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### **PREPARING AND USING OAK BARRELS**

Oak barrels have traditionally been used to age the finest (and most expensive) commercial wines. Unfortunately some of the traditional amateur techniques for using barrels can lead to problems. It is wise to learn their special characteristics of preparation, use and maintenance before considering their use at home. Unless properly used, they can spoil a good wine and become permanently contaminated at the same time. If contamination occurs, crevices in the structure of the barrel, between staves, etc., protect spoilage bacteria from normal sanitizing agents which are effective on non-porous materials.

A few key properties explain the value and the potential problems in using oak barrels. The porous structure of the wood allows a very slow infusion of minute amounts of air. Through some very involved chemistry, the air dissolves in the damp oak and transfers very slowly to the wine inside the barrel. The slow infusion of air along with flavor and aroma contributed by the wood itself, brings about much of the improvement associated with barrel aging. The wood may also have some capacity to absorb harsh components from a young wine.

Since all these interactions depend upon contact with the wood, the rate at which they occur is influenced by the amount of wood surface per gallon of wine. This factor increases dramatically in small barrels, causing the rate of air and flavor addition to be too rapid. Small barrels are more likely to over-oak the wine before enough time can pass to benefit general aging. We recommend using barrels only in 10 gal. or larger batches. Oak chips which are a by-product from barrel makers and are the same high quality wood can be used in 5 or 6 gal. glass carboys to gain much of the benefit of wood contact. Oak chips are inexpensive and easy to use safely in glass.

Generally, barrels are not the best fermentation containers. As primary or secondary fermenters, they insulate against heat loss too well, are cumbersome to handle and are

more difficult to clean. Use the equipment proven to be best for primary and secondary fermentation and the early stages of bulk aging. After the wine is free of heavy sedimentation, then using oak barrels for bulk aging will give excellent results. They should be used in addition to, not instead of other fermentation and aging equipment.

The most commonly available large barrels are 50 gal. used whiskey barrels which are completely charred inside. The char layer absorbs bad tasting components from the raw spirits during the aging time in the barrel. If the char layer is not removed before putting wine in the barrel, some of these bad tasting compounds as well as the whiskey taste will bleed back into the wine. If the barrel has been empty for some time, it may have become contaminated and should be regarded with suspicion.

Before opening a whiskey barrel to remove the char, mark the barrel head and stave tops in several corresponding spots so that the rotational position of the head versus the staves is defined. When the barrel is reassembled, the head can be returned exactly to its original position using these marks.

Remove the hoops from the top half only of the barrel, allowing the staves to spring open enough to remove the head. Remove the char from the head and the top half of the staves. Reassemble that end, taking care to align the head with the index marks as mentioned above. Then repeat the process on the other end of the barrel (never remove the hoops from both ends at the same time) and rinse out any loose char material thoroughly. It is now ready for treatment in the same way as a new barrel.

When beginning with a new dry barrel, the outside surfaces and hoops can be treated with boiled linseed oil to protect and improve appearance. Allow about two days for the linseed oil to cure before proceeding. We recommend that you do not drill a spigot hole in the barrel head. The wine can be removed by siphoning or pumping.

A cradle is necessary to support the barrel near its ends so that no weight is supported near the middle portion (bilge) of the barrel. If a pump is not used, the cradle height should be arranged to allow siphoning both to and from the barrel. Place the barrel, with bung hole up, on its cradle over a floor drain or outdoors where leakage won't be a problem.. Fill it with warm water and continue adding water to keep it full until the wood expands and seals to a leak free condition. If the barrel is still leaking after several days, locate the leak(s) and use barrel sealing wax worked in from the outside to seal the leak. The barrel does not need to be emptied to apply the wax.

Once the barrel is absolutely leak-tight, it must be treated with Barolkleen, a mixture of soda ash and lye (separate instructions) to condition the raw wood. The treatment is done only before the initial use of the barrel with wine and need not be repeated. After rinsing and neutralizing the residual Barolkleen with acid blend or citric acid, the barrel is ready for use.

The ideal conditions for aging in oak are the same as those for other containers. See Page 11, *Bulk Aging Wine*. As with other aging containers, oak barrels must be kept full to minimize air contact. Since some volume will be lost to evaporation from the outside of the damp wood, extra wine should be available from small bottles to add as needed to keep the barrel topped up. We have only two simple tasks to carry out every month or so while aging in oak: Taste the wine to evaluate oakiness and top-up with extra wine from a freshly opened bottle. Smaller barrels produce faster results, and wines with less body and flavor will probably need less time. Also, as a barrel is used repeatedly, we should expect more time to be necessary. The only way to be sure of its condition at a given time is to taste the wine and use personal judgment. Generally, when the wine begins to display a definite oakiness, it is time to rack to other containers. From there it can be bottled or allowed to age further in bulk. Oak flavors will tend to blend into and become part of the wine during bottle aging.

If white wine or other more gently flavored wine is to be barrel aged, it is probably better to use 15 to 30 gal. barrels. Barrels for white wines need to be dedicated to that use alone. Once a barrel has been used for red wine it cannot later be used for white wine.

After removing wine from a barrel, rinse it thoroughly with plain water. If the barrel will be filled with another wine right away, wet it with sulfite solution of the proper strength (see page 5, *Using Sulfite*) before placing the wine in it. If the barrel will not have a wine in it, fill it with a barrel keeping solution made with 2 oz. sulfite crystals and 2 teaspoons acid blend for each 5 gal. of barrel volume. Keep the barrel topped-up by adding regular strength (stock) sulfite solution. Empty the barrel and refill with fresh keeping solution each two or three months. If the barrel will be taken out of service for an extended period, remove the head from one end (as described above) so that the barrel can be dried quickly and thoroughly. A space heater can be directed into the barrel to dry it quickly. When the barrel is to be used again, reassemble and soak with water until leak free.