

SOME COMMON WINEMAKING PROBLEMS

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Some of the more common winemaking problems, causes and possible solutions are briefly described below.

My wine smells like rotten eggs

Your wine contains hydrogen sulfide (H_2S). Hydrogen sulfide is a colorless, flammable gas that smells like rotten eggs. The nose is sensitive to H_2S and minute quantities of the gas can be detected by its distinctive odor. Hydrogen sulfide is often produced during primary fermentation from sulfur residues on the grapes. H_2S can also be produced when the yeast does not have enough nitrogen, micro nutrients or vitamins. In fact, hydrogen sulfide can be produced any time yeast is subjected to stressful conditions. Montrachet yeast produces more hydrogen sulfide than most other types of yeast.

Mild H_2S problems can often be cured by adding extra sulfur dioxide and racking the wine with some splashing. The pros remove hydrogen sulfide from their wines by adding a tiny quantity of copper sulfate, but some care is needed here. Severe H_2S problems are difficult to repair and the wine is often a total loss.

Here are a few ways of avoiding hydrogen sulfide in your wines. Grapes are often protected from mildew with sulfur, so inspect grapes carefully to avoid sulfur residues. Add extra nitrogen (DAP) and micro nutrients including *pantothenic* acid to the must before starting fermentation. Avoid using Montrachet yeast.

My wine smells like vinegar or finger nail polish

Your wine is turning into vinegar. Vinegar bacteria (*Acetobacter*) convert alcohol into acetic acid and then the acetic acid is converted into ethyl acetate (fingernail polish remover). All wines contain small quantities of acetic acid. But, the vinegar odor becomes offensive if the acetic acid exceeds about one gram per liter.

Excess acetic acid can be removed from wine. Unfortunately, the process requires large and complicated equipment. Just setting up and adjusting the equipment requires much time and effort, so the process is only economically feasible when hundreds of gallons of wine will be processed.

Here are a few tricks winemakers use to minimize vinegar formation. Vinegar bacteria need oxygen to convert alcohol into acetic acid, so winemakers avoid exposing their wines to air. They keep all wine storage containers full and tightly sealed or sealed with a fermentation lock to exclude as much air as possible. They maintain 0.8 ppm of molecular sulfur dioxide in the wine. They discourage fruit flies by keeping the winery clean and by disposing of pomace promptly.

My wine smells like Sherry

Your wine is oxidized and oxidation is the most frequently encountered flaw in homemade wines. Sherry wines contain a material called acetaldehyde. Acetaldehyde is what gives Sherry the distinctive smell. Acetaldehyde is produced when wine is exposed to air and oxygen in the air converts alcohol in the wine into acetaldehyde. So, acetaldehyde can be thought of as oxidized ethyl alcohol. The unique, nutty bouquet is very pleasant in Sherry wines, but it is considered a major fault in table wines.

Sulfur dioxide can react with acetaldehyde and resulting material has little Sherry smell. Therefore, a little extra sulfur dioxide can often remove unwanted Sherry odors from **slightly oxidized** table wine. But, excessive oxidation is difficult to remove by any method.

Here are a few ways to avoid excessive wine oxidation. Measure wine pH and adjust the free sulfur dioxide level to maintain the molecular SO_2 at 0.8 ppm (See below). Limit oxygen access by keep wine storage containers full and tightly sealed. When racking wine, fill empty containers from the bottom up with a minimum of splashing and bubbling. Do not use pumps with leaky seals and always try to avoid air leaks in pump suction lines.

My wine has cooked-fruit flavors

Cooked flavors in wine are often caused by fermentation temperatures that are too high, overripe grapes or too many raisins in the fruit.

Sometimes, a light fining with PVPP or potassium caseinate will reduce cooked flavors. But like most wine related problems, avoidance is the best approach.

The following precautions will minimize cooked flavors in wine. White and blush wines should be fermented in the temperature range of 50 to 60 degrees. Red grapes should be fermented at temperatures less than 90 degrees. In red fermentations, the cap temperature can exceed liquid temperature by several degrees, so punch down the cap often to keep the cap cool. Avoid fermenting overripe or dehydrated grapes containing large numbers of raisins (a few won't hurt).

My wine has a burnt match odor

A wine contains too much molecular sulfur dioxide when it smells like a burnt match and excess sulfur dioxide is not easy to remove from wine. However, sulfur dioxide slowly dissipates as wine ages and the problem will often disappear after a few months unless a gross mistake was made.

Free sulfur dioxide in wine exists in three chemical forms. The three forms are molecular sulfur dioxide (SO_2), bisulfite (HSO_3) and sulfite (SO_3). Molecular sulfur dioxide is the biologically active form, but it is also the form that produces the burnt match smell. Molecular sulfur dioxide is difficult to measure in wine. But, free sulfur dioxide and the wine pH can be easily measured and the molecular sulfur dioxide can be calculated from these values. Note that the correct amount of sulfur dioxide depends on wine pH.

Avoid the burnt match smell in wine by using the following technique. Measure the free sulfur dioxide and the pH of the wine. Look in a table and see how much free sulfur dioxide is needed to produce 0.8 milligrams of molecular sulfur dioxide per liter of wine (ppm) at the wine pH. Then adjust the free sulfur dioxide in the wine to the level needed to produce 0.8 ppm molecular sulfur dioxide. Measure the SO_2 in the wine every few weeks and maintain 0.8 ppm of molecular sulfur dioxide in the wine until it is bottled.

My wine smells like a musty closet

Your wine may be “corked.” Bad corks can produce a “swampy” or “musty closet” odor in perfectly good wine. The quality of corks has dropped significantly over the past several years. This is the industry trend and it will probably continue. Unfortunately, there is no simple cure other than changing cork suppliers. Cork taint problems are the reason so many commercial wineries are changing to screw caps.