Barrel types to use for aging beer.

Wine barrels:

- Red - Merlot, Cabernet Sauvignon, Syrah, Red Zinfandel, Petite Syrah.
  - Each varietal of wine will give different flavors.
  - White - Chardonnay, Pinot Gris, Sauvignon Blanc.
  - Same as with the red, different flavors with the different varietals.

Whiskeys/Spirits

- With spirit barrels you can use bourbon, rye or any whiskey you like, gin, rum and tequila will make interesting flavors depending on your beer of choice.
- Most barrels range in size from 5 gal to 80 gal. Smaller used barrels are harder to get than the larger one as most vintners and distillers use a 53 gal barrel. With the larger barrels you can do a group brew and share it.
- Woods - American oak has a looser grain than the European oak, so it will impact different flavors.
- The European oak will be loss oaky with subtle vanilla and other flavors.
- Used American oak barrels will range from $50 to $150.
- Used French oak barrels will range from $90 to $200.
- Used Hungarian oak barrels, although cheaper than French, are harder to find.

Suppliers;

- All vintners and distillers will of course have used barrels. They may not want to sell them.
- There are brokers who sell and ship barrels.
- midwestbarrelco.com, out of Lincoln NE
- Locally, some of us have used Journeyman barrels with good luck.
- Brewhouse Supplies 1555 W Lincolnway, Ste 102
  Valparaiso, Indiana 46385
- Farmhouse brewing Supply from Janesville Wisconsin has Bourbon and Rum barrels sometimes.
  - https://www.homebrewing.org/ Adventures in Homebrewing
  - You can always do a weekend bourbon trail trip and try to get a barrel from Kentucky.
- There are a lot of Michigan wineries to check into for wine barrels.

Additional Information

- http://www.milkthefunk.com/wiki/Barrel. Great source of information on barrels, and suppliers.

Barrel uses;

- Red Wine barrels, - Belgians work well, maybe a Trippel or a Saison, wheats or a honey beer.
- White Wine barrels - Never used one but my guess would be a wheat beer or a lager, always fun to experiment.
- Bourbon/whiskey - Porters, stouts, barley wine, scotches, browns, and ambers, all would work well in a whiskey barrel.
- Tequila - I would say a DIPA, Belgian Trippel.
- Rum – Stouts, Porter, and Belgian Trippel, again experimenting is fun.

Flavors and Char levels

- There are four things that give off the flavors from Oak.

- **Hemicellulose**- which breaks down into wood sugar and gives off brown sugar, caramel, or toffee flavors.
- **Lignin**-is where the vanillin (vanilla) and spice come from, the higher the char the more the lignin yields flavors of spice and smoke.
- **Tannins**- essential for successful long term aging, the higher the char the mellower the interaction between spirit and tannin.
- **Oak Lactones**-Responsible for the woody/ coconut flavors, the higher the char the less impact of the oak lactones.

- Different charring and toasting will give different flavors, like the different woods will.
- Wine barrels are usually a light to med toast giving flavors of vanilla, clove smoke,
- Rum - This will transfer to the beer and you will get chocolate, dark cherries, coconut
- Bourbon/whiskey barrels are usually charred heavy, that is what gives the spirits the flavor. This will transfer to the beer and you will get a little more boozy flavor, chocolate, dark cherries, sometimes the burnt oak flavors.

Barrel Maintenance

- If used barrels are to be stored empty, rinse them several times with clean water, drain.
- I wouldn't let the barrel wood dry, it will shrink over time, and will therefore require to be swelled again when transferring beer into it.
- An effective alternative is to fill and store barrels with a sulfur-citric holding solution. This holding solution will promote sterility; keep the barrels swelled and smelling sweet. It is not recommended for new barrels or barrels less than one year old as precious oak extract would be stripped.
- The holding solution is prepared using 1 tsp of citric acid and 1.5 tsp of potassium metabisulfite for each gallon (4 L) of barrel volume.
- Dissolve these in one gallon of hot water. Fill the barrel two-thirds with water, add the holding solution, top up the barrel with cool water, and bung the barrel. Top up the barrel with a holding solution once a month to replace solution lost by evaporation and absorption into the wood. The barrel can be stored indefinitely without the risk of spoilage. During storage, rotate the barrel 45° in either direction every time you top up to keep the bung area soaked. This will prevent the bung area from drying out and protect it from spoilage organism growth.
- Caution: The sulfur-citric holding solution will etch a concrete floor. Rinse the floor with water to prevent this.

- Used barrels require no special preparation beyond a simple water rinse, if desired, when transferring wine out and in immediately. If the barrel has been stored with a holding solution, drain the barrel and rinse it thoroughly with clean water before transferring beer into it.

Types of Barrel Spoilage Problems

- Oak barrels will not cause any problems when properly maintained.
- Spoilage problems can occur because wood is a good breeding for bacteria and other bad organisms.
- Penicillium mold — a blue-green fungus causing foul-smelling odors.
- Acetobacter (acetic acid bacteria), which cause alcohol to be converted to acetic acid usually created from leaving head space in the barrel. always top off your barrel when using or storing it
- Acetic acid will cause the familiar vinegar smell.

- Brettanomyces yeasts resident in barrels are another source of problems.
- Lactobacillus and Pediococcus (types of lactic acid bacteria) resident in barrels can also cause spoilage in beers.
- To treat any of the above spoilage problems, first fill the barrel two-thirds with cool water. Prepare an alkaline solution by dissolving either sodium carbonate or sodium percarbonate in water at a rate of 1 tsp per gallon (or use 1 g/L) for mild spoilage problems or up to a maximum of 3 tsp for more serious problems. Add the solution to the barrel and then top up with water.
- Let the barrel soak overnight, empty it and neutralize any remaining alkaline residues using a citric acid solution. Trace residues of sodium carbonate or sodium percarbonate are not harmful but they will affect the taste of your beer if allowed to come into contact with it. Prepare the citric acid solution by dissolving citric acid powder in one gallon of water. Use 1 tsp of powder for each gallon of barrel volume.

- Fill the barrel two-thirds with cool water, pour in the citric acid solution, top up with cool water, and let the barrel soak overnight. Then, empty the barrel and rinse it thoroughly. Drain the water completely and let the barrel dry. Smell the barrel for any off odors to ensure the treatment worked. If the barrel does not smell completely clean, repeat the treatment as required. Discard the barrel if the problem cannot be eliminated. You can use that way for different styles of sours

Beer aging in the barrel;

- There is no specific amount of time for the beer to be in the barrel. The longer the more oak flavor you're going to get unless it is an old barrel. Thieve some periodically and judge by your tastes.
- If the barrel is older and starts losing some flavor, you can splash a handle of cheaper spirits of your choice. Rotate the barrel a quarter turn every couple of days. Leaving it in at least 2 weeks. If the oakiness leaves you can always char a spiral and hang it from a string for more oak flavor. Caution; if you do this, taste it more often. The spirals have a lot of surface area and can impact a lot of oak flavor quickly.
- Do not use chips; they are hard to clean out of the barrel.

Transferring the beer;

- There are several ways to move the beer from the barrel. Easiest is have the barrel up high enough to siphon.
- You can get a large bung and drill a second hole, one for racking, and the other to hook up your CO2 tank and force it out with pressure.
- Once your beer is out of the barrel and in a keg of bottling bucket, carbonate like any other beer, but with barrel aging you may need to add some fresh yeast along with your corn sugar if you plan on bottle conditioning as the yeast may not be viable after the time spent in the barrel.
- Let's say your beer didn't come out quite the way you wanted, whatever you do, don't dump it, you can blend it with a fresh beer or add fruit to it, the possibilities are endless.

What to do with your barrel after you have aged a couple of beers in it.

- You could recharge the barrel as we stated earlier with a liquor of your choice.

- You could turn your barrel into a sour barrel.
- You could use the barrel as a solera and continuously age say a Flanders Red in it where you remove a small portion of the aged beer and blend it with a young beer, and then top off the barrel with the rest of the young beer.