

General Instructions for Red Wines

1. Crush and destem the grapes. At least 90% of the stems need to be removed. Place the crushed grapes into a primary fermentation container. This should be either a *food grade* plastic, glass, or stainless steel open top tub. Do not use an old wooden barrel unless you know exactly what was in it before, you know it's been sterilized *and* disinfected, and the top is open. If in doubt, throw it out.
2. Check the °Brix (sugar) content of the must at this point. You can do this with either a hydrometer or a refractometer. Add sugar as needed to bring it up to 23-24 degrees Brix. This is important to insure you end up with wine with about 11-13 % alcohol. Any more and the wine will taste 'hot or warm' and be unpleasant to drink (will make you sleepy). Any less and the wine may not preserve for very long and possibly spoil.
3. Next measure the volume of crushed grapes as closely as you can. Add ¼ level (or a bit less) teaspoon potassium metabisulfite per every 5 gallons. You can also use one Campden tablet per gallon instead. Add the crushed tablets or powder to 1/2 cup warm water to assure it is dissolved and then add the mixture to the must. The purpose of this is to get to a level of about 30-50 parts per million sulfur dioxide, which will 'kill' or attenuate the natural yeasts present on the grapes which can cause incomplete fermentation, or off tastes/flavors in your wine.
4. Now check the acid level of the must through titration. Adjust acidity at this point through the addition of water if too acidic; add tartaric acid, or acid blend if too low. Caution should be exercised when adding water. This is more forgiving with hybrid musts due to the intensity of flavor and color. *V. vinifera* is more delicate in both color and flavor and must be approached carefully. Add an appropriate amount of sugar with water to maintain correct °Brix levels. If watering is not an option consider either/both cold stabilization and/or malolactic fermentation.
5. Add 5 drops of liquid pectin enzyme per gallon of must. After stirring the must very well it should now be set aside to rest for at least 24 hours.
6. After 24 hours, check the must. There should be **no** activity in the vat, no bubbles when you stir it. This means that the sulfur worked and the must is now ready for the yeast. Bring the ambient temperature in the fermentation room to the appropriate red wine temperature to assure proper extractions.
7. Use one pack of yeast for every 5 gallons of must; place the yeast into a sterile container of warm water, about 104 degrees. Tap water is fine if there is no chlorine in the water. (If you have 'city' water, you probably have chlorine and you need to boil the water for 5 minutes first to boil off the chlorine.) Use one cup of warm water per packet with about ¼ teaspoon sugar per cup. Add the dry yeast, (Pasteur Red or other yeast for red wines), to the water, stir gently and set it aside for 15-20 minutes trying to keep it warm. Then add about 1/4 cup of must to the yeast, stir gently and set aside for another 10-15 minutes. By then the yeast should be foaming up on top indicating they are alive, happy and well. Then add another 1/2 cup of must for another 10-15 minutes resting time.
8. After all this the yeast should be ready for introducing into the must container. This is called 'pitching the yeast'. If there is a large temperature gradient between the must and the yeast, place the yeast container into the must and allow the temperature to gradually equalize. Pour the yeast over the top surface and mix it well into the must. Cover the top of the tub with a plastic cloth to

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keep the fruit flies and dust out. It should not be air tight. Set it aside and check in about 12 hours. Some winemakers also add wood chips/dust at this point, about 1/3 cup per five gallons.

9. Mix the must with a long handled spoon, a small paddle, or your hands, all being first sterilized/disinfected. Reach down to the bottom and stir up the whole mixture. The must should put out a lot of bubbles when disturbed. This indicates that the fermentation is underway. You need to mix and 'punch down' the cap of skin and seeds that come to the top surface. The surface cap needs to be kept moist and stirred. Do this at least three times a day for about 5-6 days. Always clean the spoon or your arms well and disinfect with a solution of potassium metabisulfite before mixing the must.
10. Monitor the progress of the fermentation each day. When the °Brix level has fallen 1/3 (i.e., 2/3 sugar remaining), yeast nutrients may be added, at the recommended rate, and stirred in well.
11. When the °Brix level has fallen 2/3's (i.e. 1/3 sugar remaining) add malolactic (ML) cultures if so desired. Allow the process to continue, punching the cap as before. At some point, primary fermentation will cease or be imperceptible. ML may continue. Allow the wine to rest on the skins for several days extracting as much color as possible. ***Be careful to assure a safe blanket of CO₂ or N is always present, add if necessary, and replace cover.***
12. When sufficient time has elapsed for color and tannin extraction you must separate the (liquid) wine from the (solid) skins and seed. Wash and disinfect all the equipment. Wash and disinfect your containers. Make sure you have enough containers to hold the wine. If you use a wine press, place a disinfected fiberglass screen sheet into the press around the basket inside diameter to help hold back the seeds and solid matter while pressing. Place the must into the press slowly and collect the free run wine and place into the secondary fermentation container (carboys/demijohns, stainless tanks). Continue doing this until all the must is in the press. When each container is full, about an inch or two from the top, insert an airlock and place the container in a cool place so that fermentation can be completed. You should also taste the wine to see if anything is wrong. When all the free run wine has come out, decide whether or not you want to press the solids material; if not, discard the solids. If you elect to press, start pressing slowly. Don't put too much pressure on to get the last few drops out. The more you squeeze the more bitter the wine because you will be crushing the seeds and remaining stems, none of which help the taste. Collect pressed wine and store separately from free run for possible blending at a later date.
13. After a couple of weeks, the wine should be completely still, fermentation is finished, and the lees have collected on the bottom. You can now rack (siphon) the wine off for the first time. Rack into a clean, sterile container into which you add a bit less than 1/4 teaspoon potassium metabisulfite or four crushed Campden tablets per five gallon, (we are trying to stay at about 30 ppm.). Taste the wine. You may also add oak chips/dust at this point at about 1/2 cup per five gallons, to taste.
14. Around mid November time, you may rack the wine for a second time. Taste it and decide if more wood should be added. The wine ought to be pretty good at this point although a bit harsh. It needs aging. Check the wine free SO₂ level. Adjust the SO₂ level of the wine to 30 ppm. This is very important to avoid spoilage. Also, it is critical that each time you rack, bring the wine level up to within 1 inch of the stopper to prevent oxidation. If the wine is to be long term stored in oak barrels, now is the time to fill the properly disinfected barrels. At this point, the vast majority of solids have been removed (racked off) and a minimum amount of solids will be thrown by the wine, thus simplifying the barrel cleanliness issue, for future usage.

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15. Leave the wine for at least 6-8 months. You should taste it periodically to make sure everything is OK. Always use a sterile wine thief and always remember to top the container up with either reserved wine, store bought wine, or wine from a previous year in good condition, or sterile water.
16. If you are really anxious, you can bottle at this point although my experience tells me to wait with red wine for at least another year before bottling. If you decide to bottle, rack the wine one last time into a sterile container and adjust free SO₂ to at least 50 ppm. Fill your bottles from the container.
17. Do not add any sweeteners to this wine.



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