

### High-Solids Solvent-Based

These solvent-based coatings have a high-solids concentration in the range of 35-40 percent solids which results in an increased application of coating with less VOC emissions and solvent waste. There are three basic types of high solids coatings - two component ambient temperature cured, one component heat converted, and high solids thermoplastic solvent borne coatings.

#### *Benefits*

- ! reduce air emissions, and liquid and solid wastes
- ! realize less compliance and disposal costs
- ! less material required to coat, reduce solvent usage and costs
- ! reduce number of spray applications to achieve the same coating thickness
- ! high transfer efficiency
- ! reduce inventory, less handling and shipping costs, additional available floor space
- ! less fire risk, potential reduction in fire (in some cases)

#### *Cautions*

- ! cannot use effectively in dip or flow coating applications
- ! wood surface must be clean
- ! may require high temperature curing with narrow "time/temperature/cure window"
- ! difficult to control film thickness and sagging; may require heater
- ! sensitive to ambient temperature and humidity
- ! finished piece difficult to repair
- ! overspray is tacky and difficult to clean
- ! reduce shelf life, short pot life for two component coating
- ! odor and slow flash-off require use of vented flash-off zones

### Polyester-/Polyurethane-Based

Polyester-based and polyurethane-based coatings are used significantly outside the U.S. Use of these coatings can result in a reduction of VOC air emissions over nitrocellulose solvent-based coatings. Polyester-based coatings include styrene derived polyester of 100 percent solids which is cured by ultraviolet (UV) radiation, and acrylic polyesters (30-50 percent solids) which are cured by catalytic reaction or UV radiation. These coatings are typically applied by conventional spray guns or flat line applicators. Curing may require an initiator such as organic peroxide or UV radiation.

#### *Benefits*

- ! reduce solvent usage and associated costs
- ! reduce air emissions, solvent wastes and associated compliance and disposal costs
- ! fast drying, less floor space needed
- ! durable finish
- ! resistant to heat, chemicals, impact
- ! high gloss with polyurethane
- ! multiple application methods

#### ***Pennsylvania House Case Study, White Deer, Pennsylvania***

**The Pennsylvania House manufacturing facility in White Deer, PA is applying the UNICARB™ spray finishing system full time for lacquer topcoats on chairs. Starting in spring 1990, Pennsylvania House worked with Union Carbide (licenser of UNICARB™ system), Nordson (developer of the spray equipment) and Guardsman Product Inc. (formulator of the top coat lacquer) in the development of the system, which was installed on the chair finishing line, July, 1991.**

**Results include a topcoat finish of equivalent quality and integrity to the finish previously provided by the air assisted airless spray guns, however with only about half as many gallons of finish used. VOC emissions have been reduced by approximately 70 percent.**