity of NC or some PU finishes. I would say this is probably true in some cases. But, the Water Based finishes can be very comparable to both NC and PU with the proper products (Below list) and techniques. You will notice the clarity and brightness issues on dark / transparent finishes. The Water Based NGR stains do not bleed back to the surface as they do with NC or solvent based stains. Thus without the bleed back when spraying a sealer or lacquer, the Water Based colors might not have the same bright feeling that the NC products do. This can be resolved by the type of Water Based NGR and Duro Stain used, and how it is mixed and applied. The Clear Sealers and Lacquers can be adjusted in the system to give optimum clarity. Thus, these two issues can be compensated for, and almost completely non existent. With the list below, one can see the basic system and products are the same as the NC or PU systems, only all are Water Based Products.
The Coating system will be 100% Water Based, with the following products used in the finishing systems

- WB – Sap Stain / Equalizer / NGR
- WB – Duro Stain / Pigment Stain
- WB – Pigmented Metallic Basecoat colors
- WB – Clear Washcoat
- WB – Semi Transparent Glazes
- WB – Opaque Glazes (Depending on desired effect)*
- WB – Clear Sealers
- WB – Dry Brush / Spatter / Cowtail / Antique effects
- WB – Pad Stain / Shade Stain
- WB – Clear Topcoats
- WB – Clear Topcoats (with Crosslinker / Catalyst if needed)*
- WB – Wool Wax / Marguard / Rubbing Solution

From the above product list, we can achieve the beauty of the American multi-step antique finish, to the sophisticated contemporary looks coming from Europe. The upscale young looks of New York, to the simple rustic / natural look of the Northern Europe can all be achieved using Water Based Coatings.

A few years ago we would not be able to confidently say this is achievable. But now it is, and now is the time to consider whether your market / your customers are ready for the “GREEN FINISH / ENVIROMENTALLY FRIENDLY FINISH”?

Information on the author: Steve Kirk – Sales Director North China – Valspar Wood Coatings Shanghai
30 years in the Asian Furniture Coatings Industry. Started in Taiwan in 1981, has lived and worked with furniture manufacture and exporters throughout all of Asia. Currently leading the Valspar North China Wood Furniture Group in expanding into the domestic market with Water Based Coatings.