

Winemaking

Winemaking, or vinification, is the production of wine, starting with selection of the grapes and ending with bottling the finished wine. Harvest is the picking of the grapes. Grapes are either harvested mechanically or by hand. The decision to harvest grapes is typically made by the winemaker and informed by the level of sugar, tartaric acid and pH of the grapes. Berry flavor, seed colour and weather forecasts are also taken into account.

After the harvest, the grapes are crushed and allowed to ferment. Red wine is made from the pulp of red or black grapes that undergo fermentation together with the grape skins, while white wine is usually made by fermenting juice pressed from white grapes, but can also be made from pulp extracted from red grapes with minimal contact with the grape skins. Rosé wines are made from red grapes where the juice is allowed to stay in contact with the dark skins long enough to pick up a pinkish color, but little of the tannins contained in the skins.

During this primary fermentation, which often takes between one and two weeks, yeast converts most of the sugars in the grape juice into ethanol (alcohol). After the primary fermentation, the liquid is transferred to vessels for the secondary fermentation. Here, the remaining sugars are slowly converted into alcohol and the wine becomes clear. Some wine is then allowed to age in oak barrels before bottling, which add extra aromas to the wine, while others are bottled directly. The time from harvest to drinking can vary from a few months to over twenty years for top wines. Depending on the quality of grape, some of these steps may be combined or omitted to achieve the particular goals of the winemaker. Many wines of comparable quality are produced using similar but distinctly different approaches to their production; quality is dictated by the attributes of the starting material and not necessarily the steps taken during vinification.

Variations on the above procedure exist. With sparkling wines such as Champagne, an additional fermentation takes place inside the bottle, trapping carbon dioxide and creating the characteristic bubbles. Sweet wines are made by ensuring that some residual sugar remains after fermentation is completed. This can be done by harvesting late (late harvest wine), freezing the grapes to concentrate the sugar (ice wine), or adding a substance to kill the remaining yeast before fermentation is completed. For example, high proof brandy is added when making port wine (alcoholic proof is a measure of how much alcohol is contained in an alcoholic beverage).

Making the wine

Wines must be prepared according to the following instructions:

1. Make sure the area in which you are making your wine is at a stable temperature below 23° C or 75° F. At higher temperatures, the chances of your wine turning into vinegar are increased.
2. Clean and sanitize everything just before it touches the wine. That includes any funnels, cups, bowls and other items. If you have to use them on two consecutive days, clean and sanitize before every use. If you don't do this, it is likely that something like Acetobacter is going to get in and turn your wine to vinegar.
3. Pour your juice into a large plastic container. If you are using a concentrate, top up with filtered water to 23 liters. The finished product must be between 65° and 75° F or 18° to 23° C. Test with a sanitized dairy thermometer when you're up to 20 liters, and add hot or cold juice or water at the end to adjust the temperature.

4. Stir vigorously.
 5. Add yeast.
 6. Check your specific gravity by putting a sanitized hydrometer in the container. It should show a specific gravity of 1.010 or greater. If it is less, you must add a bit of sugar syrup and stir, then check again. Remove the hydrometer.
 7. Put the lid on. Cover the container with a big plastic sheet and tie it closed with some string or twine around the middle of the container.
- In a day or two, your wine should be bubbling away. Soon after that, the yeast will drop to the bottom of the container and you will not see it working, but it will still be fermenting.



Airlock



Airlock



Carboy

8. After a week, clean and sanitize the carboy (a device that is used to prevent bacteria from entering during the fermentation process), the bung (a rubber stopper with a hole in it), the airlock (a device used to prevent the gases from mixing) and the plastic tubing. Siphon the wine into the carboy.
9. Leave out as much of the sedimentation on the very bottom as you can. Attach the bung and the airlock, making sure to fill the airlock halfway with water.
10. Cover the carboy with a dark, clean, thin sheet.
11. Wait ten days and check the specific gravity. Check this once a day until the specific gravity is the same on two separate days.
12. Remove the bung and airlock and add whatever you are using to stop fermentation (you can use a little pure ascorbic acid) and to encourage settling. Stir for five minutes straight. Make sure to stir up all the sedimentation on the bottom. Replace the bung and the airlock.
13. Fourteen days later, clean and sanitize your bottles and your tubing. Siphon the wine into the bottles and cork them. You can buy a corking machine, or you can rent or borrow one from a wine store. Most corks are sold pre-sanitized, but you can soak them in a sulfite solution if you cannot buy them already prepared.
14. Let the bottles sit upright for three days, then let them sit on their side for at least a month. If you have made red wine, you should leave it for a year.
15. Add a final dose of sulfite in order to help preserve the wine and prevent unwanted fermentation in the bottle. Then seal the wine bottles with a cork.