TIPS: FOOD SAFE FINISHES

Food Safe Finishes

Question:
I am a woodturner and a member of the Chippewa Valley Woodturners Guild. I would like a listing of the FDA-approved wood finishing products such as oils, etc. Thank you.

~ Dennis, Wisconsin

Answer:
The topic of food safe finishes is a recurring theme for many woodturners and woodworkers who envision placing their projects in contact with food, drink, or any materials meant to be consumed. Some of the concerns raised about whether something is "food safe" or not stem from invalid assumptions about the nature of the available finishes used to protect the wood, accentuate its figure, and reduce infiltration of moisture and other materials from the food into the wood. 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. However, once the finish has "matured" to its final state, many would argue that nearly all finishes are "food safe," specifically with regard to direct contact with food, such that no undesirable chemicals will leach out of the wood and finish into the food material being consumed. If you don't eat or drink the finish, it's food safe!

We first need to determine the kind of finish desired, as to whether it forms a film on the surface of the wood, or whether the finish penetrates into the porous structure of the wood. For those pieces that will not be subject to damage from food handling utensils, film finishes, such as polyurethane, lacquer, "varnish," or even shellac would be acceptable to use, for example, on serving platters. For those pieces where a film finish is likely to be damaged (cutting boards, salad bowls, etc.) a penetrating oil finish is recommended. For film finishes, once the carrier solvents have been permitted to fully leave the finish, and the surface has "dried," one might consider these surfaces food safe. For example, it is necessary to allow polyurethane finishes to fully polymerize and lose their carrier solvents (essentially making a "plastic" film finish), and to allow soluble finishes such as shellac and lacquer to fully evaporate away their solvents. Assuming you don't serve food mixes containing high concentrations of alcohol or lacquer thinner, which would dissolve these finishes, the surfaces should also be considered "food safe." In fact, purified shellac is a frequent ingredient used in various pharmaceutical products (e.g. coated tablets or pills), and is fully ingestible and generally safe.

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Similarly, oil finishes are often supplied as dissolved in a solvent which must leave the oil behind in the wood as it evaporates, and then allow the oil to "cure." That is, if the oil finish used is composed of one of the so-called "drying-oils," such as linseed, tung, or walnut oils. These oils do not actually "dry" in the evaporation sense, but actually undergo spontaneous cross-linking of their molecular structures (in the double bonds of their fatty acids) with the incorporation of oxygen from the air. The fully-cured oils would also be considered food safe. In some commercial preparations of oil finishes (such as those using primarily linseed oil), metal-based chemicals are added to increase the rate of cross-linking with oxygen; without these "metallic driers" some of these finishes would take quite a long time to cure. Are the metallic drier chemicals "toxic" – yes, if they are ingested in their soluble form – however as the oils cure and become cross-linked, very little, if any of these additives should leach out into one's food. Even if the wood itself is ingested containing the cured, cross-linked oils, it is doubtful that a sufficient amount of metallic drier and cross-linked oil could be considered toxic in any significant concentration. Finishes sold as "salad bowl" or "butcher block" finishes are chemically related to other penetrating oil finishes that "dry" and should be considered "food safe." Oils that do not "dry" such as olive, peanut, canola, and "vegetable oil" will turn rancid through degradation of the oil's fatty acid components, and impart bad odors or flavors in foods used on these surfaces. Although these degradation products are generally not toxic, they are undesirable, and these types of oils should not be used on utilitarian wood products. Mineral oil, which "never dries or turns rancid" is sometimes used, and as long as a purified (USP) form of mineral oil is used (and replenished as needed), it, too, may be considered a food safe finish.

Finally, waxes such as beeswax and carnauba wax may also be considered food safe, provided any solvents used as a carrier for the wax are allowed to evaporate fully.

~ Rob Wallace, Ames, Iowa
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