

## Wine Containers—Made of Wood??

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(Number 14 in a series of highly opinionated articles about grapes and wine in El Dorado County.)

Let's say you have a 2001 modern winemaking facility—dedicated to sanitation, decked out with all the finest stainless-steel tanks, where storage of the wine is under scientific, sanitary conditions, and along comes a salesman who tries to get you to put your wine in an oddly-shaped, poorly-defined *thing* made out of wood! He calls it a “barrel,” and tells you it costs \$200 to \$600, holds only about sixty gallons, and, oh yes, it only lasts about four years. Can you imagine a person could making a living selling these ridiculous containers?

### “It Doesn't Cost, It Pays!”

Let's look at the reasons that this is one of the silliest ideas ever suggested. First of all, there's cost. If a new French oak barrel (the kind that all the wine writers who are all apparently in league with this maniacal salesman prefer) costs \$600 and lasts for four years, that means that the storage of 60 gallons of wine for each of those four years costs the winery \$150, or \$2.50 per gallon. And since red wines are often stored for two years “in oak,” this adds \$5.00 per gallon to the cost of the wine. Since a ton of El Dorado grapes costs about \$1000 and makes 150 gallons of wine on average, the cost of the grapes to make a gallon of wine is \$6.67, which means that the *container* costs almost as much as the grapes! (It's actually not quite as bad as that, since barrels can be used until the wood becomes too porous in perhaps eight to ten years. After four years, though, the barrels contribute almost no oak flavor to the wine and are called “neutral oak,” or my favorite euphemism: “experienced barrels.”)

### Breathe Deep

So the salesman says, “Sure, it's expensive, but your wines need to “breathe” during the time they are maturing, and only wood allows a slow, controlled amount of oxygen to get into the wine.” Oh, that sounds good, you tell yourself, but if air can get in, doesn't that mean that liquid can get out and will there be some evaporation of wine during storage? Sure enough. Depending on the temperature and humidity in your barrel room, you might easily lose five percent of the wine during its two-year journey to the bottle. Oh, and by the way, what you lose depends on the actual storage conditions. Above 65% relative humidity, more alcohol than water is lost so that the alcohol content of the wine gradually decreases; if it's drier, you lose more water, and the alcohol gradually goes up! This wouldn't seem to matter much, but the ever-watchful Bureau of Alcohol, Tobacco and Firearms is very interested in this effect. The federal tax for wine with an alcohol content of 14.0% is \$0.17 a gallon (for small wineries), but if the alcohol creeps up to 14.1%, the tax jumps to \$0.67!

### Keep it Clean!

And then, since you rarely have new wine to put back in the barrels when they are emptied at bottling time, you have to store the barrels empty for at least a few months. Now, the salesman explained to you that the wine gradually seeps into the wood of the barrel, which is how it gets that wonderful, oaky aroma. The flip side, though, is that after emptying, the wood in the barrel contains at least a gallon of your wine, which is then going to be exposed to air and spoil! No two wineries agree exactly on how to store barrels between filling, but the most common practice is to clean the barrel thoroughly and periodically dose it with sulfur dioxide gas, which

preserves the barrel but is very hazardous to cellar workers. Failure to follow a preservation routine means that the barrel will smell like vinegar and not be suited for another wine.

But even properly stored barrels can be a conduit for bacterial diseases. There are social diseases of wine like *brettanomyces* (wet wool or “barnyard” aromas) and *pediococcus* (so named because it smells like dirty feet), and once these get into the pores of the wood, they will contaminate every wine that follows. The only cure is to cut the barrel in half and sell it as planters.

## **Wine Diamonds**

When wines stay in the barrel during cool weather each winter, they deposit crystals of potassium bitartrate (cream of tartar) on all the inside surfaces. These “winestones” need to be cleaned out after each use, either with boiling hot water and a pressure washer, or with a new material called “ProxyClean,” available from Barrel Builders (707-942-5426). You can’t use bleach on a barrel, because the chlorine stays in the wood just like wine does, and ruins the next batch of wine. ProxyClean is a safe oxygen bleach that “de-tartrates,” cleans and sanitizes barrels, and has allowed many otherwise unpleasant barrels to be reclaimed for additional use. Just be sure to follow the directions and rinse with a dilute solution of citric acid.

## **Stacking and Racking**

Two thousand gallons will make about 800 cases of wine, and can be stored in a tank just over six feet in diameter and eight feet high. When transferred to barrels, the same amount of wine will occupy a space eight feet wide by eight feet deep by thirteen feet high, or almost four times the volume. Each barrel weighs about 560 pounds when full, so there’s no chance it can be lifted without hydraulic aids. Because of their ‘interesting’ shape, they are also very difficult to stack. Special steel racks that hold two or four barrels are the modern solution to stacking, although a few traditionalists still use a pyramid stack or immovable wooden racks. With the steel racks, barrels can be easily stacked four high, and an ordinary forklift with a steel-nerved driver can move four at a time.

## **Specifications**

“All right,” you say to the salesman against your better judgment, “let me have some of those ‘barrels.’” He says, “Which kind, what country, which forest, what shape, staves how thick, how much toasting, and do you want chestnut or willow fronds on the end hoops?” Arghhh! Almost everyone agrees that barrels from France have nice characteristics, but you need to decide if you want the wood from a forest in Allier, Limousin, Nevers, Tronçais, or others, and it turns out that each has different flavor characteristics. The pieces of wood that make up the barrel (the “staves”) are steam-bent over a fire of oak chips, and in the process acquire a pleasant toasted oak flavor. This is due to the formation of chemicals known as “oaky lactones” (doesn’t that sound like a singing group from Bakersfield?). You can ask for light, medium or heavy toast, but not all cooperages have the same definition of ‘medium toast,’ so you have to know how each one defines it, and sometimes lean toward “medium-plus” or “light-medium.” You can also specify if you want the end pieces of the barrel toasted by asking for “toasted heads” (now, that definitely sounds like a rock group!).

Bordeaux barrels are longer and thinner; Burgundies are shorter and fatter. Oh, and you can’t mix the two on a barrel rack if you are trying to stack them, because the different diameters will make the next pair up unstable. “Export” barrels have thick staves, but “chateau” barrels have thinner staves and will mature the wine a little faster. And, oh yes, they all have different

capacities, ranging from about 57 to 60 gallons, so you can't exactly fill one from another. Finally, just to make it really interesting, the prices are quoted in French francs, which means you won't really know how much they cost in U.S. dollars until delivery in the fall.

### **America the Bountiful**

As an alternative to expensive French oak, there was a time when you just asked for "American" oak, and it came from somewhere in the great heartland. (A popular source for barrels was Kentucky, which developed cooperages to make the charred barrels that bourbon whiskey was aged in, but that was before Kentucky became the first state to make direct shipment of wine to its residents a felony. California wineries don't buy as much Kentucky oak as they used to.) Now, just like France, you can ask for barrels from Arkansas, Minnesota, Missouri, Pennsylvania, Virginia, or half a dozen other states. One unusual source that we like to use is "Oregon oak," which is a separate species of white oak that grows in Northern California, Oregon and Washington (*quercus garryana* instead of the usual *quercus alba*), and has properties much like French oak at somewhat lower prices. Some enterprising wineries in places like Mendocino have even been able to harvest their own trees for "estate-grown barrels."

As amazing as it seems, with all the problems and drawbacks barrels entail, they are by far the most common storage containers for fine wines the world over (the stuff that Gallo keeps in those refinery-sized tanks in Modesto are excluded from this statement). And if you think this is crazy, just wait until another salesman stops by and tries to persuade you to stopper your wine bottles with a piece of bark from a cork oak tree!