

## **SAFETY FIRST - KNOW YOUR ALCOHOL**

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Previous Perpetual Novice articles have attempted to look at the trials and errors of learning the woodworking craft with a bit of humor. This one is different in that it is serious. I've been surprised of late to see the "wrong" alcohols in a number of people's shops. I've known about this for a long time and assumed it was general knowledge, but since it doesn't seem to be, allow me this one time to slip into lecture mode.

Woodworkers often have alcohol around the shop for various uses, the most common of which are:

- Cleaning, especially glass.
- Wiping a board to see how it will look after finish is applied. Wetting it with alcohol makes the grain pop, and the alcohol quickly evaporates so you don't have to wait long to proceed with your project. (Some folks use mineral spirits the same way, but alcohol evaporates faster and doesn't smell as much.)
- Mixing or thinning shellac, which is my primary use for it.

Obviously I'm not talking about that bottle of Jamieson's, or in my case, Stolichnaya for use in more contemplative periods.

Not all alcohols are alike, and some are outright dangerous to use, besides being highly flammable. "Denatured" alcohol is ethanol (ethyl alcohol, also called grain alcohol) with additives to make it undrinkable (thus avoiding federal booze taxes). Additives may make it bitter, have a noxious odor, be poisonous, or a combination. The most common additive is methanol, another form of alcohol, which is highly poisonous, irritates sensitive tissue (eyes, lungs), affects the central nervous system, can be absorbed through the skin or affect the lungs when inhaled. While originally (think prohibition period) 10% methanol was generally used to "denature" ethanol, and 5% seems to apply today, some products have a much higher methanol content.

Most big box and hardware stores carry Kleen Strip Denatured Alcohol in a blue can. Some cans say right on them "Fuel" because this stuff is meant as alcohol stove fuel, not shellac solvent. According to its Material Safety Data Sheet (MSDS) it is 45-50% methanol, 45-50% ethanol and 1-4% other ingredients! In other readily available data, it is shown as 30-60% methanol. There are other brands of denatured alcohol that are similar in composition.

Also from its MSDS:

Inhalation Acute Exposure Effects: Vapor harmful. May cause dizziness, headache, watering of eyes, irritation of respiratory tract, irritation to the eyes, drowsiness, nausea, other central nervous system effects, spotted vision, dilation of pupils, and convulsions.

Skin Contact Acute Exposure Effects: May cause irritation, drying of skin, redness, and dermatitis. May cause symptoms listed under inhalation. May be absorbed through damaged skin.

Eye Contact Acute Exposure Effects: May cause irritation

I've left off the paragraphs about ingestion because I hope you know enough not to drink it.

Furthermore, I understand that methanol is not as good a shellac solvent as ethanol, though I can't quote a reference for that.

So what do we do for alternatives? There are low- or no-methanol ethanol products available, though I must admit that searching the internet gets a little confusing with inconsistent or conflicting information about a given product abounding. Nevertheless:

Kleen Strip Green Denatured Alcohol in (surprise, surprise) a green can is readily available at most big box and hardware stores, costs about the same as the blue can (about \$8-9/qt), and contains 90-95% ethanol and less than 5% methanol, according to its MSDS. (Confusion; Shellac.net claims this product is 190 proof (95%) ethanol, not 90-95%). To my way of thinking, that's a no-brainer! Leave the blue can for camping (until it's gone, then don't buy it again. Green is still also labelled "fuel").

You may want to go further, however, for safety's sake. Remember, methanol can be absorbed through the skin or inhaled. Shellac guru Don Williams, former Curator of Furniture at the Smithsonian, once told me that he will not have methanol in his shop, period! I don't use a huge amount of shellac, my primary use for alcohol in the shop, so the extra cost of avoiding methanol altogether is not large to me.

Behlen Behkol solvent (denatured alcohol) is 91% ethanol with 4% butanol and 4% isopropyl alcohol. It is allegedly formulated specifically to be a shellac solvent. Yes, I know. Those numbers don't add up to 100%. That missing 1 % is probably water. Ethanol is mildly hygroscopic (absorbs water from the air) and only expensive lab or medical grade 200 proof supplies are essentially water-free. Butanol, like methanol, also can affect the central nervous system, but if I take any comfort from the greatly reduced words and softer tone of the MSDS for butanol, it appears to be less toxic than methanol. Behlen is available from Shellac.net for about \$11/qt plus shipping. Woodcraft's website currently says it's out of stock. I used to see it at local Woodcraft and Rockler stores, too, and maybe it's still there but I haven't looked at either place lately. Another source suggested a Sherwin Williams paint store.

E-bay offers a 95% bio-alcohol in various quantities and fairly cheaply, plus shipping. That is probably corn-based ethanol similar to what's used as a gasoline additive, but I couldn't find an MSDS or other details to determine its ingredients, so I'll avoid it.

Finally (though there are probably many other brands I haven't touched on), there's Everclear 190 proof grain alcohol that sells for about \$15-20/qt. and no shipping cost. This is NOT denatured alcohol; it's made to be consumed (though as one source put it, "after the finishing job is done"). I have been told that it's illegal to sell it in Massachusetts, but I'm not sure that's true as I have seen it in one large liquor store in Natick (alongside another brand of grain alcohol (I've forgotten the brand) that is only 150 proof or 75% ethanol). I don't know if the NH or RI stores carry it or how widespread it may be in MA.

The choice is yours. Stay safe. Stay healthy.

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