

Section VII: Coating Your Finished Wood Product

Process Overview

The finish of finely crafted wood furniture, cabinets and millwork is designed to provide a pleasing appearance, feeling of smoothness, and protection of the wood from physical and chemical damage, and natural degradation. The coating materials traditionally used by the wood products industry contain a substantial quantity of solvents that volatilize to the air within the plant and/or are directly vented to the outside, usually without treatment. The basic operations of the typical finishing process include:

- ! glue sizing or bleaching
- ! cleaning / stripping
- ! coating
- ! drying
- ! sanding
- ! rubbing / buffing
- ! equipment cleaning
- ! repair / touch-up

Potential Wastes: Solid and Hazardous

- ! volatile organic compound (VOC) emissions and hazardous air pollutants (HAP) emissions
- ! liquid wastes: spent stains, wash coats, fillers, sealers, glazes, topcoats, solvents, spray booth wastewater
- ! solid wastes: spray booth filters, overspray masking, paint solids, rags, solvent still bottoms
- ! energy

Waste Reduction Options/Case Studies/Checklists

Coating Formulations:

Waterborne

Water, instead of conventional solvents, is the major carrying medium for the coating solids in waterborne coatings. Using waterborne coatings, or "hybrid" coatings with a combination of water and conventional solvents can significantly reduce VOC air emissions and reduce associated wastes.

Benefits

- ! reduce air emissions and hazardous liquid and solid wastes
- ! finish resists moisture, chemicals, impact and abrasion well
- ! adaptable to a wide range of conventional application methods

New England Woodcraft Case Study *Forest Dale, Vermont*

In 1987, New England Woodcraft, a manufacturer of bedroom and lounge furniture, installed a continuous finishing line that can apply clear water-based sealers and topcoats to their flat furniture pieces. Sealing steps include spraying, flash-off, infrared heating, followed by hand sanding. Pieces then make their way to the top coat spray booth, another set of flash-off and infrared ovens. After three years of testing water-based emulsion finishes with C. E. Bradley Laboratories of Brattleboro, VT, the company completely converted its finishing line to water based acrylic clear sealers and topcoats.

Results not only included a pleasing, high quality finish with excellent performance, but also the reduction of VOC emission rates by 80 percent and reduced costs by 25 percent. Even though the water-based formulations cost more than nitrocellulose, a Woodcraft representative states that they get "more mileage" from the water-based formulations because of the higher solids content.

Source: "Getting the Most from Water-based Finishes," *Furniture Design & Manufacturing*, January 1991.