- **Transportation.** ***Designers should evaluate the amount of transportation involved at all points, from raw material production through final product delivery. Each mile of transportation requires more energy consumption and produces greater levels of pollution. Are there locally produced products that will serve the need just as well?***

- **Production.** ***It is important that the design professional understand the various production steps that take the raw materials through to a finished product. How much pollution is released into the air, water, and soil in these processes? How much waste is produced in these processes? How much energy is used? How much water and other resources were required in the processes? What other resources are depleted in the production process? Is the process safe and healthy for the workers?***

- **Packaging.** ***Designers should not forget that packaging alone can represent a large percentage of the total waste stream for a given product and looms large in the total waste stream of society. While construction waste recycling is important, avoiding packaging waste in the first place is the most efficient strategy. Is the packaging necessary? How little is necessary? Is the packaging material reusable? If not, can it be recycled in other ways? Many innovations are made possible by using local materials and working with manufacturers. As an example, consider that 50 percent of all hardwood is used for pallets; 95 percent of these pallets are used only one time.***[3]

- **Installation.** ***As designers know, many products, which are otherwise environmentally benign, can fall into disfavor simply because of the installation procedures required by the manufacturers. Is the installation safe for workers? Does it introduce volatile organic compounds (VOCs) into the building? Will the warranty be voided if a more environmentally friendly mastic or finish is used? Are the mastics, finishes, or other required installation materials safe and environmentally friendly?***

- **Use.** ***The design firm should ask whether the material will serve for a long time with a minimum of upkeep. Is it safe for users? Are the maintenance procedures safe? Is it free of VOCs and other toxic compounds?***

FIGURE 16-5
Paint is the most common finish material. Until recent years, most paints off-gassed high quantities of VOCs during and after installation. The paint industry, however, has made great strides in improving the environmental performance of the product. As with all other materials, it is still extremely important to read the label carefully.