

Grapes: Much Ado About Oak

Late in the last century, we talked a little about the tribulations of using oak barrels to store and flavor wine in the winery. Although the techniques for using standard barrels have been well worked out for commercial wineries, home winemakers have often been frustrated in attempting to round out their wines by adding an essence of oak. This column deals with the ways enterprising people have devised to add oak flavor to wine without having to use those eighty-pound big clumsy round things called barrels.

Son of a B(arrel)

There is an uncertain, almost romantic interplay between wine and oak containers, and although much of it may just be the training we have given our tastebuds, wine with no exposure to oak during its maturation just doesn't seem to develop the complexity or appeal of wine that's been stored in wood. For many home winemakers, the standard 60-gallon barrel is just too big (and often just too much wine). Smaller barrels are available from home winemaking suppliers, but they have some special requirements you need to be aware of. Five to fifteen-gallon barrels are just right to hold the reasonable amounts of wine that sensible people make, but there are more differences than the size. The reason for it is subtle but important—smaller containers have a larger surface area-to-volume ratio than small ones. (What???) As a container is made smaller, the amount of surface (the area of the walls of the container) increases for each gallon of liquid inside. It doesn't make intuitive sense, but if you go through the fairly complicated mathematics, you learn that each gallon of wine in a six-gallon barrel is exposed to well over twice the amount of wood surface it would see in a sixty-gallon barrel. And since the interaction between wine and wood depends on the amount of surface, the wine gets oaky much faster, and can even get too much air and oxidize before you know it.

With practice and care, you can make small barrels work. The main trick is to leave the wines in them much shorter times (six months is probably the limit), and even shorter times when the barrels are new and have a lot of oak flavor to impart. After the short period of barrel aging, some wines will be ready to bottle, while others may need more time to mature. There's nothing wrong with starting the aging process in glass jugs, moving to a barrel for a few months, and then back to glass. The nice part of finishing in glass is that you can see when the wine is clear enough to bottle.

One part of barrel use that's the same regardless of size is their care between uses. Unless you always have another wine just ready to go in each barrel when it's emptied, you'll have to learn how to prevent problems during storage. Wineries can clean the barrels with high-pressure washers (and even use ozone to sterilize the barrels), then gas them with sulfur dioxide and allow them to dry, but most people don't have access to this approach at home. Sulfur wicks (which are burned inside the barrels) used to be much more commonly used, but are messy and smelly and may drip sulfur into the barrel. The best solution for home use is to keep the barrel filled with a 1% solution of sulfite (about four tablespoons per gallon of potassium metabisulfite), acidified with about the same amount

of citric acid. Just be sure that, before putting wine back into the barrel, you neutralize the wood by filling it for at least a day with a 1% sodium carbonate solution, then rinsing thoroughly. Failure to do this can result in dangerously high amounts of sulfite in the next wine.

If your winemaking hobby gets out of control, you will need to graduate to full-size 60-gallon wine barrels. New ones are very costly (about \$300 for good American oak, \$600 for French), but used ones can often be obtained from your local winery for as little as \$25.00. There are two pieces of advice—if you want the wine to have oak flavor, rather than just getting the controlled air exposure of the barrel, you'll have to bite the bullet and buy a new one (that is, unless you use oak chips as described below). In any case, though, be sure you know the quality of a used barrel when you buy it. Tell the winery that it's going to be used for wine, and don't be afraid to ask "Would you put your wine back in this barrel?" If there's any hesitation, look elsewhere—wineries usually know which barrels they're selling should only be used for planters, but may not be anxious to admit it.

The Tan, Powdery Substance

An approach that has been around for a few decades is the use of oak chips (or "powdered oak"). You can buy these from most home winemaking suppliers, and usually choose between French and American oak, sometimes with different levels of toasting. Two long-time suppliers are both in Napa: World Cooperage at 707-255-5900, and Barrel Builders at 707-942-4291. Barrel Builders will sell American oak chips for \$2.00/pound, French at \$3.50/pound with a 50-pound minimum. The problem is getting a consistent amount of flavor. Depending on how the oak was treated, chipped and toasted, one source may have much more flavor one time than another, and since there's no easy way to measure, it's a moderate gamble each time you buy a new supply. Unlike barrels, where the source of the oak is well documented, chips can come from a sawmill, a barrel reconditioning facility or even one of the premium coopers. The best approach is to find a supplier whose oak chips you like, then buy a lifetime supply of fifty pounds, or go together with friends to meet the minimum order. If the chips are kept in air-tight containers away from termites, they'll last for many years.

The amount to use depends on how strongly flavored the chips are and how much oak flavor you like in the wine. Start with one to two ounces of chips per five gallons of red wine (less for white), and adjust up or down depending on taste. Since the chips are so small (compared to the stave thickness in a barrel), the flavors are completely extracted into the wine in less than a week, and you can remove the chips anytime after that. In glass jugs, the chips form a thin coating on the bottom, and are easily removed when you siphon the wine in the racking process. If you use them to increase the oak flavor for wine in a neutral barrel, however, they settle into a layer that is fairly thick in the "bilge" of the barrel (the middle of the barrel where it's thickest). This thicker layer can have unpleasant consequences if left too long, since it becomes a place where sediment can accumulate and bacteria can grow, and can contribute "cardboard" or garbage-like

aromas if left too long. As a general rule, the wine should be racked within a month of the addition of oak chips.

Beans, Cubes and Boards

Other innovative approaches have been developed, originally to use in full-sized barrels in wineries, but there's nothing to prevent them from being used in smaller containers at home. There are companies that sell small toasted oak "beans" or cubes with either stainless steel tubes or bags to suspend them in the wine. Either of these can be adapted for use in home-sized containers with a little effort. Probably the most complete and experienced supplier is StaVin in Sausalito at <http://www.stavin.com/homewinemaker.htm>. Their website is very complete, but home winemakers are required to deal with their distributors, such as <http://www.morninggloryfermentation.com/>, right nearby in the town of El Dorado. StaVin even makes toasted French Oak barrel stave segments that can be suspended from the stopper and dangled in the wine for the required time. These are mostly used in barrels, and the first year they were available, they were cut to just barely fit through the barrel's bung hole. Unfortunately, they forgot how much the wood swells in wine, and removing the oversized oak strips almost became a Houdini magic act. If you use strips or beans, don't try to re-use them after they've been in wine, then stored and dried out. Just as barrels do, they can harbor some undesirable organisms like acetic acid bacteria and *brettanomyces* (the "barnyard" bacteria), so it's best to use them only once. After they've been used in wine, the best way to dispose of them is to throw them into the barbecue for good smoke flavors, or for the sweetest-smelling kindling you've ever tried!

Things That Don't Work

Like any other hobby activity, winemaking draws from enthusiasts with all kinds of backgrounds, and some of the approaches used for adding oak flavor are extremely creative, if not always effective. One widely attempted approach is to make an extract of oak wood, either with water or a water-alcohol mixture. Not only are different substances extracted from the wood than into wine, but they react to some degree with air and each other, and while the resulting solution may smell like oak, it usually imparts very different flavors to the wine. There are subtle differences when the materials in oak are slowly and gently dissolved into wine from the wood, and like most of the chemistry of wine, it's unlikely that we'll ever understand it all.

Another approach that has been tried is to use powdered oak tannins, or "oak concentrates." Most people who have used them have not been satisfied with the results, and they never seem to give the same flavors as real wood, probably again because they don't contain exactly the same materials that are gradually leached into the wine.

Finally, you probably shouldn't attempt to make your own oak chips or pieces. The temperature for the toasting process is very touchy, and unless you start with white oak that is suited for barrels and has been air-dried for two to three years, you won't get the result that the chip manufacturers do. Above all, don't cut up a used wine barrel and try

to toast it—wine permeates the wood much deeper than you can see, and toasting used oak can change the flavor of good wine into something that smells more like prunes!