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Selecting Natural Wood Finishes

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Selecting Natural Wood Finishes

WOODS found in every home need surface protection against wear, soil, and stains. Finishes are applied to woods to provide this protection and to enhance their natural beauty. Unfinished woods shrink in dry, hot air; swell in moist air; and are marred and soiled in everyday use. Three purposes of finishing wood are: (1) to retard changes caused by variations in moisture and temperature; (2) to enhance their natural luster, grain pattern, and color; and (3) to close the porous surface to reduce contamination by handling, atmospheric grime, and food, thus making cleaning easier.

As a do-it-yourself wood finisher, you should consider the ultimate use of any wood before determining what kind of coat to apply. Finishes for floors should have high resistance to abrasive wear, finishes for kitchen cupboards should be resistant to water and chemicals, and finishes for furniture should be resistant to marring and abrasion. Requirements for wood paneling finishes depend on where the paneling is located in the home. Before selecting a particular finish, decide what characteristics it must have to give you good service.

Conventional finishes include shellac, varnish, lacquer, oil, and penetrating seals. Among the less well-known finishes of interest for homeowners' use are the epoxies and urethanes. They are but two of the many possible chemical formulations you can use for surface coatings. These finishes, used chiefly for commercial work, are more expensive, may require costly spraying equipment, and require more application skill than conventional finishes.

Conventional Finishes

SHELLAC is a clear, quick-drying finish used on surfaces such as picture frames and furniture interiors where durability is not required. It comes in white and orange. It is brittle and lacks resistance to marring, water, and heat.

Varnish, long used for floors, woodwork, and furniture, comes in high gloss or satin finishes. It has a tendency to yellow with age and is not desirable for use on birch or maple. Spar varnishes, made for marine use, are very durable.

Lacquers, used on much factory-made furniture, dry quickly, may be brushed or sprayed on, are nonyellowing, and are available in high or low luster. Some are highly resistant to water and alcohol.

Oil finishes are used chiefly on walnut, cherry, and teak furniture. Consisting mainly of boiled linseed oil, they require much hand polishing and many coats. Oil deepens the color of the wood and provides a dull sheen. Oil finishes are durable and may be renewed by applying additional coats. Special oils are used on salad bowls, cutting boards, and kitchen cutting blocks.

Though penetrating seals are used chiefly on floors, they may be used on paneling and furniture. Similar to oil finishes, seals sink below the wood surface. Worn areas on floors can be renewed with additional coats without complete removal of the old finish. Seals usually have little luster.

Chemical Coatings

URETHANE coatings were first created in Germany in the late 1930's and were advanced during World War II because Germany had a shortage of the oils used in paints and varnishes. Because other materials were readily available in the United States, urethanes were almost unknown here until recent years.

Because chemical finishes were unstable and tended to gel unpredictably, they were packaged in two parts until a few years ago. Recently, however, safe, stable, one can, oil-modified urethane has been produced.

The oil-modified products, though stable, cheaper, and easier to use, do not have the same adhesion, hardness, and chemical resistance as the two package types. Once the two parts are mixed, potlife is limited anywhere from a few hours to 3 or 4 days, depending on the manufacturer's formulation. The ingredients then harden into a solid mass, even in a tightly closed can.

In the same class with urethanes are the epoxy resins. Both epoxies and urethanes are made in high gloss and semigloss finishes. Manufacturers of epoxies and urethanes claim that their products:

- Resist mars, scratches, and stains.
- Adhere tightly to wood, metal, concrete, plastic, and fiberglass.
- Retain their high gloss for years.
- Stand up two to three times longer outdoors than spar varnish.
- Are unaffected by alkalis, acids, and most common chemicals.

Because urethane dries with a hard finish and is unusually resistant to abrasion and staining, it is widely used on floors that receive hard wear, such as those in gymnasiums and roller skating rinks. High resistance to water and detergents makes urethanes valuable as finishes for outdoor patios and porches.

Because urethane dries to such a hard finish and because it does not have the adhesive power of the epoxies, you must take care when applying it over itself. You must sand the glossy surface down to provide a good "tooth" for the new coating. Without proper sanding, the new coating will peel in a short time. Urethanes tend to darken when used on interior work.

Epoxy finishes also are frequently sold as floor sealers. Though not quite as clear as urethanes, epoxies are less likely to darken with age when used indoors. Because they have exceptional bonding strength and resistance to chemicals, they often are used for finishing concrete floors. A two part pure epoxy coating also is available for waterproofing leaking joints in basement walls and swimming pools.

Although most chemical coatings will bond satisfactorily over lacquer, you must take care in applying them over previous finish—powerful solvents used in many of the coatings will react with old finishes. Make a test first. Let it dry. Wait 15 to 20 minutes to see whether or not the new finish will work.

Costs of Coatings

CHEMICAL coatings usually cost much more than regular clear varnish. They may be worth the extra cost if you need a coating with exceptional toughness and chemical resistance. Regular varnish, however, is still the best choice for many purposes.

Ready-mixed, one part epoxy finishes cost about \$7.50 a gallon. Most good quality urethane finishes sell for \$10 to \$12 a gallon. The two part epoxy coatings are the most expensive, selling for \$5 to \$6 a quart and \$18 to \$22 a gallon.

More About Coatings

URETHANES stand up better outdoors than epoxies. When two or three coats are applied on a boat hull or house exterior, the film will be glossy and in good condition after 2 to 3 years. Under the same conditions, spar varnish will hold up slightly more than 1 year. Epoxy tends to lose its gloss and starts to

chalk in less than 1 year. Epoxies have far greater adhesion than urethanes or any other type of coating, so they are widely used on concrete floors and walls. Epoxies are more resistant to chemical attack than urethanes. Urethanes, crystal clear and usually pale straw in color, enhance the natural beauty of wood and give it a special depth and brilliance.

Worth Remembering

1. The manufacturer's recommendations for applying any finish are given on the container label. Always read and follow directions carefully.
2. A reliable dealer handles quality products and can provide additional information about the products he sells. Buy from a reliable dealer.
3. There are no bargains in good quality products. Buy as high a quality finish as you can afford.
4. The best quality products will not cover up your failure to prepare the surface properly. To obtain satisfactory results takes time and patience—there are no shortcuts.
5. Select a good quality finish—it will protect your wood surfaces, keep them beautiful, and make them easy to maintain.

For Further Reading

- Grotz, George. *The Furniture Doctor*. Doubleday and Company, Inc. Garden City, N.Y. 1962.
- Hochman, Louis. *How to Refinish Furniture*. The Do-It-Yourself Series. Arco Publishing Co. New York, N.Y. 1954. \$2.
- Meades, Kenneth G. Urethane Coatings for Industrial Finishers. *Industrial Finishing*. June 1964. 40: 54-58.
- New Plastic Varnishes. *Popular Science*. July 1962. 181: 145-48.
- Rosen, H. J. Exotic Coatings. *Progressive Architecture*. April 1964. 45: 188.
- Scharff, Robert. *Complete Book of Wood Finishing*. McGraw-Hill Book Co., Inc. 330 West 42nd St. New York, N.Y. \$4.50.
- Thames, Gena. *Furniture Restoration*. Rutgers University. N.J. Agr. Ext. Bull. 355. New Brunswick, N.J. 25¢
- Zabel, Myra. *Finishing and Refinishing Wood Furniture*. Univ. of Minn. Agr. Ext. Bull. 332. St. Paul, Minn. 1966.

Facts About Conventional Finishes

Type	Used on	Characteristics	Limitations	Drying time
Shellac	Picture frames, some furniture	Clear, quick drying; may be sanded and recoated the same day; applied by brush.	Brittle; not resistant to water and heat or mars and scratches; must be sanded between coats.	30 minutes; allow 4 to 6 hours between coats
Varnish	Floors, paneling, woodwork, furniture	Durable, film-type finish; may have high gloss or dull satin finish; resistant to heat, water, and acids; applied by brush; slow drying.	Not easily repaired when damaged; odor offensive to some; needs to dry in dust-free room.	1 to several days, consult label
Lacquer	Furniture, kitchen cupboards, paneling, wood trim	Clear, nonyellowing, quick drying; high or satin luster; some are resistant to water, heat, and chemicals; may be brushed or sprayed on.	Cannot be used over other finishes; odor offensive to some; must be sanded between coats; must be thinned with special lacquer thinner.	15 minutes (may be recoated same day)
Oil	Furniture, salad bowls, cutting boards, counter-blocks	Deepens and darkens wood tones; a penetrating type finish that never needs complete refinishing; additional coats may be applied as needed; durable; resistant to water, heat, alcohol, and marring; applied with cloth.	Requires much rubbing to obtain desired dull sheen; usually requires 5 to 12 coats.	24 hours or more
Penetrating seals	Floors, furniture, paneling, wood trim	Durable, penetrating finish; resists marring and wear; applied with cloth; easily renewed in worn areas.	Two coats usually needed; must be sanded between coats; paste-wax may be applied on top for protection.	Overnight

Facts About Chemical Coatings

Type	Used on	Characteristics	Limitations	Cost
One part modified urethane	Wood floors as sealer and finish, marine surfaces, exterior siding and trim, furniture, paneling	Excellent resistance to weather; excellent gloss retention; will not crack under temperature changes; gives a very hard finish; resistant to abrasion, scuffs, and stains; not damaged by water, alcohol, or detergents; no mixing required.	Darkens with age when used indoors; poor adhesion if not sanded thoroughly between coats; can't be used over shellac; some brands will not stick when applied over lacquers.	About \$10 to \$12 a gallon
One part epoxy	Wood and concrete floors, paneling, wood trim	Sticks to any clean surface; resistant to chemicals; does not yellow or darken with age; excellent seal for concrete floors.	Most brands intended for indoor use only; tend to crack and chalk when used under severe outdoor conditions; some have solvents that react with other finishes; some brands require special thinners.	About \$7.50 a gallon
Two part epoxy	Boats and marine surfaces, basements and swimming pools, ceramic tile, countertops, kitchen cabinets	Excellent adhesion; used on any type surface; more resistant to chemicals than any other finish; resistant to most common chemicals; forms strong, flexible film; withstands rugged wear; good for waterproofing.	Requires mixing before use; limited potlife; powerful solvent may react with old finish; may lose gloss when used outdoors; tendency to chalk slightly; some people allergic to solvent.	About \$5 to \$6 a quart, \$18 to \$22 a gallon

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