How to Make Wine From Grapes

Here is a checklist of everything you will need to make wine from grapes:

- Fresh or Frozen Grapes
- Acid Testing Kit
- Tartaric Acid
- Hydrometer
- Yeast
- Yeast Nutrient
- Wine Cap Punch Down Tool
- Ratchet Press
- Floating Thermometer
- 7.9 Gallon plastic fermenter
- 6 Gallon Carboy with a stopper and airlock
- Racking Equipment

Wine making has been around for thousands of years. In its basic form, wine making is a natural process that requires very little human intervention. Mother Nature provides everything that is needed to make wine; it is up to humans to embellish, improve, or totally obliterate what nature has provided, to which anyone with extensive wine tasting experience can attest.

There are five basic components or steps to making wine: harvesting, crushing and pressing, fermentation, clarification, and aging and bottling. Undoubtedly, one can find endless deviations and variations along the way. In fact, it is the variants and little deviations at any point in the process that make life interesting. They also make each wine unique and ultimately contribute to the greatness or ignominy of any particular wine. The steps for making white wine and red wine are essentially the same, with one exception: if you are making white wine, the juice gets
separated from the seeds and skins right away, so that they don’t impart any color to the wine. The making of fortified or sparkling wines is also another matter; both require additional human intervention to succeed and at this time, will not be part of this discussion. If you are starting with fresh grapes, instructions begin with “The Harvest”; if you purchased frozen grapes from Midwest, instructions begin with “Thawing the Must”. If you have further questions, feel free to call us at 888-449-2739 or email at service@midwestsupplies.com

If using fresh grapes: The Harvest
Harvesting or picking is certainly the first step in the actual wine making process. Without fruit there would be no wine, and no fruit other than grapes can produce annually a reliable amount of sugar to yield sufficient alcohol to preserve the resulting beverage, nor have other fruits the requisite acids, esters and tannins to make natural, stable wine on a consistent basis. For this reason and a host more, most winemakers acknowledge that wine is made in the vineyard, at least figuratively. In order to make fine wine, grapes must be harvested at the precise time, preferably when physiologically ripe. A combination of science and old-fashioned tasting usually go into determining when to harvest, with consultants, winemakers, vineyard managers, and proprietors all having their say. Harvesting can be done mechanically or by hand. However, many estates prefer to hand harvest, as mechanical harvesters can often be too tough on the grapes and the vineyard. Once the grapes arrive at the winery, reputable winemakers will sort the grape bunches, culling out rotten or under ripe fruit before crushing.

Crushing and Destemming the Grapes
Crushing the whole clusters of fresh ripe grapes is traditionally the next step in the wine making process. Today, mechanical crushers perform the time-honored tradition of stomping or trodding the grapes into what is commonly referred to as must. For thousands of years, it was men and women who performed the harvest dance in barrels and presses that began grape juice’s magical transformation from concentrated sunlight and water held together in clusters of fruit to the most healthful and mystical of all beverages - wine. As with anything in life, change involves something lost and something gained. By using mechanical presses, much of the romance and ritual has departed this stage of wine making, but one need not lament too long due to the immense sanitary gain that mechanical pressing brings to wine making. Mechanical pressing has also improved the quality and longevity of wine, while reducing the winemaker’s need for preservatives. Having said all this, it is important to note that not all wine begins life in a crusher. Sometimes, winemakers choose to allow fermentation to begin inside uncruushed whole grape clusters, allowing the natural weight of the grapes and the onset of fermentation to burst the skins of the grapes before pressing the uncrushed clusters.

Up until crushing and pressing the steps for making white wine and red wine are essentially the same. However, if a winemaker is to make white wine, he or she will quickly press the must after crushing in order to separate the juice from the skins, seeds, and solids. By doing so unwanted color (which comes from the skin of the grape, not the juice) and tannins cannot leach into the white wine. Essentially, white wine is allowed very little skin contact, while red wine is left in contact with its skins to garner color, flavor, and additional tannins during fermentation, which of course is the next step.

Crushing Red Wine Grapes
Crush (break the skins) and de-stem the grapes. For most grape varieties, about 90% of the larger stems should be removed. Test for total acidity following the instructions in your acid testing kit. If the acidity is less than .7%, add enough tartaric acid to bring it to that level. Test for sugar with your hydrometer. Correct any deficiencies by adding enough sugar to bring the reading up to 22% (22 degrees brix). When these tests and corrections have been completed, the must should be sulfited. Estimating that you will get roughly one gallon of juice yield for every 16 lbs. of grapes, calculate the anticipated amount of juice. Using this estimate, add enough sulfite (sodium metabisulfite?) to give you a sulfur dioxide (SO2) level between 50 and 130 parts per million (ppm). The amount needed will depend on the condition of the grapes, with moldy grapes getting the most concentrated dose. Unless you have found it necessary to add more than 65 parts per million SO2, yeast should be added immediately. If using more than 65 parts per million SO2, you must wait four or five hours before doing so.

Crushing White Wine Grapes
Crush (break the skins) the grapes. It is not necessary to de-stem them. Test for total acidity following the instructions in your acid testing kit. If the acidity is less than .7%, add enough tartaric acid to bring it to that level. Test for sugar with your hydrometer. Correct any deficiencies by adding enough sugar to bring the reading up to 20% (20 degrees brix) for most varieties (22% for Sauvignon Blanc and Chardonnay). When these tests and corrections have been completed, the must should be sulfited. Estimating that you will get roughly a gallon of juice from every
16 lbs. of grapes (varies with the variety), add enough sulfate to give you a sulfur dioxide (SO2) level between 50 and 120 parts per million (ppm.). The amount needed will depend on the condition of the grapes, with moldy grapes getting the most concentrated dose.

**If using frozen grapes: Thawing the Must**
Let your must or juice thaw out in a space with constant, room temperature (60-70°F). It will take roughly 1-3 days for the grapes to thaw. The sooner you can thaw must or juice to proper fermentation temperatures, the better. If your must thaws too slowly, you run the risk of contamination by spoiling microorganisms. Stirring your must with a clean, sanitized utensil will help speed up the thawing process. Once the must is thawed, transfer it to your primary fermenter. Leave a small amount of must or juice behind to swirl in your pail to pick up any residuals in the pail to transfer to your primary fermenter.

**Preparing for Fermentation**
The majority of winemakers who make wine from frozen musts do not sulfite their must before proceeding. This is because the extended freezing period as well as the higher concentration of sugars inhibit the existence of microbes. We do not recommend adding sulfate to the must and rather inducing fermentation with your yeast as soon as the must reaches fermentation temperatures. If you choose to sulfite with potassium metabisulfite, we recommend not adding above 50ppm for the volume of must, as this can cause problems with the malolactic “fermentation” (MLF) later on. 30-50ppm will suffice. Bear in mind the amount of free SO2 (in ppm) in the wine is pH dependent. We sell SO2 test kits and pH test kits to help you determine these values. One gram of potassium metabisulfite will contribute approximately 50 ppm to 5 gallons of must. ¼ tsp is approximately one gram of metabisulfite.

**Test your must for °Brix, TA, and pH:** You’ll want to test your must for the sugar content (°Brix), titratable acidity, and pH level. Adjustments may be necessary if any of these values are out of range. Making adjustments as necessary will help you make great wine. Start with the °Brix. Use a hydrometer or a refractometer to get your Brix reading from a well mixed sample of the must – it should be within 22-25°Brix. If using a hydrometer, make sure you are using a pure juice sample. Leftover grape material will skew the reading. If the reading is below 22°Brix, you’ll need to add sugar to bring the reading into an appropriate range. Adding 1.5 oz. of granulated sugar per gallon will raise the Brix value by 1°. Add an appropriate amount of sugar to the must to bring the sugar level to within 22-25°Brix. You can first dissolve the sugar in a small amount of water before you add to the must, or you can add the sugar directly. In either case, you’ll want to make sure the sugar is dissolved and mixed well into the must.

If the Brix reading is more than 25°, we would recommend diluting with unchlorinated water to within the 22-25° range. We recommend treating the water first with 7grams per Liter tartaric acid. This is to ensure the wine’s acidity isn’t skewed out of range.

**Testing Titratable Acidity:** Now to test for the Titratable Acidity (TA). For a red wine, we want the TA to land within 0.6% to 0.8%. Shoot for 0.7-0.9% for white wines. In order to get a representative sample of a red wine must, start by lightly blending a sample of the must, that includes crushed grapes, in a blender. Then, strain the sample through a wire mesh strainer or mesh bag. You can squeeze the bag or push the must in the strainer to help produce a strained sample. Finally, use a coffee filter in a wine glass or jar to filter the strained sample. We recommend using a rubber band to fasten the filter to the jar or glass. You’ll want 30 mL or more of juice so you can sample both TA and pH.

Kits to test titratable acidity are available on our website. Follow the directions on the test kit to get your TA reading. You can also use a pH meter if you have one. Follow the same procedure as you would in a Titratable Acidity test kit, except use the pH meter reading as the indicator instead of the phenolphthalein color indicator. The endpoint is reached when the pH meter reads 8.2. Stir the sample with the pH meter between Sodium Hydroxide additions.

If the TA is above 0.9% for either reds or whites, you may want to lower the acids into the must or juice’s respective acceptable range. You can do this a couple ways. We recommend considering a Malolactic fermentation for reds after the primary and/or Cold Stabilization. Malolactic fermentation is often used for Chardonnays and Sauvignon Blancs, as well. If the TA reads much lower that 0.6%, you can raise it into the target range by adding tartaric acid. When calculating the amount of tartaric acid necessary, make the calculation based on the expected final yield of the wine. For 5 gallons of red wine must, that number is roughly 3.5 gallons. For settled white wine juice, it’s essentially the volume of the juice. 3.8 grams of tartaric acid per gallon will raise the TA by 0.1%. You can also use a teaspoon. A level teaspoon will raise the acidity by about 0.12% per gallon. Mix the tartaric acid into a small amount of water and add to the must. If you want to increase the TA by more than 0.2%, we’d recommend adding half the tartaric acid, and retest.
Check the pH: A suitable pH range is 3.4 – 3.6. In most cases, if the TA and the Brix are in the proper range, the pH will be within the range, but it’s best to be sure with a test with a pH meter. The Checker 1 pH meter will make this reading quick and easy.

Add yeast: We have a variety of wine yeasts to choose from. Choose a strain that will suit the style of wine you are making. Check our website and read the descriptions for the wine yeasts we offer. They will help you choose a strain. There may be several suitable strains, so choose one that sounds good to you. Follow the instructions on the yeast packaging to inoculate the must with your chosen yeast strain. We recommend making a yeast nutrient addition along with pitching your yeast. We have several kinds available. Add half the total addition now, and make another half-addition when the Brix reading is about 13°Brix. You’re on your way to making wine!

Primary Fermentation
With red wines, you can start the fermentation right in the bucket that your frozen grapes came in. All you need to do is drill a 1/4" hole in the lid, sanitize it and put a grommet and airlock in it and you’re ready to go. Otherwise, your basic plastic fermenter will work great. We’d recommend starting the fermentation in the 60-70°F range. A floating thermometer will help you monitor the must’s temperature. Fermentation will create heat and bring the temperatures into the 70s and above. For red wines, you’ll want to make sure the fermentation temperature isn’t rising into the 90s for an extended period of time, although some winemakers think a short spike in the lower 90s is ok. This short spike will help extract color from the skins. The rest of skin fermentation should take place at 60-70°F. If the temperature gets too hot, you can freeze plastic water bottles (filled with water) in your freezer, sanitize the sealed bottles and add them to your must to keep things cool. For whites, we’d recommend starting the fermentation in the same temperature range as reds. Once fermentation begins, if possible, slowly lower the temperature to a cooler range of 55-65°F. Do not cool too fast or the yeast may cease fermenting. Do the best you can – and don’t worry too much.

Also add one ounce of yeast nutrient for every 100 lbs. of grapes. Your yeast culture should be mixed into the crushed grapes (now called “must”). Stir it in thoroughly after eight to twelve hours. The must should be stirred twice a day until fermentation begins. The beginning of fermentation will be obvious, as the grape skins will be forced to the surface, forming a solid layer (called a “cap”).

Punching the Cap: The CO2 produced will lift and suspend a “cap” of crushed grapes above the juice. Punching the cap is simply using a large, sanitized spoon or cap-punching tool to push the grape material back into the must. Stir up the yeast at the bottom of the fermenter as well. This allows the CO2 and heat to escape as well as improves the color and flavor development of the wine, among other things. Once the cap has formed, it should be pushed or “punched” back down into the fermenting juice twice a day until it is ready to be pressed. Our Wine Cap Punch Down Tool comes in very handy for this step. You’ll want to “punch the cap” 2-6 times daily. That’s a lot of attention to your wine – be sure to punch the cap at least 2 times a day. To an extent, the more you punch the cap the better – it will aid your wine in several ways. As you are punching the cap, it’s a good idea to check the fermentation temperature as you are doing so.

**Note for white wines: Punching the cap is not necessary on white wine juice since the skins and seeds have already been pressed and removed.

Most of the sugars will be fermented away in about a week, but times will vary due to fermentation temperature, amount of yeast pitched, and other factors. After about 7 days, you’ll want to start checking the sugar level of the must. You can test the sugar level of the juice with a hydrometer (be sure to get a pure sample of juice without much sediment). When the hydrometer reads around -1.5° to -2°, it means the Brix value has reached 0°, and it’s time to press. We also offer Clinitest tablets, which make testing the Brix level a breeze.

Pressing the Must
**Note for white wines: If you are making white wine from frozen grapes, you can skip this step.

For red wine, when the desired level of color has been achieved (anywhere from four days to several weeks of active fermentation), your wine should be pressed to separate the wine from the skins. When doing small batches, you can use a nylon straining bag and your hands to squeeze the fermented juices out of the grapes. A ratchet press or bladder press is an even easier pressing option and we have several sizes of both types available for purchase. See our full guide on using a ratchet press.
Move the must to the press and be sure to have a collection vessel below the press outlet. Some of the juice will flow freely (called “free-run” juice), and is considered higher quality juice than the pressed juice due to fewer harsh tannins being extracted from the grapes. Some winemakers opt to separate the free-run juice from the pressed juice (“press-run”) and store them separately. You could blend the two later if you desired. It’s also fine to simply combine the free-run and the press-run and age together. Be sure to sample and taste the press run-off to know when to stop pressing. You’ll know to stop when the runoff starts to taste astringent. Consider sulfiting the spent grape skins and using them to add extra structure to a Winexpert wine kit.

Funnel the wine into cleaned and sanitized 6 gallon carboys or other containers that can be purged of oxygen, filling them no more than 3/4 full. For the most part, you want to prevent oxygen from entering your wine from this point forward. Attach a stopper and airlock, and allow the containers to sit until all visible signs of fermentation have ceased (at least three or four days).

Within 24-48 hours after pressing and transferring to your temporary storage container(s), you’ll want to transfer off the sediment (called gross lees) that has collected at the bottom. This particular type of sediment can lead to off-flavors in your wine if left in contact with your wine too long. Transfer into cleaned and sanitized carboy(s) leaving minimal headspace.

When the wine is about half to two thirds fermented, most red wines should be inoculated with malolactic bacteria (either before or after pressing).

**Malolactic Fermentation (MLF)**

You may choose to conduct a malolactic fermentation (MLF) with malolactic bacteria on your wine, which is traditionally done on most red wines, Chardonnays or even Sauvignon Blancs. This process converts the harsher malic acid into lactic acid, which is a softer acid on the palate. MLF rounds out red wine in most cases, helps lower the acidity, and adds body to the wine. We have liquid and dry malolactic bacteria available.

Malolactic bacteria are extremely sensitive to sulfite, so you will want to wait on any sulfite additions until after MLF is complete. Keep an airlock on the carboy while MLF is active. Three things will contribute to a successful MLF: stir the lees up from the bottom of the carboy twice a week, keep temperatures in the 70-75°F range, and keep oxygen out of the headspace. Our inert gas product, Private Preserve can help you purge the headspace. The MLF process can take 2-6 weeks to complete. You can test for the completion of MLF with the Malic Acid Test Kit. When complete, you can make additions as necessary and rack the wine off the lees.

**Racking after MLF**

Once MLF is done, you will want to rack off the lees into a new cleaned and sanitized carboy. During the transfer you can sulfite the wine and make adjustments to the pH and TA. Starting with the sulfite, we’d recommend adding half the total amount necessary to protect your wine, as the amount necessary is dependent on pH. The pH will shift if you make adjustments to the TA. Test and taste a sample of the wine for TA and pH, since the MLF will have changed these values. Make adjustments as necessary to the TA in order to please your palate and bring the pH value within the acceptable 3.4-3.65 range. It helps to make the sulfite and TA additions at the beginning of the transfer off the lees to promote good mixing. Proceed to aging and fining the wine in the carboy, following the instructions supplied with your fining agent. Top off and let stand for a month. Rack the wine away from the lees again, sulfite it to about 20 ppm. SO2, and place it back in topped off carboys for three or four weeks. You can check for the end of the alcoholic fermentation by using our residual sugar test kit.

In June of the following year, filter the wine if you plan to do so. Sulfite to no more than 20 ppm. SO2. Allow the wine to sit through most of the warm summer weather with a relatively low sulfite level. This will encourage malolactic fermentation to finish up. You can test for the end of the malo-lactic fermentation with malic acid test strips. In early September, (just before you need your storage containers for the next year’s crush), carefully rack the wine from the lees, siphon into bottles, cork them, and lay them down for bottle aging. If you have enough storage capacity, you may wish to wait up to another year before bottling. At bottling time, test your wine for free sulfur dioxide, using a test kit for SO2, determining how much sulfite to add to bring the level in the wine to 30-35 ppm. If possible, store your filled bottles on their sides. Otherwise, store them with the corks down. Most red wines will benefit from at least one year’s additional aging, and frequently more.
Aging/Sulfites

In terms of storage temperature, there are benefits and drawbacks of storing the wine in warmer temperatures as well and benefits and drawbacks of storing in cooler temperatures. Aging the wine in roughly 55-60°F, if possible, is a good balance of the two. During the aging process you will also want to monitor and maintain a protective quantity of free SO2 in the wine to protect it from oxygen and wine-spoiling microorganisms. To help you do this, it’s useful to have a SO2 test kit. Even if you calculate how much sulfite to add to maintain sufficient free SO2, depending how it binds in the wine, it may not be enough. Testing the wine and adjusting the SO2 into the proper range is the only way to be sure your wine is protected properly. You’ll want to do this as the wine ages when any taste testing is performed during the aging process, as well as to account for the slight loss that occurs with time. The optimum amount of free SO2 to protect your wine is pH dependent, but if the wine is within the 3.4-3.65 pH range, the ppm of free SO2 necessary is about 20-35. Use the chart below from Accuvin as a guide:

![SO2 Test Kit Chart](chart.png)

Congrats! As always, we’re only a phone call away if you have any questions.

Also, check out our forum at www.brew-wineforum.com.

Questions?

As a full-blown home winemaker, it is wise to equip yourself with good resources. We carry several winemaking books that cover much more that what is overviewed here. We highly recommend books such as The Way to Make Wine (Sheridan Warrick), Home Winemaking Step by Step (Jon Iverson) or Techniques in Home Winemaking (David Pambianchi). You can also give us a call if you have any questions in the winemaking process: 888-449-2739

Cheers!

The Crew @ Midwest Supplies