The Evolution of Non-solvent Coatings Technology

Since the early days of non-solvent based coatings products, incredible strides have been achieved. Early entries that disappointed many, from slow drying, fish eyeing and a cloudy blue tinged appearance, has evolved to a wide range of fast drying, stable, crystal clear rugged products equal, or in some cases even better than, popular solvent coatings.

What becomes important is knowing how to make the right product selection to achieve the desired end result as well as learning how to best use the product. The wrong choice will lead to frustration, poor or unacceptable finish quality and an unfair opinion of non-solvent coating technology.

There are two basic technologies. **Waterborne** and **Waterbased**.

Waterborne finishes are formulated on a solvent platform. Although they are water reducible and non-flammable, these products combine oil, water, resins and additives to create the product. A downside of waterborne technology is the freeze/thaw cycle. If a waterborne product freezes in shipment or while stored in a can it can render the product useless. Shelf life of waterborne finishes is limited.

Waterbased finishes are formulated on a water platform. Generally waterbase products are lowest in VOC's (volatile organic compounds), are of course non-flammable and can withstand a few freeze/thaw cycles. Shelf life is longer than a waterborne formula.

Both technologies will perform equally assuming a good formulation.

It is important to note that Waterborne and Waterbase finishes need to be formulated for a specific method of application. If your intent is to manually apply the finish then a product specifically designed for brushing or wiping should be used. This will ensure the proper drying time, appropriate viscosity for product build and other additives to help the product perform to your expectations.

If your intent is to spray the finish we must separate the various technologies available, as non-solvent product must be formulated for different types of spray equipment to achieve the best results.

If you are using HVLP technology, it is critical to use a waterbase or waterborne product that is specifically formulated for HVLP. Since it is generally not advisable to thin or reduce the viscosity of these products more than 10%, and then only with an appropriately formulated reducer, the product manufacturer must prepare the coating at a viscosity that will atomize properly yet maintain the level of solids to provide an appropriate build while flowing out to a smooth level finish. This is accomplished by starting with specific raw resin product, additives and adjusted viscosity. RTS (Ready To Spray) HVLP Compatible will provide the best results with HVLP turbine technology and HVLP spray guns used with air compressors. Generally it is suggested that at least a three stage turbine unit or larger be used to achieve the best results. Spraying light wet multiple coats will provide rapid drying, high build and the most natural look associated with a solvent finish. We refer to this type of application as custom finishing as opposed to high production finishing where the intent is to spray a minimum of coats to achieve rapid production results.

If you are using conventional compressed air spray technology, Air Assisted Airless or Air Mix Waterborne and Waterbase are specifically formulated for these technologies. Since application

pressures are higher the products are manufactured at higher viscosities and additives are adjusted accordingly. Do not attempt to use these products with HVLP technology because results may be poor to unacceptable even if thinned or reduced. These products are designed for continuous or higher production as opposed to custom finishing as described above.

In addition, there are special waterbase formulations for dip coating, roller coating, tumble coating, UV, metal priming and more. These products are custom manufactured for the specific application.

Waterbase products for wood applications are most popular. You can find equivalent waterbase products to solvent base. There are stains, clear sealers and topcoats that range from average to super-hard or pre-catalyzed, urethanes, pigmented products, grain fillers, and outdoor compatible products.

The most important aspect of success with waterbase products is to select the right product for your particular application. For production, use a production formulated product, for HVLP use an RTS, HVLP compatible formulated product and for manual application use a product formulated for brushing or wiping. If you are not sure of your selection, a call to the technical department of the manufacturer can usually resolve any uncertainty.

Most important, understand the waterbase technology, understand how it relates to your method of application and learn how to best use the product.