

# Homemadewine.net presents - A Step-by-Step Guide to Making your First Wine



## **Introduction**

Making wine is one of the most enjoyable hobbies I can imagine. How often do you find a hobby that allows one to transform something like fruit into another substance so different from its original like winemaking does? This tutorial attempts to demystify making wine by walking you through the process of making your own apple juice wine. Making wine is neither hard nor complex. The basic steps can be broken to:

- Create an environment the yeast likes and thrives.
- Allow the yeast to consume as much as of the sugar as you wish.
- Stop the yeast from growing after the desired amount of sugar has been consumed.
- Bottle the wine.
- Allow the wine to age.
- Drink it.

Now this is an incredibly simplistic way of looking at making wine, but it is basically that easy. However, before I demonstrate each of these steps, I feel it is important to have a fundamental understanding of the chemicals and hardware used throughout this tutorial, and winemaking in general. First, we will examine the chemicals/additives.

## **Chemicals / Additives**

When one hears the words "chemicals" or "additives" one may think of poisons or undesirable substances such as the ubiquitous "Yellow #5" found in almost everything. Fortunately, the additives used in the wine making process are completely safe and used to enhance as well as extend the life of the wine. Strictly speaking, one can make wine without any chemicals. However, I would not recommend it. Each of the additives serve a specific purpose, and without them, the quality of the wine would suffer. In this part of the tutorial, I will examine each of the chemicals in the Apple Wine recipe used for this tutorial.

## Sulfite Solution

Technically speaking Sulfite Solution is really a powder called Sodium Metabisulfite added to water. It is a substance commonly used to sanitize anything that comes into contact with the wine during the entire winemaking process.



Please note When I say "anything that comes into contact with the wine," I do mean **everything**. Cleanliness is **the most** important edict in making wine. To make the Sulfite solution, add once ounce of Sulfite Powder to one US Gallon of cool water and shake vigorously for a few minutes. **Do not use hot or warm water**

## Pectic Enzyme

Pectic Enzyme helps break down pectin present in the fruit being fermented. For those of you who have made jams or jellies, you may recall pectin is one agent used to help solidify fruits, transforming them into a jam or jelly. Without Pectic Enzyme, it would be virtually impossible to break down the naturally occurring pectin resulting in a wine that looks hazy. Pectic Enzyme also serves as a juice extractor. Pectin is found in the cellular walls of fruit. Pectic Enzyme helps break down the cellular walls, increasing the amount of juice extracted from the fruit.

## Acid Blend

In winemaking, there are three basic types of acid: Tartaric, Citric and Malic. Acid Blend is a combination of these acids to help add fruity character and sharpness to wine. Too little Acid Blend, the wine could have a flat taste and lack character. Too much, the wine could have an undesirable sharpness that might do away with further aging. Then again, it might not.

## Yeast Nutrient

Strictly speaking, Yeast Nutrient can be considered "super food" for the yeast. Often yeast needs something to help it along for a short period of time at the beginning until it can consume the sugars in the wine completely on its own. This is the sole purpose for Yeast Nutrient. Do not get this confused with Yeast Energizer. Yeast Energizer could be considered "super, super food" and should only be used in specific circumstances such as when you are having problems getting something to ferment. Adding Yeast Energizer will force the yeast to grow.

## **Tannin**

Tannin is a substance found in grape skins, seeds, stems and oak barrels (known as wood tannins). Because of this, red wines tend to have higher amounts of tannins than white wines. Tannins also contribute astringency (that pucker feeling when you drink a dry wine) and/or bitter flavors to wine. Tannins also act as a natural preservative, aiding in the aging process.

## **Campden Tablets**

Campden Tablets are small tablets containing about 450 mg of potassium (or sodium) metabisulphite. What on earth do you need potassium metabisulfite for and what is potassium metabi-whatever? Well, one of the golden rules in winemaking is "Cleanliness is next to Godliness." I mean this literally. Anything that touches the wine before, during, after and bottling must be spotless. Campden Tablets are simply the most common of the many sterilizing agents used to kill any "bad" bacteria that exists in the wine before you add "a good fungi" (the wine yeast). This insures you start the wine with a clean slate. Free of anything that could cause bad flavors or ruin the wine.

## **Wine Yeast**

Wine Yeasts are a special type of yeast used only in making wine. Just like regular bread yeast, wine yeast consumes sugar then produces alcohol and carbon dioxide gas as a by-product. There are countless types of Wine Yeasts; each imparting different qualities. The most common yeasts include: Flor Sherry, Montrachet, Pasteur Champagne, Premier Curvee, Côte des Blancs, etc. One package of yeast will product up to five gallons of wine.

## **Potassium Sorbate**

Stabilization of a wine is one of the last steps in the winemaking process. As stated earlier, carbon dioxide gas is a by-product of the fermentation process. Stabilization inhibits (does not kill) the yeast, preventing any additional CO<sub>2</sub> gas from being generated. Without stabilization, the wine will continue to ferment in the bottle; potentially leading to exploding corks and a real mess. Before you start freaking out, the bottles themselves should be fine. It's the corks that will blow out before the bottle blows up. Potassium Sorbate is one of the many different types of stabilization agents used to inhibit the yeast and put them into hibernation. It is highly recommended you add a stabilization agent to every wine before bottling it; regardless what the recipe says. It's just good practice.

## Hardware

The most expensive aspect of making wine is the hardware. Fortunately, all of the hardware, except for labels and corks can be reused again and again. One very important thing to remember is to only use food-grade materials when making wine. Materials not marked as food-grade can contain chemicals that could leech out into the wine during fermentation. While I have never know anyone to get sick, I would simply not risk it. Food-grade materials do not possess such chemicals and are specifically designed to be used with food materials. Therefore, don't skimp out and buy a big trash can thinking it's a substitute for a high quality food grade bucket. Spend the extra bucks on a really good one. You won't regret it. Now let's get on with explaining the hardware.

### Carboy

A Carboy is simply a glass jug. That's all, nothing fancy. Carboys come in sizes ranging from One Gallon US to Six Gallons US.



I specifically mention "US" in my previous sentence. This stands for United States (US) measurements as opposed to United Kingdom or Imperial measurements. Some recipes require US measurements where as others use Imperial measurements. You may think they are the same, but they are not. For example, a Five Gallon Imperial carboy is the equivalent of Six US gallons. Therefore, read your recipes carefully.

### Bung

bungs are nothing more than rubber stoppers with holes drilled down the middle where an airlock (I will explain that later) is attached. They come in various sizes and are inserted in the mouth of the carboy during the secondary fermentation phase (I will explain that later as well).

### Airlock

The bane of every winemaker is oxidation. Oxidation is the breakdown of the wine due to over exposing it oxygen. Airlocks help prevent this from occurring by creating a "valve" where CO<sub>2</sub> gas from the fermenting wine is allowed to escape while at the same time keeping air from entering the carboy and oxidizing the wine. Airlocks work in conjunction with bungs by being inserted in the hole of the bung and then the bung is inserted in the mouth of the carboy.

There are two basic types of Air Locks; one looks sort of like a "S" the other looks

like a small cup with an inverted cup floating inside it. They work by filling them half-way with water. The pressure of the water in the airlock keeps air from entering the carboy while also allowing air to escape; prevent oxidation. It's kinda cool watching them bubble as the wine ferments.

Personally, I prefer the "S" shaped airlocks. They are easier to use any have no additional parts that could get lost; unlike the other "double cup" type Air Locks.

### **Hydrometer and Hydrometer Tube**

An important part of making wine is measuring the amount of sugar before, during and after fermentation. This is done with a Hydrometer and Hydrometer Tube. The Hydrometer looks sort of like a 12 inch thermometer with a piece of paper stuck inside of it with numbers printed on it. To use it, you put a small amount of the wine in the hydrometer tube, drop the hydrometer in the wine and spin it. The spinning action removes any bubble that may have accumulated on the sides of the hydrometer. The hydrometer will float in the wine giving you a measurement of the sugar in the wine. To read the measurement, look at the number inside the hydrometer where it's floating on the wine. That is the level of sugar currently in the wine.



#### **Please note**

The standard measurement used with hydrometers in winemaking is one called Specific Gravity. Almost every recipe uses it, and every hydrometer will have Specific Gravity, or SG as it is commonly referred to, printed on it. To make matters even more confusing, most Hydrometers also have two or three other measurement systems printed on them. They are Balling, Brix, and Potential Alcohol. I would ignore Balling and Brix, but I would keep the Potential Alcohol measurement in the back of your mind. This can be helpful in determining the amount of alcohol in a finished wine.

### **Wine Thief**

A Wine Thief is a glass or plastic tube with holes at both ends used to extract small amounts of the wine. To use it, insert it into the wine. Allow it to fill with wine. Cover the hole exposed towards you with your thumb. Remove the Wine Thief. You now have a small amount of the wine ready to be used. A Wine Thief is not an absolute necessity for making wine, but it is very helpful. An immaculately clean turkey baster makes a suitable replacement for a Wine Thief.



*Drawing of a basic Wine Thief.*

*A clean turkey baster works great as a replacement.*

### **Food-Grade Bucket and Spoon**

As I stated before, it is imperative you use materials labeled as food-grade. This insures no nasty chemicals worm their way into the wine during the fermentation process. So what size do you need? That depends on the amount of wine you are producing. For a one gallon batch, I would use a three to five gallon bucket. Fermenting things can create a lot of foam and you need a vessel large enough to hold the wine and the foam.

Where can you find a food grade bucket? My favorite place is my local wine supply shop. Unfortunately, not all of us have that level of convenience. Fear not, you still have a couple options. One is to go to your local discount store such as K-Mart, Wal-Mart or Target. All should have buckets suitable for winemaking. Another option, and free one at that, is to visit your local grocery store. They literally have dozens of buckets in the bakery section, and many grocery stores are more than happy to give you a few. However, make sure you verify they bucket(s) were only used to store food products and not any nasty cleaning solutions. Then take them home and run them through a dishwasher cycle. Don't have a dishwasher? No worries, just clean them out by hand at least two or three times with a super generous amount of soap and very hot water. It's imperative you have them absolutely free of all debris and all food particles.

### **Food-Grade Racking Tub and Hose**

Racking is the process of transferring wine from one vessel to another. Why do such a step? As a wine ferments, sediments will drop to the bottom of the container holding the wine. This is mostly lees (dead yeast). You must keep the wine off the lees or it will add off flavors to the wine. Racking is a simple process of siphoning the wine from one carboy to another using a racking tube and hose. The tube is a straight stiff piece of plastic tubing curved at the top where you connect a piece of flexible hose. The tube goes into the carboy containing the wine and you literally suck on the other end of the flexible tubing until the wine starts flowing into the clean, empty carboy. Sounds gross but it's really not.



## Making Wine:

### Step One - Sanitize EVERYTHING

#### Supplies needed:

One gallon glass jug

1 oz Sulfite powder

Three to five gallon food-grade bucket

Food-grade plastic spoon

The first step in making wine is to prepare the sulfite sanitizing solution (This step can be skipped if you already have a sulfite solution prepared). Add one ounce of Sulfite Powder to one US gallon of cool water and shake vigorously for a few minutes or until the powder has completely dissolved. The solution stays effective for months if stored in a tightly sealed container in a cool/dry place. Pour some of the sulfite solution in the bucket. Swish the solution around covering every inch of the inside of the bucket. Now, dip the spoon into the sulfite solution in the bucket.



#### Please note:

The point of this step is to sanitize all of the hardware used before we start making the wine. This step must be repeated **every time** you use a piece of hardware that touches the wine.

Once the hardware has been properly sanitized, toss the solution.



#### Please note:

**Do not** rinse the hardware with water. Doing so, will expose the hardware

to bacteria again; ultimately defeating the purpose of the sulfite.

## **Step Two - Preparing the Must**

### **Supplies needed:**

- 1 quart measure vessel
- Pot that holds two quarts
- Plastic trash bag
- Butcher's twine
- 3 quarts fresh pressed cider or apple juice, no preservatives
- 1 quart water
- 1 1/2 lbs sugar (approx Three cups)
- 1 tsp acid blend
- 1/4 tsp. tannin
- 1 tsp yeast nutrient
- 1/2/ tsp pectic enzyme
- 1 campden tablet

Start preparing the Must by first selecting the correct type of apple juice or cider. Make sure you select one that has:

- No preservatives
- Organic
- Free of pesticides

Sanitize the one quart measuring vessel, measure three quarts of the juice and put in the primary fermenter (the big bucket). Next, mix the water and sugar together in a pot and heat until boiling. Once the sugar has completely dissolved, pour the sugar water solution over the apple juice. Then add the Acid Blend, Tannin, and Yeast Nutrient.



### **Please note:**

Be careful when adding the tannin. It tends to "clump up," sometimes making it difficult to disperse in throughout the must.

Allow the must (unfermented wine) to cool completely to room temperature. Once the must has cooled sufficiently, crush the campden tablet with the back of a spoon, add to the must and stir. Cover the primary fermentor with a plain old plastic bag and secure tightly with some butcher's twine. Now, allow the must to rest overnight. During this time the campden tablet will kill any nasty bugs in the must. The next day, add the Pectic Enzyme to the must and stir. You are now ready to measure the Specific Gravity/Potential Alcohol and confirm you have the proper amount of sugar in the must.

### Step Three - Measuring the SG and PA

#### Supplies needed:

Hydrometer and Hydrometer tube

Wine thief

Sulfite solution

Sugar is the heart of all yeast fermentation. Yeast consumes the sugar and produces alcohol as the by-product. Therefore, the higher the sugar content, the more alcohol can be produced. Conversely, the lower the sugar the less alcohol can be produced. Specific Gravity (SG) and Potential Alcohol (PA) readings provide you with ability to measure how much alcohol is possible in the must. However, a baseline measurement must be taken before any fermentation starts. After you have taken your baseline reading, your goal should be to make the must ferment out to a SG reading of .990 or less (same as less than 0% PA). Meaning, no more alcohol can be produced. Since no more alcohol can be produced, the baseline PA reading is the alcohol content within the wine. The simplicity of the PA system is why I really like it. Unfortunately, the PA system is not as accurate as the SG system and most wine recipes use Specific Gravity. Therefore, I use both and have the best of both worlds.

Below is a chart I designed showing the measurement conversions between SG and PA.

SG	PA		SG	PA
1.150	20%		1.068	9%
1.143	19%		1.061	8%
1.136	18%		1.053	7%
1.128	17%		1.046	6%
1.121	16%		1.038	5%
1.113	15%		1.030	4%
1.106	14%		1.023	3%
1.098	13%		1.015	2%
1.091	12%		1.008	1%
1.083	11%		1.000	0%
1.076	10%			

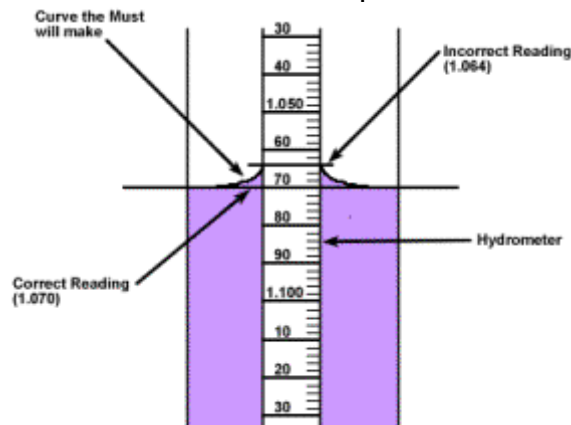
To begin taking the SG/PA measurements, first sanitize the hardware by completely submerging it in the Sulfite Solution then discard the solution.

Now that the hardware is clean and sanitized, insert the wine thief in the must. Wait for the thief to fill. Once filled, cover the hole facing you with your thumb and remove it from the must. The wine should stay in the thief. Now place the tip of the thief in the Hydrometer Tube and release your thumb. **Carefully** lower the hydrometer into the tube. **Do not drop it or it will probably break.** Continue adding more and more must until the hydrometer floats freely in the tube. Now, spin the hydrometer in the tube. This releases any bubbles that may have formed around the hydrometer. Once the spinning has stopped, carefully look at the point where the hydrometer is floating.



**Please note:**

The capillary effect will cause liquid to "bend upwards" on the sides of the hydrometer. **Do not** mistake the top of this "bending" as the right reading. Instead carefully examine where the bottom of the curve is located. This is the correct measurement. Please see the picture below for an example.



*How to correctly read a Hydrometer*

Once you have an accurate SG reading, write it down. For this recipe, you should have a SG reading between 1.076 to 1.098 (10% to 13% PA). You are now ready to add the wine yeast and start the fermentation process.

**Step Four - Primary Fermentation**

**Supplies needed:**

- Wine Yeast of your choice
- Hydrometer and hydrometer tube
- Food-grade plastic spoon
- Sulfite solution

There are loads of different kinds of wine yeasts, each contributing different attributes to wine. For simplicity I recommend you use Premier Cuvée for this

recipe. However, feel free to use any of the other basic wine yeasts such as Flor Sherry, Montrachet, Champagne, etc.

Sprinkle the yeast over the must and stir it with a sanitized plastic spoon.



**Please note:**

Do not use any wooded utensils in your winemaking. They are prone to bacterial growth due to their porous nature. Stick with plastic. It's easy to clean and cheap to replace.

Stir the must daily with a sanitized spoon for one week. After one week, check the SG/PA. It should have a SG/PA reading of between 1.024 1.030 (3% to 4% PA). If the must has not reached the proper reading, then wait another 2 to 3 days and take another reading. Once the must reaches 1.024 to 1.030, you are now ready to move to the Secondary Fermentation Stage.

### **Step Five - Secondary Fermentation**

**Supplies needed:**

Racking tube and hose

One Gallon glass carboy

Bottle of inexpensive, but drinkable, white wine for topping off

Sulfite Solution

Bung / Airlock

Secondary Fermentation is a "closed" fermentation process where the must is allowed to continue to ferment while exposed to as little air as possible. To achieve this, one must first transfer the wine to a different fermentation vessel. The vessel of choice is a glass carboy. Carboys are nothing more than big glass jugs. Since this recipe produces only one gallon of wine, you can use **any** basic, run of the mill glass jug (such as the one the juice came in).



**Please note:**

Do not use a plastic jug for this step in the winemaking process. Plastic is perfect for spoons, hoses etc, but is not recommended for secondary fermentation. If you have to, buy a glass jug.

Once you have your carboy you will need to start racking your wine into the

carboy. Racking is basically siphoning the must from the primary fermenter to the carboy. This requires you purchase a racking tube and hose. A racking tube is a stiff piece of plastic bent at the top where you attach the racking hose.



**Please note:**

This piece of hardware should be purchased from a winemaking shop. Other types of hoses are not classified as food-grade, and as I have stated earlier you should **only** use food-grade materials when making wine.

To start racking the wine, open a bottle of inexpensive, but drinkable, white wine at room temperature and set aside (water boiled and cooled to room temperature works as a substitute). Now, place the primary fermenter on a flat surface at least three off the floor (such as the kitchen counter). Next, clean the carboy out **really** well; making sure no particles are visible. Sanitize the carboy by pouring some sulfite solution in it and swish it around making sure the entire surface has been covered. Discard the solution. Next, sanitize the racking tube and hose by submerging them in the sulfite solution. Once everything has been sanitized, put the carboy on the floor, insert the racking tube in the primary fermenter and suck, yes suck, on the other end of the racking hose. Once the wine starts flowing, put the hose in the carboy. Once most of the must has been transferred, carefully watch what is left in the primary fermenter. There will **always** be some really nasty looking stuff left in the fermentor. It is better to leave that behind rather than try to get every drop. Now take the white wine (or boiled, then cooled water) you set aside earlier and fill the carboy up to about 1 1/2 - 2 inches from the top. Lastly, submerge the bung and airlock in the sulfite solution, fill the airlock with water up to the fill line printed on it and insert it into the mouth of the carboy. Allow the wine to continue to ferment in the carboy for several months until the SG/PA ferments out to .990 or less (same as less than 0% PA). This usually takes about six months. Make sure to check the air lock often and replace the water as it evaporates. Also, rack the wine every couple of months or when you see a large amount of sediment at the bottom. Use the same steps as above whenever you rack your wine.



**Please note:**

It is very important to watch the level of lees, or sediment, at the bottom of the wine. Neglecting to rack your wine could allow bad things to happen

such as off tastes and odors caused by the lees. Conversely, you do not want to rack the wine too often as this will make it prone to bacterial exposure which is very bad. Every two to three months is usually more than sufficient.

Once your wine has fermented out (reached a SG/PA of .990 or less) you can proceed to the last step, Stabilizing, Bottling and aging.

## Step Six - Stabilization, Bottling and aging

### Supplies needed

1/2 tsp. Potassium Sorbate  
Sulfite Solution  
Five standard wine bottles  
10 Number 8 Natural Corks  
One to three gallon primary fermenter  
Food-grade plastic spoon  
Corker  
Labels  
Racking tube and hose

The final step in making your wine is stabilizing it, bottling it and allowing it to age. Begin by soaking the corks in water for at least eight hours.



### **Please note:**

You really do not need 10 corks. I included extras because you never know when a mistake is made and it's better having a few extras around just in case.

## Stabilization

Next, clean the wine bottles thoroughly. Then swish sulfite solution in them and discard the solution. Then sanitize the racking hose, tube, primary fermenter and plastic spoon (discarding the solution afterwards). Rack the wine into the primary fermenter. Add 1/2/ teaspoon of potassium sorbate to the wine and stir. Potassium sorbate is a yeast inhibitor that keeps it from continuing to ferment while in the bottle. **Do not** skip this step. If you do not stabilize your wine, it will continue to ferment in the bottle, increase the pressure inside the bottle ultimately causing the cork to blow out. Adding the potassium sorbate takes just a few seconds and is **well** worth the peace of mind.



**Please Note:**

The bottle will **not** explode. Only the wine will blow out of the top. I guess it's possible the cork could hit someone and hurt them, but that is highly unlikely.

**Bottling**

Now that the wine has been properly stabilized, rack the wine into the bottles leaving about two inches of free space at the top.



**Please note:**

Just like previous steps, do not try to get every last drop of the wine in the bottles. There will always be some sediment on the bottom of the carboy, **do not bother with it.**

After all the bottles have been filled you will need to cork each bottle. Now, there are many different kinds of corkers and I cannot possibly explain how they all work. Therefore, I will leave those instructions up to the manufacturers.

Now that all the bottles have been corked, add your labels. Personally, I add labels to **every** wine I make. The design may be secondary, but it's important to have at least the following on every label:

Name of the Wine  
Month/Day/Year it was bottled  
Alcohol by Volume

**Aging**

I like to allow my wine to age for at least six months before I drink it. To age properly, store the wine on it's side in a cool, dry and dark place like your basement or crawlspace.

That's it. Enjoy your wine.

Please visit [www.homemadewine.net](http://www.homemadewine.net) or [www.farmatnanticokecreek.com](http://www.farmatnanticokecreek.com) for recipes, tips, tricks and supplies.

Copyright 2001-2008 Homemadewine.net

