

Food-Safe Finishes

Compiled by Garrett Lambert

About once a month someone asks what finishes are food-safe. The responses usually include one or more of “none,” “vegetable oils,” and “beeswax.” Erudite devotees of this topic will sometimes note that shellac, a natural product, is another good choice.

Few, however, will reply that all modern finishes are food-safe once fully cured, a conclusion supported by two recognized experts on finishing, and the United States Department of Agriculture. Note that the USDA does express a residual concern about finishes that chip.

However, there's no future in arguing this issue with someone who *believes* otherwise, particularly if you're trying to sell your work to him/her. In that case pick beeswax and offer to sell an accessory container of it (works wonders for profits).

Here is support for the proposition that “all modern finishes are food-safe when properly cured.”

(Link to the original: <http://www.popularwoodworking.com/features/finish3.html>)

The Folly of Food-Safe Finishes

By Bob Flexner

Despite what you've read elsewhere, almost every wood finish should be considered food-safe.

It's a shame, but many woodworkers worry about which finish to use on objects that will come into contact with food or children's mouths. The reason for the worry is that woodworkers have been conditioned by several decades of articles in woodworking magazines to believe that ordinary finishes like boiled linseed oil, alkyd varnish and polyurethane varnish may leach poisonous ingredients like metallic driers. And other finishes, like lacquer, catalyzed (two-part) finishes, shellac and water-based finishes, may leach poisonous solvent.

The idea that some finishes are harmful is reinforced by a few manufacturers who label their finishes food- or salad-bowl safe, which implies that other finishes are not.

A Non-Issue

The shame for woodworkers is that a lot of energy is spent on the issue of food safeness when none is warranted. Food safeness is a non-issue because there's no evidence of any problem. So far as we know, all finishes are safe to eat off of, and safe for children to chew on, once the finish has fully cured (the rule of thumb being 30 days).

Think About It

- Have you ever heard or read of anyone, child or adult, being poisoned from contact with a cured, non-pigmented finish?
- Is it likely that any finish could be sold in paint stores or home centers without a warning if the finish were known to be dangerous for food or mouth contact? (Paint store clerks are rarely even aware that there might be an issue.)
- If there were any evidence that common wood finishes were unsafe for food or mouth contact, why is no mention made on the MSDS (material safety data sheets)? All unsafe uses of products are required by law to be listed on these forms, along with information about treatments for resulting health problems.
- Finally, does it make any sense that commonly available oils and varnishes that contain driers and solvents could be a health risk while the so-called “food safe” oils and varnishes, which contain the same driers and solvents, aren't a problem? (These finishes wouldn't cure without the driers and would be too thick without the solvents.)

I want to make clear that I'm not saying that all finishes are food safe—we can't be

absolutely sure about the safety of any curing finish. I'm saying that there is no evidence of any common wood finish being unsafe for food or mouth contact once it has fully cured, so a distinction between food-safe and non-food-safe is speculative.

For those who would then reply, "well, there's no point in taking a chance," I would say that we take chances everyday with almost everything we come in contact with. To rule out certain finishes when there's no evidence of a problem is unreasonable and arbitrary.

The FDA

A lot of the discussion about food safeness centers on what the Food and Drug Administration (FDA) allows. The FDA doesn't approve products, it regulates them. And it has published a set of regulations for establishing the food safeness of finishes. These regulations are contained in the Code of Federal Regulations, Title 21, Part 175, which you can find at larger public and university libraries.

There are two conditions for meeting FDA regulations.

- First, the finish must be made from among the raw materials listed on nine double-columned pages (additional ingredients can be added by a petition method). This list includes every oil, resin, drier and additive commonly used in wood finishes (polyurethane is covered in Part 177). It does not include lead or mercury. Because lead is no longer used in common wood finishes, and mercury never was, it can be assumed that all common wood finishes use only FDA-approved ingredients.
- Second, the finish must be formulated in such a way that it does not leach more than a specified amount of extractive when subjected to a variety of specified tests. The point of these tests is to show the finish cures properly. It's important to note that these tests must be done on every batch of finish to establish that no foreign substance has gotten into the finish (for example, from the finish having been made in a dirty vat), and that these tests are expensive.

No manufacturer providing finishes to the woodworking community puts their finishes through these tests. Thus, no manufacturer can legitimately claim they meet FDA regulations.

On the other hand, there's no evidence of problems, so manufacturers feel pretty safe in claiming food safeness anyway.

The Issue of Metallic Driers

Metallic driers are added to oil and varnish finishes to speed curing. Without driers, these finishes take many days or weeks to cure.

Lead driers were once commonly used in oil and varnish finishes, but in the 1970s it was learned that lead is highly toxic, especially to children. The problem was associated with the relatively large amount of lead contained in pigment and not with the tiny amount contained in clear finishes. Nevertheless, to be safe, lead was removed from all commonly available paints and finishes, including oils and varnishes. (Lead is still used in some specialty art and marine finishes, and labels are required to disclose its inclusion.)

Other metallic driers, including salts of cobalt, manganese, zirconium and zinc, continue to be used in all varnishes and curing-oil finishes except raw linseed oil and pure tung oil. Without these driers, these finishes cure extremely slowly.

There is no indication that these driers cause health problems. A very small amount is used, and it is well encased in the cured finish film so that if any is ingested, it passes through the body without causing harm.

Other Finishes

All other common wood finishes also are safe for food and child contact. In fact, commercially made wooden bowls, baby beds and children's toys are usually coated with

one of these finishes.

The solvents, which cause some people to worry, evaporate out completely enough so they aren't a problem. And catalysts, which can be toxic in their liquid state, become so fully reacted with the finish that there is no evidence of a problem.

Conclusion

The issue of food safeness in finishes is a classic case of the concept "validation by repetition." Consistent, long-term repetition in woodworking magazines of a food-safeness issue, despite the complete lack of supporting evidence, has led to a widely held belief in the woodworking community that food safeness is an issue.

It shouldn't be. No other segment of society treats it as such. A more reasonable approach is as follows.

You can't be absolutely sure about the food safeness of any finish you put on wood. There could even be problems with mineral oil and walnut oil that we just don't know of yet. There could also be problems with raw linseed oil, pure tung oil, wax, shellac and salad bowl finish, because we don't know where these substances have been or what they might have come in contact with. None has met the regulations laid out by the FDA.

But, based on FDA regulations, the way finishes are made, the complete lack of any evidence to the contrary, and the countless other untested objects food and children come in contact with, there's no reasonable argument for avoiding the use of any finish.