



Wood Finishes

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Outline



- Goals for Applying Wood Finishes
- Food Safe Finishes
- Wood Finish Safety
- Wax Finishes
- Oil Finishes
 - Non-curing Oils
 - Semi-curing Oils
 - Curing Oils
- Varnish Finish
- Common Finish Types

Goals for Applying Wood Finishes



- Enhance natural color & beauty
- Build a surface film to protect wood from use
- Resistance to sun damage (Ultra Violet light)
- Resistance to water damage
- Liquid spills resistance, i.e., alcohol, hot liquids
- Surface film finish to enhance appearance
 - Flat
 - Semi Gloss
 - Gloss
 - High Gloss
- Easy to maintain and repair

Food Safe Finishes

- All finishes made for wood after 1972 are food-safe when cured properly
- A good rule of thumb is to let an item dry (i.e., cure) for 30 days. Get close and smell the item, if you can smell the finish it needs more time to cure.
- There is no finish on the market that has been approved by the FDA as food-safe. *Note: Every batch must be tested and the tests are very expensive.*
- While in their liquid state, most finishes should be considered “toxic” and unsafe for human consumption due to the presence of solvents used to carry the actual finish into or onto the wood surface

Wood Finish Safety

- Federal code on coatings

CITE: 21CFR175.300 (document embedded)

TITLE 21 -- FOOD AND DRUGS

CHAPTER I -- FOOD AND DRUG ADMINISTRATION

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SUBCHAPTER B -- FOOD FOR HUMAN CONSUMPTION; PART 175 -- INDIRECT FOOD ADDITIVES:

ADHESIVES AND COMPONENTS OF COATINGS

Subpart C--Substances for Use as Components of Coatings

Sec. 175.300 Resinous and polymeric coatings.



Adobe Acrobat
Document

- Nut Oil Allergic reactions

- Proteins in nuts can cause allergic reactions
- Exposure to heat & organic solvents during manufacturing and cross-linking of the molecules during curing changes the proteins so they cannot react with other molecules and cause allergic reactions

Wood Finish Safety (Con't)



- Metallic Driers
 - Includes salts of cobalt, manganese, zirconium and zinc used in all varnishes and curing-oil finishes
 - No indication these driers cause health problems
 - Small amount is used and evaporate out or become encased in the finish and if ingested passes through the body without causing harm

Wax Finishes

- Beeswax
 - The work of the honey bee
 - Add luster to the surface
 - Can be mixed with an oil to create a better-smelling, slightly more water repellent finish
- Carnauba wax
 - Derived from the Brazilian palm tree
 - Harder than beeswax and more water-resistant
 - Can be used straight on wood as a light protective coating or add luster to the surface



Brazilian Palm Trees

Oil Finishes: Non-curing Oils



- Examples of non-curing oils
 - Mineral oil
 - Peanut oil
 - Olive oil
- Remain viscous, i.e., tacky
- Potential to turn rancid and smell
- No protection of wood surface

Oil Finishes: Semi-curing Oils



- Examples of Semi-curing oils
 - Corn oil
 - Sesame oil
 - Soybean oil
 - Safflower oil
 - Walnut oil
 - Based on growing conditions or processing can also be a curing oil based on concentration of polyunsaturated fats that moderate curing
 - Walnut oil sold in a grocery store is a Non-curing oil as manufacturers include additives to inhibit curing to extend shelf life

Oil Finishes: Curing Oils

- Examples of curing oils in pure form
 - Linseed oil
 - Tung oil
 - Walnut oil – see comments for Semi-curing Oils
- Cure to a matte finish unless other ingredients added
- Soft in comparison to finishes with driers and added ingredients to form a harder surface film

Varnish Finish

- Varnish is a combination of an oil and a synthetic or natural resin
- Natural resin - a sticky flammable organic substance (gum or sap), insoluble in water, exuded by some trees and other plants (notably fir and pine)
- Varnish is not considered an oil finish
- More durable finish than an oil finish
- Some penetrate the wood and will build a surface finish after numerous applications
- Some build a surface finish upon application

Common Finish Types



- Pure Tung Oil
 - Extracted from the nut of the china wood tree
 - Used as a base in many blended finishes
 - Difficult to apply, requires many coats
 - Long curing time
 - Good water-resistance
- Raw Linseed Oil
 - Pressed from flax seeds
 - Not boiled linseed, which contains metallic driers
 - Very long curing time
 - Enhances wood color
 - Low water-resistance
 - Non-curing oil
 - Requires frequent reapplication

Common Finish Types

- Mineral Oil

- Derived from petroleum
- Colorless, odorless, tasteless and entirely inert
- Non-curing oil
- Requires frequent reapplication

- Walnut Oil

- Pressed from the nuts of the walnut tree
- Walnut oil dries and won't go rancid
- Easy to apply
- Frequent reapplication

Common Finish Types (Con't)

- Shellac

- A secretion from the lac bug, from India
- Super blond shellac in flake form is the most water resistant variety
- A film-forming finish.

- Boiled Linseed Oil

- No longer boiled, now contains metallic driers
- Pressed from flax seeds
- Enhances wood color
- Low water-resistance
- Requires frequent reapplication

Common Finish Types (Con't)

- Polymerized Oil
 - Normally Tung oil or walnut oil
 - Oil is heated to cause the molecules to link into a chain
 - Cures quickly
 - Builds a surface film
 - Easy to repair
- Varnish
 - Resin forms a film as the solvent evaporates
 - Durable finish that is waterproof
 - Hard to repair
 - Produces heat when drying, oil-soaked rags can ignite

Common Finish Types (Con't)



- Wiping Varnish
 - Oil & varnish (resin) blend
 - Easier to apply than varnish
 - Can sag or drip unless applied in thin coats
 - Multiple coats required to build a film
- Shellac to fill the wood pores covered by curing-oil or varnish
- Boiled Linseed oil to bring out the grain or figure, covered by varnish or curing-oil