UNISON
WINDOWS & DOORS

WOOD FINISHING

Wood structures exposed outdoors need protection against the influence of the exterior factors such as sunlight and rain. Protection can be achieved with a combination of building design and efficient coating. The ability of a wood surface to accept and hold a coat of painting is determined by the natural characteristics of the wood species and the manufacturing processes used. Natural factors (anatomical, physical, and chemical properties) vary considerably not only between different species, but even within the same species or the same tree.

A main problem in the wood finishing for outdoors lies in the fact that architects as well as homeowners often prefer to use fully transparent or semi transparent finishes because they like the look of natural color and texture of wood. Because these popular types of finishes (clear finishes, stains) have to transmit some sunlight they contain only small amounts of pigment and may have low moisture resistance capability. The problem with these finishes is that they don't have the requirements for a long and durable finish.

Most wood finishing experts suggest that the wood surface itself needs to be modified to achieve both better photochemical resistance and better dimensional stability. Such treatments or modifications could also reduce other weathering effects such as dark coloring due to mildew. Nonetheless, the finishing products themselves have to be optimized to provide more ultraviolet light protection, less moisture permeability, and more mechanical flexibility. Reasonable design criteria and construction details are also necessary for good durability and performance of both wood and finish.

The primary function of any wood finish is to protect the wood surface, help maintain and enhance the appearance, and provide cleanability. Wood surfaces exposed to the weather without any finish change color, are roughened by the photo degradation process and surface checking and erode slowly. Wood surfaces exposed indoors without any finish may change color and accumulate dirt and grease.

Wood and wood based products in a variety of species, grain patterns, textures, and colors can be finished effectively by many different methods. Selection of the finish will depend on the appearance and degree of protection desired, on the substrates used, but, mainly, on the final end use of the product. Since different finishes give varying degrees of protection, the type of finish, its quality, quantity and the application method must be all considered in selecting and planning the finishing and refinishing process of wood and wood products.

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WOOD FINISHES

There are two types of finishes (or treatments) used to protect wood surfaces exposed outdoors, those that form a film, layer, or coating on the wood surface and those that penetrate the wood surface leaving no distinct layer or coating.

Film forming finishes include:
- Paints of all descriptions
- Varnishes
- Lacquers

Penetrating finishes include:
- Preservatives
- Water repellants
- Pigmented semi transparent stains
- Chemical treatments

PAINTS: From all the finishes, paints provide the best protection for wood against ultraviolet light (UV) degradation and erosion in the outdoor environment. The paint seals the wood against moisture penetration from exterior. Also it seals inside all the wood oils that otherwise would be weathered away. Paint it is not a preservative, therefore it will not prevent decay if the conditions are favorable for fungal growth. Oil-base or alkyd paints are essentially suspension of inorganic pigments in an oil or resin vehicle that binds the pigment particles on the bonding agent to the wood surface. Latex paints are suspensions of inorganic pigments and various suspensions of inorganic pigments. Acrylic latex resins are very durable and I generally accepted that an acrylic paint will outlast the oil-base house paint. Latex paints are also more porous, and the fact that they can breathe slightly contributes to their longevity.

VARNISHES: Varnishes are also surface film finishes. These clear finishes have always been popular because they accent the grain and the color of the wood. Unfortunately, all types of varnishes (oil-base, alkyd, urethane, and acrylic) require frequent maintenance to keep up this attractive appearance. The culprit is the ultraviolet light from the sun, which degrades both the varnish and the wood fibers directly beneath it. Even though new synthetic resins have been made with special UV inhibitors, some UV still gets through the film. Eventually the varnish cracks, peels and flakes off, taking with it the fibers of the photo chemically degraded wood. Cleaning and revarnishing has to be done as soon as the breakdown occurs.

WATER REPELLENTS: A large portion off all the damage done to exterior woodwork is a direct result of moisture changes in the wood and, as a result, dimensional instability. The treatments can be also used as natural finishes for wood. Pretreatment for wood with water repellents or water repellent preservatives is very important in the finishing of wood for exterior use.

STAINS: When inorganic pigments are added to water repellents or other similar transparent wood finishes the mixture is classified as a semitransparent penetrating stain. The addition of the pigment provides color and increases greatly the durability of the finish. These finishes will not peel or blister even if moisture is entering the wood. Stains can be prepared from both solvent-base resin systems and latex systems. Latex systems do not penetrate wood surface, however. The most common used stains are: pigmented oil stain, pigmented latex stain, penetrating oil stain, water stain, spirit stain, non-grain raising stain, shading stain and varnish stain.

WOOD SURFACE PREPARATION

Surface sanding has proved to be an advantageous processing step prior to paint application. Sanded surfaces need a relatively low quantity of paint for coverage and show best paint performances even on low-grade wood, which can improve the further performance of wood products.