

## STORAGE CONTAINERS FOR HOME WINEMAKERS

by  
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Wine is a perishable commodity because it oxidizes easily. So, bulk wine should be stored in full, sealed, containers that prevent exposure to oxygen in the air. Wine containers suitable for long term storage can be fabricated from a variety of materials including glass, wood, stainless steel and some plastic compounds. Wine contains acid and acid attacks most metals. So, metals, excepting stainless steel, are not suitable materials for wine containers.

The characteristics of several types of wine containers are discussed below.

### Glass

Home winemakers often use gallon jugs, 5-gallon and 6.5-gallon carboys made of glass. Five-gallon water bottles are readily available, and these are the bulk wine containers most often used by beginning home winemakers. Like many other materials, glass storage containers have advantages and disadvantages. Glass can be cleaned easily, and it can be completely sterilized. Glass is transparent, so the progress of fermentation can be easily monitored visually.

On the other hand, glass containers are heavy, and some winemakers find moving full 6.5-gallon carboys difficult. Glass is slick and fragile, and handling heavy glass bottles with wet hands can be dangerous. Five-gallon containers are really a bit too small for long-term wine storage because of the large surface to volume ratio. The price of a new glass water bottle is about \$16.00 (~\$3.00 per gallon), so the high cost of glass is another negative factor. Even so, a few 1-gallon jugs and some water bottles are handy for storing wine leftovers.

### Plastic

Polyethylene is light, strong and inexpensive container material. Polyethylene is a recognized “food grade” material, and polyethylene drums are widely used for shipping and storing liquid food and beverage products.

Polyethylene is light, strong and inexpensive, and several firms now produce polyethylene tanks designed specifically for use as wine storage containers. Heavy walled tanks and drums made from high density polyethylene have negligible oxygen permeability. Wine can be safely stored for extended periods in high-density polyethylene containers and several manufacturers are producing poly tanks specifically for wine storage. Small and medium size poly tanks are relatively inexpensive. They are also easy to handle, so poly tanks are used in many smaller wineries. New and used poly drums are available in 20, 30, 40 and 55 gallon sizes, and they make excellent wine storage containers for home winemakers.

Just like glass, wine storage containers made of polyethylene advantages and disadvantages. They are lightweight, and polyethylene drums can be handled and stored easily. Best of all, they are inexpensive. New poly drums cost about \$1.00 per gallon, and good, used, drums can often be purchased about \$15.00 or so. That is only \$0.27 per gallon for a bulk wine storage container so used poly drums are a bargain. But unfortunately, polyethylene has a porous microstructure, and the small pores make this material difficult to clean completely. Used polyethylene drums can retain odors for long times, and the **residual odors can contaminate wine**. Consequently, secondhand drums must be selected with care. Use and trust your nose when buying used poly drums.

Better-Bottle sells 3, 5 and 6-gallon carboys made from Pet plastic (polyethylene terephthalate). Pet is more dense than polyethylene. It is less permeable to oxygen and Better-Bottle claims wine can be stored in their containers for extended times. Like polyethylene, carboys made from Pet are light, strong and easy to handle.

Plastic sheet materials that provide low oxygen transfer are now available (bag in a box). The sheet is formed by laminating several different plastics with evaporated metal surfaces. An Australian firm has been producing large size bags for commercial wineries since 2004. Small bags, suitable for home winemakers, should be available in the next couple of years.

### Stainless steel

Properly designed stainless tanks are inert, tight and durable, and smooth, polished stainless steel surfaces can be cleaned easily. Unfortunately, stainless steel is expensive and fabrication costs are high. But, stainless containers give many years of trouble free service, so the high initial cost can be easily justified.

Variable capacity (floating lid) tanks made of 304 stainless steel are now being produced specifically for home winemakers. These tanks are available in several sizes. The cost ranges from \$8.00 per gallon for small tanks to \$5.00 per gallon for larger tanks (200 gals). These tanks are well made and the variable capacity feature is convenient for small producers. The only significant drawback is the high per-gallon cost.

Many home winemakers often use 15.5 and 7.5-gallon stainless steel beer kegs for wine storage containers. Availability and low cost make beer kegs attractive. Beer kegs come in two shapes. The new style kegs are cylindrical in shape and they have the bung on top. The old style kegs are barrel shaped and they have the bung on the side. The deposit for a 15-gallon beer keg is about \$15, and finding a first class wine container for less than a dollar per gallon is difficult. Keep the receipt so you can get your deposit back when you are finished with the keg.

### Oak Barrels

Wine barrels come in two standard sizes. American-made barrels often have a capacity of about 200 liters (52 gals) and French barrels hold about 225 liters (59 gals). New French oak barrels cost about \$900, and new American oak barrels cost about \$350 these days.

Oak barrels impart a vanillin flavor to the wine, and this oak character is desirable in most red and some white wines. After a barrel is four or five years old, it no longer produces the desirable flavors, so wineries must replace their barrels from time to time. A few wineries replace all of their barrels each crush season, but many commercial wineries replace about 20 percent of their barrels each year.

When a new barrel is filled, almost four gallons of wine soak into the wood. When a used barrel is stored empty, the wine in the wood starts turning into vinegar in just a few days. Barrels full of wine require little extra attention. But, empty, used barrels are difficult to maintain and require a great deal of attention. Commercial wineries avoid this problem by not emptying their barrels until new wine is available. They wash their barrels with clean water as they are emptied and then the barrels are immediately refilled with new wine. This is why many commercial red wines are bulk aged in barrels for either one or two years. Of course this practice means that wines are being bottled close to harvest time which makes the crush season even more hectic.

Oak barrels have several other disadvantages. Barrels are heavy and difficult to handle. Empty barrels weigh almost 100 pounds, and full barrels weigh about 600 pounds. Empty barrels can

be moved by hand without much difficulty, but moving full barrels more than a short distance by hand is seldom feasible. Wineries place full barrels on special steel racks, and the racks and barrels are then moved with a forklift.

Oak barrels are often attacked by wood borers. These tiny insects bore a small hole from the outside all the way through the wood. Then the barrel starts to leak and the winemaker must locate the leak and plug the hole. A round toothpick is the standard plug material. Borer problems are minimized by coating barrels with a special preservative and by keeping barrels from touching concrete floors.

In warm weather, empty barrels dry out quickly. The wood shrinks, and the staves and heads become loose. (Old, dry barrels can literally fall apart). Then the barrels must be filled with water and allowed to soak until all of the leaks stop. Several days of soaking may be required for the staves to swell and become tight. Allow the barrels to soak for two or three more days after all of the leaks stop. Then the barrels can be refilled with wine.

Clean, sound, used, barrels can often be purchased from wineries for \$25 to \$75. But much care is needed if the barrels have been empty for some time. Put your nose down in the bung hole and smell the barrel carefully. Sound barrels smell like wine and sweet wood. Barrels should not smell like vinegar, finger nail polish remover or a barnyard.