



# THE BEVERAGE PEOPLE

## 2014 Summer News and Wine Catalog

### Varietal Winemaking

#### Making Fruit Wines At Home

By Joe Hanson-Hirt

The summers of Sonoma County are flush with the bounty of wonderful fruit. And as Byron Burch, the shop's founder, was fond of saying, "If it's got sugar or starch, we can make alcohol with it." Besides the fun of discovering a use for extra fruit, these wines really add variety to your cellar.

Grapes are naturally suited to winemaking. They

One of my favorite and most-used resources for winemaking is our very own **Newsletter/Catalog**. Especially page 6 of this **2014 Summer Newsletter**, where I can refer to "Winemaking Step by Step." For many years we have published the "Red Wine Procedures" and "White Wine Procedures" (p. 8), with period updates and guidelines as new products or information has become available. They are solid, effective short procedural instructions to help keep you on track as you turn your grapes into that magic elixir we call wine. But being brief—13 steps for

red, 12 for white—they are limited in terms of subtleties and nuances that may occur in your winemaking. So this is a companion piece to the basic guidelines with modifications and extensions to the procedures that you might want to employ to get the very best out of a particular wine variety.

To start, I wanted to get an idea of what varieties our customers are turning into wine most often. As many of you know (and as it says on the back cover of this publication), we maintain in the store a binder listing

grapes for sale. Figuring that book represents a sort of cross-section of the locally available grapes, I counted varietal entries to see what is most popular.

The winner among the reds was Zinfandel, followed closely by Cabernet Sauvignon. Behind those two big ones came Pinot Noir, Merlot, and a tie between Syrah and Petite Sirah. An astonishing 11 more red varieties followed with scattered listings.

Among the white varieties, Chardonnay was way out in front, with Sauvignon Blanc a distant second. All the other whites had few listings, with Pinot Gris/Grigio, Semillon,

See **FRUIT WINES** CONTINUED pg. 4.

#### Reference Group

Red 1  
Red 2  
Red 3  
Red 4  
White 1  
White 2  
White 3

#### Signature Variety

Zinfandel  
Cabernet Sauvignon  
Pinot Noir  
Syrah  
Chardonnay  
Sauvignon Blanc  
Riesling

#### Other Group Members

Primitivo, Barbera, Alicante Bouschet  
Merlot, Malbec, Cabernet Franc, Petit Verdot, Carménère  
Pinot Meunier, Sangiovese, Grenache, Nebbiolo  
Petite Sirah, Mourvèdre, Carignane, Cinsault, Tempranillo  
Pinot Gris/Pinot Grigio, Pinot Blanc, Chenin Blanc, French Colombard  
Semillon, Viognier  
Gewürztraminer, Albariño

#### What's New - Lots!

Photos from left to right, top to bottom.

- TE231 **100 mL BEAKER**, (Not Pictured) glass \$2.99  
TE232 **400 mL BEAKER**, Low form borosilicate glass \$4.99  
TE233 **1000 mL BEAKER**, (Not Pictured) glass \$12.99  
TE98 **Primo Digital SCALE** - 1g to 5Kg (also measures 1 oz. to 11 lbs.) NSF Listed \$44.99  
TE203 **pH METER**, Milwaukee 0-14pH, ATC, Battery, pH and Temperature Probes, 4, 7 buffer \$119.99  
P61 **13 QT- Stainless Steel Pail** with bail handle \$21.99  
TE82 **125 mL Erlenmeyer Flask** uses a #5 stopper \$8.99  
PS09 **Self Priming Diaphragm Pump - Shurflo** - 1/2" MPT ports (will need two PS48 Connectors for 1/2" tubing) \$189.99  
BK165 **The New Cider Maker's Handbook**, Jolicoeur \$39.99  
TE104M **TA Titration Kit - pH Meter Method** Benchtop kit employing a digital pH meter and a Class A glass buret with a Teflon stopcock. \$249.99



and the German pair of Riesling and Gewürztraminer notable among them. Just three more varieties - Chenin Blanc, French Colombard, and Albariño - completed the list.

To address varietal differences during winemaking, I decided to narrow the pool down to choices based on grapes with similar enological characteristics. **Taking some of the popular listed grapes as my "signature varieties,"** I combined others into the reference groups listed in the box above. For varietal winemaking suggestions, what applies to one variety in a

group can generally be applied to the others.

*To consider varietal winemaking ideas, find your variety (or something a lot like it) from the box on page 1, then apply the Reference Group suggestions below. These are keyed to the 13 steps of Red Wine Procedures and the 12 steps of White Wine Procedures.*

## Red Wine

**Step 1: Crush and de-stem.** Process conventionally. Red 3 should be treated more gently, if you own your equipment. Stem without crushing by setting the rollers a bit apart in the crusher / destemmer, and / or transfer slowly and gently into the hopper to avoid excessive breakage. With these lighter varieties, you are trying to minimize early tannin extractions by avoiding broken stems or crushed seeds.

**Step 2: Test TA.** Red 3 can run a little higher than the 0.6% recommendation. Red 1 can go a bit lower, leading to full fruity flavors, but watch pH for sulfite stability.

**Step 3: Test for sugar.** Red 2 and Red 3 will be best in the lower range here; 22° to 24° Brix. If you need to add sugar, do not go much above 22°. Red 1 and Red 4 typically taste better made in the higher range; 24° to 26°. If I had to water back one of these, I might even sneak it to 27° and let it ride (a calculated ABV at the end of around 14.8%).

**Step 4: Sulfite.** Sulfiting advice applies to all groups. For estimation, 17 lbs. of Red 2 or as little as 14 lbs. of Red 1 will yield one gallon of juice; adjust estimates accordingly. The Lallzyme EX enzyme is strongly recommended for Red 3 to improve color extraction. Red 2, with its characteristic low yields, also benefits from the EX addition for better maceration. Red 2 is also prone to over-cropping and excessive vegetal character; EX helps with that, too. If you do not use enzymes, a cold soak between Step 4 and Step 5 may be considered. Once again, Red 3 is the biggest beneficiary for improved color. Add enough dry ice to cool the must to below 50° F. **(Warning! Do this in a well-ventilated area! Dry ice produces Carbon dioxide gas which is a powerful asphyxiant!)** Add more dry ice as needed to maintain that temperature for three to six days, then allow the temperature to rise above 60° F before moving to step 5.

**Step 5: Add yeast.** For all reds, calculate the yeast addition based on the entire Must volume. Choose variably appropriate yeast strains from the table on p. 11. If working with very high brix must (Red 1 or Red 4), use the upper end of the yeast addition: 2 grams per gallon. A stuck fermentation may be avoided under these conditions by using a Go-Ferm yeast rehydration program. See the 2012 Summer Newsletter (<http://www.thebeveragepeople.com/pdf/WineCatalogWeb2012.pdf>) for details.

**Step 6: Stir and punch down.** Once again, Red 3 will gain the most benefit from winemaking enhancement products FT Rouge Soft and Opti-Red®. Use both. Remember the risk of vegetal character in Red 2! Opti-Red® can help with that and can also help round out a big wine in Red 4 when high

brix carries the risk of alcohol harshness. In terms of actual punchdowns, three times per day will provide more extraction for Red 3 musts as compared with the standard twice a day. For Red 3, you may even find it worth setting up a system for rack-and-return (or délestage), allowing full wetting of the cap and removal of some seeds.

**Step 7: Temperature.** Do your best to get above 85° F at least once with groups Red 1, 2, and 4. Lower temperatures will have less negative impact on Red 3 and may even be helpful for preserving delicate aromas in these varieties.

**Step 8: Press.** The 0° Brix guideline works for most reds most of the time. However, some tannins are more soluble in alcohol than in water. The longer seeds and skins are in contact with alcohol, the harsher the tannins. For Red 2 wines, often high in tannins, you may want to press at 4° or 5° Brix to minimize tannin extraction and allow the fermentation to complete in tank or barrel. For Red 1, though, additional tannin extraction is often desirable. In that case, you may want to extend maceration beyond the completion of primary fermentation. To do so, you need to protect the must from oxidation during the extended maceration time, since carbon dioxide is no longer being produced.

**Step 9: ML.** Sometimes Red 1 and occasionally Red 3 wines are not inoculated for ML. Skip it if you are trying to make a bright, fresh, young-drinking wine (malolactic fermentation tends to mask fruitiness). Otherwise, ML for all reds.

**Step 10: First racking.** Wines with color stability challenges, especially Red 3, will benefit from addition of Tannin Complex at this stage. (Keep in mind Tannin Complex comes from Quebracho and Oak wood— if you are adverse to adding oak characteristics, do not use.)

**Step 11: Second racking.** For all wines, test for ML completion (if inoculated) and add sulfites. Oak is very beneficial for Red 2 and Red 4, less so for Red 1, and sometimes not used at all for Red 3. Tannin Refresh untoasted oak tannin can help round out and improve maturity in overly fruity wines in Red 1 or Red 4.

**Step 12: Third racking.** Skip this one for Red 3. Consider Tannin Riche for Red 2 wines that are still showing vegetal character or have a “donut hole” problem: a nice start and a long finish, but missing mid-palate character.

**Step 13: Bottle.** Red 1 and Red 2 traditionally go in claret (Bordeaux – straight sided) bottles. Some Red 3 and Red 4 wines are bottled in Burgundy bottles instead. But it’s just tradition—the wine doesn’t change because of the bottle shape. Some winemakers like a bottling addition of Flashgum R for Red 3 wines, noting improved smoothness and reduced need for bottle aging before drinking.

*As I put together these varietal tips, I asked my Beverage People associates to comment on any special steps they had taken in their winemaking, based on grape variety. Here are some red wine remarks:*

**Primitivo:** “I really wanted Zinfandel this year, but couldn’t get my hands on any. I was able to get some Primitivo, which is



basically Italian Zinfandel. I like my Zinfandel to have fruit and berry flavors with strong vanilla character from the oak. Therefore I chose 71-B Beaujolais yeast to enhance the fruit quality and French dark oak cubes to impart the vanilla. I also used Opti-Red to ensure a deep, dark purple color. I'm happy with how this wine came out and am going to try to make about a gallon of port with it!" – Joseph Hanson-Hirt

**Pinot Noir:** "Given that Pinot Noir tends to be light in both body and color, I wanted to make sure I did what I could to preserve the natural tannin and color structure that the grapes provide. To that end, I treated my 2013 Pinot with FT Rouge Soft at the beginning of fermentation. FT Rouge Soft is a sacrificial tannin that substitutes for the natural grape tannin/color compounds in reactions with the grape proteins, allowing the natural compounds to stick around instead of dropping out in the lees. So far the color looks great!" –Alex Ponting

## White Wine

**Step 1: Crush.** Usually the same for all varieties. Commercial whites are sometimes whole-cluster pressed without crushing, but the only home wine presses capable of that technique are water-filled bladder presses or hydraulic ram presses. Ratchet presses won't do it.

**Step 2: Test acidity.** The 0.65% level may be too low for some White 3 wines, especially if you intend to bottle with a bit of residual sugar. On the other hand, it may be too high for White 1, especially Chardonnay, if the goal is to make a fat, oaky, buttery version of the wine.

**Step 3: Test for sugar.** As noted, at least 20° Brix for White 3, 22° for White 2, and a range for White 1. For a bold outcome from the White 1 group, even 23° or 24° Brix could work very well.

**Step 4: Sulfite.** White 1 and White 2 will usually yield about the amount listed—one gallon for every 16 lbs. of grapes. White 3 will often go higher, perhaps a gallon from only 14 lbs. of grapes. Estimate sulfite for the must accordingly.

**Step 5: Pectic enzyme.** If you are making a fairly neutral white wine from White 1, a simple pectic enzyme will help increase juice yield. In White 2 or White 3, you may be more interested in releasing distinctive aroma precursor compounds from the skin cells. Lallzyme® Cuvée-Blanc is formulated with a high level of beta-glucosidases to facilitate that release during soaking.

**Step 6: Press.** White 1 grapes can tolerate just about any pressing you can deliver with a manual ratchet press at home. For White 2 or White 3, go a bit lighter. Either stop after the grapes are gently pressed and remove the wet must from the press, or separate the hard-press fraction (if you continue to press) and ferment it separately. Smell, taste, and evaluate the finished wine later before blending it back in if quality is preserved.

**Step 7: Siphon away and add yeast.** Glass or stainless fermenters are usually best for White 2 and White 3 wines. Oak barrels may be used for some White 1 wines (new or used oak for Chardonnay, used oak for Pinot Blanc).

If you want to emphasize grassy, gooseberry, or citrus aromas in White 2 wines, you may want to skip the entire settling and removal of gross fruit lees, instead fermenting the whole juice as it has come from the press. For tropical fruit aromas in White 2 and grapefruit notes in White 2 or White 3, use OptiMUM-White® Specific Inactivated Yeast Derivative Nutrient. Choose a varietally appropriate yeast from pg. 11.

**Step 8: First racking.** Applies to all whites. Stainless steel or glass may be used for any of them, with oak barrels optional for White 1 wines. White 2 wines are occasionally aged in oak, particularly blends of Sauvignon Blanc and Semillon for the "fumé blanc" style of wine. Barrel-aged wines may also be kept "sur lie" (on the lees, with stirring) for some period of time on these fine lees. Malolactic inoculation at this stage is also an option for some White 1 wines, most commonly Chardonnay.

**Step 9: Second racking.** Applies to all whites.

**Step 10: Third racking.** For highly aromatic White 3 wines, you may want to bypass this step and go directly to step 11 and 12 in the early spring. The wine will clarify better with longer aging and one more racking, but distinctive varietal aromas will decline. Oak additions are primarily for White 1 wines, or for fumé blanc from the White 2 group.

**Step 11: Fourth racking.** This racking is into the bottling bucket or tank and it applies for any wine not bottled early.

**Step 12: Bottling.** White 1 and White 2 wines are not commonly sweetened at bottling, but White 3 wines very often are sweetened. A range of 0.5 to 3% is common; trials just before bottling will help you make the determination. An addition of Flashgum R can help maintain clarity, especially in sweetened wines, which may otherwise produce some sediment on aging. White 1 wines are bottled in dead-leaf green or antique green Burgundy bottles (Chardonnay), or flint (clear, colorless) claret bottles. White 2 wines are usually bottled in flint or antique green claret bottles. White 3 wines are attractive when bottled in flint, green, or amber Hock bottles (a tall, narrow German-style bottle).

*As with the red wines, my colleagues had some comments on varietal fermentation of whites:*

**No-Oak, No ML Chardonnay:** "This past harvest was my first as a home winemaker. I was lucky enough to get my hands on three varieties of grapes: Chenin Blanc, Riesling, and Chardonnay. I chose to keep my winemaking simple this year. I love a crisp refreshing dry white wine. That being said, I went with QA23 as the yeast for the Chenin and Riesling. My Chardonnay finished on the sweet side and I needed to decide if I wanted to restart the fermentation or leave it. I decided to leave the sweetness as is and carbonate. Chardonnay is an important component of many sparkling wines, and the bite from the carbonation should offset the sweetness." – Preston Malm

**White Riesling:** "I decided to sweeten my Riesling mostly because it's a Riesling! A certain level of sweetness is expected of the varietal. Although I personally do not enjoy a sipping wine with a lot of sweetness, I found a happy medium at a level of 1% residual sugar (medium dry). This serves to balance the acidity while heightening the perception of fruit. I also now have a white in my cellar, i.e. the garage, that will pair well with spicy foods!" – Kimi Wilkinson

make enough sugar and acid on their own. Most other fruits lack enough sugar and acid to make wine on their own. Most of the sugar and some of the acid must be added. Because of this, it's best to think of fruit wine as a recipe. The fruit will provide color, flavor, some acid and some sugar; and added water, corn sugar (dextrose) and acid will build up these ingredients to actually make wine.

A good grape wine needs to start at a minimum of 20° Brix to generate about 11% alcohol and in addition will need at least 0.5 - 0.7% Titratable Acid for an acid balance in the finished wine. These amounts will taste good without overpowering the flavor or aroma with alcohol and tartness. So with those parameters, we can create our recipe to reproduce those conditions.

*The basic recipe is simple and can be used to make almost any fruit wine. Recipes are designed to start the fermentation with 6 gallons of must, understanding that once the fruit solids have been removed the liquid volume will be reduced. A starting volume of 6 gallons should yield 5 gallons of finished wine. (Refer to our page 7 for the exact measurements.)*

**Start with about 12 pounds of corn sugar per 5 gallons of finished wine.** You need about 2 pounds of corn sugar for every gallon of Must to get to 20° Brix.

**Next you need between 15 and 20 pounds of fruit.** The more fruit the better, but always have at least 15 pounds. Always use more when making wines from fruits that have lighter flavors and aromas. In my experience, darker colored fruits like blackberries, blueberries and cherries tend to make better wines. They tend to have stronger flavors which are more likely to be retained in the finished wines. Think of the flavors of the fruit itself. If there isn't much flavor or complexity in the fruit to start with, there won't be much left in the finished wine. Wines made from fruits such as apricots or melons usually have little to no flavor or aroma once they have finished fermenting.

While the fruit will contribute some sugar to the must, it is usually not enough to make the Brix too high. **A good tip to start with is to add the sugar in increments after you have mixed together the fruit, water, acid and nutrients.** After each addition is stirred in well, use your hydrometer to take the Brix reading and then continue adding until the amount of sugar reaches about 20° Brix.

**Remove as much of the seeds or pits as possible.** While seeds and pits are annoying to remove, it is worth it. As alcohol in the wine increases it may extract compounds from the seeds or pits which

may have a negative impact on the flavor or even be harmful. Tiny, soft fruits such as blackberries and blueberries can be gently crushed, just enough to break the skins. Fruits a little larger and firmer such as cherries and small plums can be halved and pitted. Larger fruits can be quartered or cut into golf ball-sized chunks.

Since most fruits, including grapes, do not contain enough nutrients like nitrogen for the yeast to carry out the fermentation, yeast nutrients are always added. **Using 1 to 2 teaspoons of Fermaid K acts like vitamins for the yeasts, keeping them healthy.** Then the yeast can work to

### Out of Season Cherry Wine

When I decided to make my cherry wine, sadly, it was the wrong season and I couldn't find fresh cherries in the store. So I used some cherry puree and zinfandel concentrate in place of the actual fruit. Here's the recipe I used to make 5 gallons with information for calculating the sugar contributed by the canned puree and concentrate.

5 cans Cherry Fruit Puree  
3 cans Zinfandel Grape Juice Concentrate

(I wanted to try replacing the corn sugar with this concentrate, but it still needed a bit more sugar, so some corn sugar is added.)

1 lb. Corn Sugar  
4-5 gallons of Water  
2 ½ tsp. Yeast Food (Fermaid K)  
2 ½ tsp. Pectinase  
8 tsp. Tartaric Acid  
5 g. Beaujolais 71-B Wine Yeast

Original Brix: 21.5  
Total Acid 0.6-0.65%

#### Zinfandel Concentrate

How much sugar is in a can of concentrate? A 4 pound can of concentrate at 68 Brix has 2.72 lbs. of sugar ( $0.68 \times 4 \text{ lbs.} = 2.72 \text{ lbs.}$ ). In our 60 lbs. of must, how many Brix will a can of concentrate add? 2.72 lbs. sugar divided by 60 lbs. of must equals 0.05. Multiply by 100 to get 5 percent, or 5 Brix. **Therefore, a can of concentrate can be substituted for 2.72 lbs. of the corn sugar in the recipe.**

#### Fruit Purees

Doing the same thing for a can of cherry fruit puree, a 3 lb. 1 oz. can of puree at an average of 24.5 Brix has 0.75 lbs. of sugar ( $0.245 \times 3.06 \text{ lbs.} = 0.75 \text{ lbs.}$ ). In 60 lbs. of must, a can of concentrate will add 1.25 Brix. **Therefore, a can of cherry puree can be substituted for 0.75 lb. of corn sugar from the recipe.**

complete the fermentation and avoid production of undesirable flavors and aromas.

**You can also add 1/2 oz. of the enzyme Pectinase to break down pectin in the fruit, allowing for easier extraction of juice and minimizing haze in the finished wine.** Pectinase should be added before the fermentation begins as alcohol inhibits its activity.

**Perform an acid test** to make sure you have the right amount of acid in your wine. **A desirable range is about 0.5 - 0.7% TA.** Add tartaric acid using the simple equation on our wine magnet or from the directions in your acid test kit.

**Add 5 to 10 grams of wine yeast that will accentuate the fruit flavors of the wine.** We often recommend a white wine yeast that produces fruity esters such as Epernay II over a clean, relatively neutral champagne yeast. The added esters from the yeast tends to lend more complexity and flavor to the wine. Another great choice is Beaujolais 71-B as it accentuates fruit flavors. I used 71-B for a cherry wine I made last year and was quite happy with the ripe, fresh cherry flavor and aromas in the wine.

**Sulfite should be added to the must** before fermentation begins to kill or inhibit wild yeast or bacteria and at multiple times post-fermentation to build up free SO<sub>2</sub> to protect the wine from oxidation and spoilage. **Refer to page 13 in the newsletter for the amounts needed.**

*When it comes to the fermentation itself,* the easiest way to ferment fruit wines is in two food grade buckets with three gallons evenly divided into each. This will give you plenty of room for the fermentation and also be easier than trying to remove and clean fruit pulp from the inside of carboys. Line each bucket with a non-reactive nylon mesh bag and allow the fruit to ferment within it. Twice a day, remove the lid of the bucket and use a sanitized spoon to push down the rising fruit pulp cap. Continually punch the cap down during fermentation to keep the fruit in contact with the yeast in the liquid. Also, don't let the cap dry out or it may attract bugs or bacteria. When the cap stops rising, simply lift the nylon bag from the sides of the bucket out of the wine. Gently squeeze out whatever juice will freely come out and discard the fruit. Replace the lid and allow the wine to finish fermenting. When the wine hits 0°Brix or below, siphon to one 5 gallon carboy. Secure an airlock or breather bung. Make sure to top up into the narrow area of the neck, even if you have to add a neutral white or rosé wine. Refer again to the sulfite instructions for additions you will make during storage and before bottling.

# Enhanced Winemaking Products Chart

	Name	Description	Purpose	Time of Application	Use Rate	Package
NUTRITION	Go-Ferm	Nutrient from inactivated yeasts	Yeast rehydration support	Just prior to yeast inoculation	1.25 g. per gal	3 oz.
	Fermaid K	Complete nutrient mix with minerals and vitamins	Yeast nutrition during fermentation	1/3 and 2/3 of fermentation	1 g per gallon, twice	3 oz., 1 lb.
	DAP	Simple nitrogen nutrient.	Nitrogen supplement beyond Fermaid K	Near beginning of fermentation	1 or 2 g per gallon, based on nutrient needs	2 oz., 8 oz., 1 lb.
	Opti Red	Yeast-derived nutrient, high in polysaccharides	Red wine color retention, smooth character	At first punchdown	100 g per 1,000 lbs. of must	50 g
	Optimum White	Yeast-derived nutrient, rich in glutathione and polysaccharides	Inhibits white wine browning, preserves aromas	While racking juice	1 g per gallon of juice	50 g
	Acti ML	Inactivated yeasts rich in amino acids	Rehydration nutrient for ML bacteria for red wine	Prior to ML inoculation	50 g for 60 gal	50 g
	Opti ML Blanc	Formulated from inactivated yeasts to meet peptide needs	Rehydration nutrient for ML bacteria for white wine	24 hours before adding ML bacteria	20 g per HL (26 gal)	50 g
	Pectic Enzyme	Pectinase enzyme preparation	Improve juice yield	At crusher	1 oz. per 200 lbs. of fruit	1 oz.
ENZYMES	Lallzyme EX	Pectinase with hemicellulases	Red wine juice yield and pigment extraction	At crusher	10 g per 1,000 lbs. of grapes	10 g
	Lallzyme Cuvee Blanc	Pectinase with glycosidases	White wine juice yield and aroma enhancement	At crusher	10 g per 1,000 lbs. of grapes	10 g
	FT Rouge Soft	Quebracho wood tannin product	Soft round body for red wines	At first punchdown	50 to 250 g per 1,000 lbs. of red grape must	100 g
	FT Blanc Soft	Gall nut tannin product	Protects white wine against oxidation and enhances mouthfeel	While racking juice off gross fruit lees	1 to 3 g for every 5 gal.	50 g
TANNINS	Tannin Complex	Oak and quebracho wood tannin product	Protects against oxidation and improves color stability in aging	First or second racking after primary fermentation	1 to 6 g per 5 gallons (less near bottling)	50 g
	Tannin Refresh	Untoasted French oak tannin product	Imparts a light oak nuance without smoky or toasty notes	After malolactic fermentation	½ to 4 g per 5 gal.	10 g, 100 g
	Tannin Riche	100% toasted French oak tannin product	Finishing tannin to impart mid-palate character, oakiness	Up to 3 weeks before bottling	½ to 1 g (whites) or ½ to 3 g (reds) per 5 gal.	10 g, 50 g
	Flashgum R Liquide	25% solution of Gum Arabic	Prevents colloid precipitation, imparts sweetness without sugar	Last product addition before bottling	1.5 to 5 mL per gal.	4 oz., 1 L
OTHER	Redulesse®	Yeast hulls rich in copper	Removes reduced sulfur aroma compounds	As soon as odor is detected in finished wine	0.4 to 0.6 g per gal.	10 g, 100 g
	Noblesse®	Yeast derived treatment product	Use with redulesse for sulfides, or alone for alcohol burn	During mixing or racking of wine	1 g per gal.	2 oz.



# Winemaking Step by Step

## EQUIPMENT

For most beginners, the hardest thing about making wine is simply figuring out, in advance, what equipment is going to be needed. This list should set most of these fears to rest. (*See the back of the catalog for rental equipment choices and rates.*)

### You will need the following:

1. Siphon Hose and Racking Tube
2. Hydrometer and Test Jar
3. Acid Testing Kit
4. Sulfite Test
5. Crusher or Crusher/Destemmer
6. Press or Pressing Bag
7. Thermometer
8. Scoop with Handle
9. Funnel
10. Bottle Filler
11. Small Bucket or Pail
12. Punch Down Tool
13. Mesh Colander or Strainer

### For every 75 lbs. of grapes:

1. 10 Gallon Food grade Bucket and Lid
2. One 5 gallon glass carboy (water bottle) with a fermentation lock and a #6 1/2 or #7 drilled rubber stopper. Or PET plastic carboy with a #10 drilled rubber stopper and fermentation lock.
3. Extra jugs, each with a fermentation lock and #6 drilled rubber stopper. These could be gallon size or smaller.
4. Twenty-five wine corks.
5. Two cases wine bottles.
6. Corker.

## INGREDIENTS

1. Wine Yeast, 1 gram per gallon of must or juice. (see pg. 11 for recommendations)
2. Grapes, 16 lbs. per gallon of wine.
3. Tartaric Acid as needed.
4. Sulfite as needed.
5. Yeast Food as needed.
6. Fining Agent (optional)
7. Malolactic culture for some wines.

## RED WINE PROCEDURES

- 1 **Crush (break the skins) and de-stem the grapes.** For most grape varieties, about 90% of the larger stems should be removed.
- 2 **Test for total acidity following the instructions in your acid testing kit.** If the acidity is less than .6%, add enough tartaric acid to bring it to that level. If you have a pH meter, also test the pH.
- 3 **Test for sugar with your hydrometer.**  
Correct any deficiencies by adding enough sugar to bring the reading up to at least 22° Brix or add water to bring the sugar down to a range between 22° and 26° Brix.
- 4 **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 to give you a sulfur dioxide (SO<sub>2</sub>) level between 50 and 130 parts per million (ppm). (See pages 12 & 13.) The amount needed will depend on the condition of the grapes, with moldy grapes getting the most concentrated dose. Extremely clean grapes may be fermented with little or no SO<sub>2</sub>. (If using **Lallzyme EX®** enzyme, wait 15 or 20 minutes after sulfiting, then add enzyme.)
- 5 **Unless you have found it necessary to add more than 65 parts per million SO<sub>2</sub> in step 4, yeast should be added immediately.** If using more than 65 parts per million SO<sub>2</sub>, you must wait six hours before doing so. Add 1 -2 grams of dry wine yeast per gallon evenly across the surface of the crushed grapes (now called “must”). Stir it in thoroughly after eight to twelve hours. Also, begin your nutrient program according to the instructions on page 10.
- 6 **The must should be stirred twice a day until fermentation begins.**  
The beginning of fermentation is obvious, as the grape skins are forced to the surface, forming a solid layer, called a cap. Once the cap has formed, mix it back down into the fermenting juice twice a day using your hand or a stainless steel punch-down tool until it is ready to be pressed. (If using **FT Rouge Soft Enological Tannin** and/or **Opti-Red® Specific Inactivated Yeast**, sprinkle them over the must and mix in at the first punch-down.)
- 7 **Throughout fermentation, the temperature of the must is usually between about 60 and 75°F.** For better color extraction from the skins, it is helpful to allow the temperature to rise at least once to the 80-90°F range. The fermentation itself generates some heat, which helps warm the must along with warm fall weather. If it is late in the season you may need a heater.
- 8 **When the wine has reached 0° Brix the grapes should be pressed to separate the wine from the skins.** This is usually about 1-2 weeks of fermentation at 70-80°F. During pressing, collect the wine into a bucket under the press and funnel the wine into secondary fermentors. Attach fermentation locks, and allow the containers to settle until all visible signs of fermentation have ceased (several days to a week or so). Top full when all activity ceases even if you have to add wine from another batch, or buy a similar wine, remember, you get to drink it later.



Winemaking Equipment from crush to bottle.



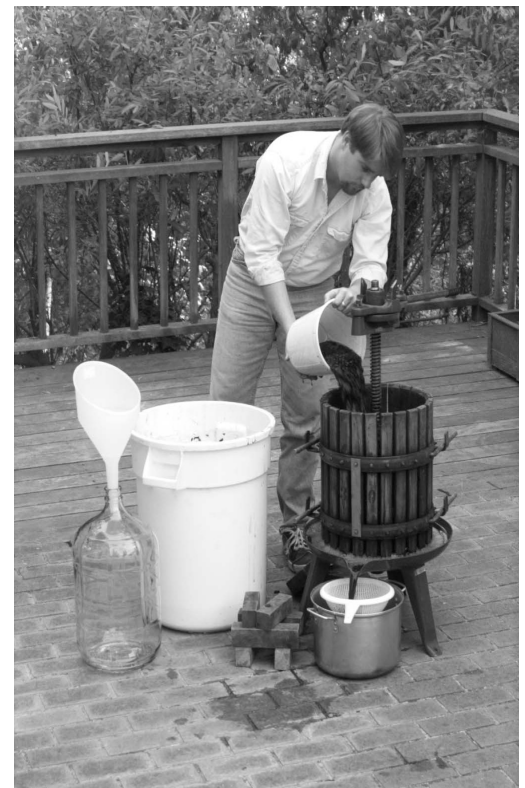
Crushing and stemming your grapes.

## Time Line for Red Wine Fermentation.....

...5 to 14 days	...1 to 2 weeks	...after 1 month	...after 4 to 6 months	...after 6 months	...before new harvest
Active yeast fermentation of Must in primary fermentors	Pressed wine moved to secondary fermentors (leave a little room for foam for a day or two, then top up.)	Rack off gross lees and top up containers, add oak or cellaring tannins, if desired.	Rack off lees again, test for ML, add sulfite and store in cool place for aging, topping and sulfiting every couple months. If desired, add additional oak.	Rack off lees, add sulfite, fining or filtering, and keep containers topped up.	Rack to bottling container, add sulfite, cork and store.

- 9 **Add an ML (malolactic) culture** (optional) to the wine which, in the case of direct pitch strains like *Enoferm Alpha or Beta*, **is added to the secondary fermentors after pressing.**
- 10 **When the wine has begun to clarify in 1-2 weeks, rack the wine off the gross lees** into clean, sanitized storage containers (glass, stainless steel, or oak). Top up the containers and let stand for a month. If ML fermentation is still active do not add sulfite during this time.
- 11 **After one month, rack the wine away from the lees again,** add sulfite to 25 or 30 ppm, and keep in topped up containers for four to six months. You must top up barrels, and visually inspect the carboys. This is a good time to add oak alternatives such as sticks or cubes. Add sulfite every few weeks. If you inoculated for ML, test the wine to be sure it is complete.
- 12 **Rack off the lees again,** and retest to see if the ML fermentation has finished. If completed, raise the sulfite to 20-30 ppm and store in a cool place for aging. If ML fermentation has not completed, keep the sulfite level below 20 ppm and warm the storage containers for a month to encourage completion. (If using *Tannin Riche Enological Tannin* from French oak, mix it with the wine during a racking at least 3 weeks before bottling.)
- 13 **Usually during the summer** (just before you need your storage containers for the next year's crush), **carefully rack the wine to a sanitary bottling container, then siphon into bottles and cork them.** Keep the bottles neck-up for one week to allow the corks time to expand, then move the cases to their side or upside down for storage. Bottling time is your last opportunity to make sure the wine will be bottle stable, so test and adjust the sulfite to 30 ppm. If this is a sweet wine, add *Sorbistat* to keep the wine from further fermentation. Most red wines will benefit from at least one year's additional aging.

White Wine Procedures, see next page.



Pressing the fermented red grapes.

# WHITE WINE PROCEDURES

- 1 **Crush the grapes** to break the skins. It is not necessary to de-stem them, but it does not hurt if you happen to have a stemmer/crusher. Keep the grapes as cool as possible.
- 2 **Test for total acidity.** If the acidity is less than .65%, add enough tartaric acid to bring it up to that level.
- 3 **Test for sugar with your hydrometer.** Correct any deficiencies by adding enough sugar to bring the reading up to 20° brix for most varieties (22° for Sauvignon Blanc and Chardonnay.) If higher than 26° brix, add water to lower it between 22° and 26°.
- 4 **When these tests and corrections have been completed, the must may be sulfited.** Estimating that you will get roughly a gallon of juice from every 16 lbs. of grapes (varies with the variety), add enough sulfite to give you a sulfur dioxide (SO<sub>2</sub>) level between 50 and 120 parts per million (ppm.) Note: The amount needed will depend on the condition of the grapes, with moldy grapes getting the most concentrated dose. Very clean grapes may get by with little or no sulfite.
- 5 **Stir in pectic enzyme (pectinase) at the rate of one ounce to every 200 lbs. of grapes, or use Lallzyme® Cuvée-Blanc.** Place the crushed grapes in a covered container to macerate from 2 to 12 hours. If left to stand longer than 2 hours at this stage, the crushed grapes should be refrigerated.
- 6 **The grapes are then pressed to separate the juice from the skins.** Funnel the juice into topped up containers, cover, and let stand for approximately 24 hours.
- 7 **Siphon the clear juice away from the layer of settlings (called "gross lees") into a glass, stainless steel, or oak fermentor which is filled no more than 3/4 full.** (If using FT Blanc Soft Enological Tannin, mix it with the juice during the transfer to the fermentor(s). This is also the time to add Opti-MUM White® Specific Inactivated Yeast if desired.) Yeast should be added, 1g per gallon and a fermentation lock attached to the fermentor. Add nutrients according to the instructions on page 10.
- 8 **When visible signs of fermentation end, the wine must be racked off the lees,** and placed in topped up storage containers (glass, stainless, or oak). Add sulfite, 30 - 40 ppm. and let stand for a month.
- 9 **Rack off the lees.** If the wine isn't clearing, fine with Sparkolloid or a Bentonite slurry. Clarity occurs by three months. Sulfite and store full containers in a cool place.

- 10 **In a couple of months, rack and sulfite the wine again, placing it back in topped up containers.** For oak flavor add oak sticks or cubes. If additional high-quality French oak character would benefit your wine, use [Tannin Riche enological finishing tannin](#).
- 11 **In late Spring, before the onset of very hot weather, carefully rack the wine from the lees.** Test the wine for free sulfite content with a sulfur dioxide test kit to determine how much SO<sub>2</sub> is needed to bring the level to 30-35 parts per million.
- 12 **Siphon into bottles, cork them, and set them aside for whatever bottle aging is needed.** If you wish to sweeten the wine, do so with simple syrup (two parts sugar to one part water, boiled), and add 1/2 tsp. [Sorbistat](#) per gallon to inhibit any remaining yeast. White wines may be enjoyed 6 weeks after bottling.

## Time Line for White Wine Fermentation.....

...1 to 2 weeks	...1 month	...2-4 months	In the spring
Active yeast fermentation of juice in primary fermentors about 3/4 full	Rack finished wine to clean fermentors, topped full. Settle out lees. Add sulfite.	Rack off lees and fine or filter. Add sulfite and cold stabilize. Oak additions.	Rack to bottling container, add sulfite, fill and cork bottles.

Fruit Wine Procedures, see next page.



Placing the wood blocks and press head into the press before pressing the grapes.



# FRUIT WINE PROCEDURES

Use the following procedures for 5 gallons of Berry or Stone Fruit Wines:

- 1 Smash sound, ripe berries (or pit stone fruit), tie loosely in a straining bag and place in open top fermentor.
- 2 Heat 6 quarts **water with Corn sugar** and bring to a boil. Remove from heat, cool and pour into the fermentor over the fruit.
- 3 Add the remaining **water, Yeast Nutrient, Pectinase and Tartaric Acid**. Add 5 crushed **Campden Tablets**.
- 4 Cover with loose plastic sheet or lid and allow to cool and dissipate the sulfite, waiting for 12 hours or overnight.
- 5 Stir in the **Yeast**. Once fermentation begins, **stir or push** the pulp down into the liquid twice a day.
- 6 After 5-7 days, strain and press the pulp. Funnel the fermenting wine into closed fermentors, such as glass or plastic carboys, and attach a fermentation lock. *Note: if this fermentation is very active, you may need to divide the wine between two carboys so it won't foam out and spill.*
- 7 When bubbles are no longer actively rising through the wine, siphon the wine back together into one full carboy. **Optional: Fine with Sparkolloid see pg.15 for mixing Sparkolloid**, add 3 Campden Tablets and store for four weeks with an airlock.

- 8 Rack (siphon) away from the sediment, top full with a neutral wine and leave under airlock for 3 weeks up to 4 months.
- 9 For **bottling, rack into an open container**, and add 3 crushed **Campden Tablets**. Sweeten with **sugar syrup** to taste and add 1/2 teaspoon **Sorbistat** per gallon to stabilize. Siphon into bottles, cork, and set aside to age for at least 3 weeks.

## Berry, Plum, or Cherry Wine Recipe

20 lbs. Blackberries or  
15 lbs Raspberries or  
15 lbs. Pitted Plums or  
22 lbs Cherries or  
15 lbs Sour Cherries  
(omit acid addition for sour cherries)  
12 lbs. Corn Sugar  
4 gallons Water  
2 1/2 tsp. Yeast Nutrient  
2 1/2 tsp. Pectinase  
8 tsp. Tartaric Acid  
5 g Epernay II Wine Yeast

**Original Brix: 20**  
**Total Acid: .6-.65%**

## EQUIPMENT NEEDED FOR 5 GALLONS OF FRUIT WINE OR CIDER

1. 6.5 Gallon Food grade Bucket and Lid.
  2. Nylon Bag to fit bucket.
  3. One 5 gallon glass carboy (water bottle) with a fermentation lock and a #6 1/2 or #7 drilled rubber stopper. Or PET plastic carboy with a #10 drilled rubber stopper and fermentation lock.
  4. Racking tube and flexible tubing.
  5. Bottle filler
  5. Corks or crown caps.
  6. Two cases wine or beer bottles.
  7. 25 pack of Campden Tablets
  8. Corker or Capper
- Optional:
1. Hydrometer (Saccharometer) and Test Jar
  2. Acid Testing Kit

# CIDER PROCEDURES

- 1 Crush the apples. Use only sound, fully ripe fruit. (*We rent an electric grinder and press.*)
- 2 Stir in **Pectinase** to accelerate break down of the fruit pectins. Use 1/2 oz. per 100-150 lbs. of fruit, with a contact time of 2-4 hrs, to achieve better runoff at press.
- 3 Press to separate the juice from the skins and other solids. Funnel the collected juice into closed containers, filled no more than 75% full. Add 5 crushed **Campden Tablets**. Settle the juice and wait for the sulfite to dissipate - 6 hours.
- 4 For each 5 gallonf of juice, add 1-2 teaspoons of **Yeast Food (Fermaid K)**. Stir and add 5-10g of **Yeast**. Attach a fermentation lock, and allow fermentation to proceed.
- 5 When visible signs of fermentation end, the cider must be racked off the lees and placed in topped up glass or stainless steel storage containers. Let it stand for a month.
- 6 During the racking at the end of fermentation, add 3 crushed **Campden Tablets**.
- 7 After a month, rack and sulfite again then rack it back into

topped up containers. Store for two or three more months.

- 8 Carefully rack away from the lees. If your cider is going into extended bottle storage, add 3 crushed **Campden Tablets**. Beverages such as this may often be enjoyed within two months of bottling. If you plan to drink some that soon, don't add additional sulfite to that portion at bottling time.

- 9 Siphon into bottles, cork or cap them, and set them aside for whatever bottle aging is needed. If you wish to sweeten, do so at bottling time with simple syrup (two parts sugar to one part water, boiled), if you do this add 1/2 tsp. **Sorbistat** per gallon to to stabilize the cider and prevent re-fermentation in the bottles. Force carbonation in a keg is also an option. See our beer catalog for instructions on kegging.

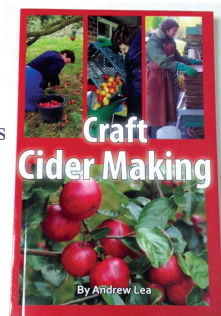
## Cider Ingredients

100-150 lbs. Apples  
or 5 gallons of juice  
1 oz. Pectinase  
2 teaspoons Yeast Food  
10 g M-2 Yeast  
25 pack Campden Tablets

**Brix: 10-13**  
**Total Acid: .6-.65%**

Great information about growing apples and making good cider!

BK47..\$15.99



# JUICE TESTING FOR SUGAR, ACID, PH & NUTRIENTS

There are three tests deemed most essential in the majority of winemaking situations. By testing these three things: Sugar, Acid, and pH, you will have the minimum level of information needed to make wine. Instruments and kits are available at *The Beverage People* for testing these parameters at home. (See pg.14)

In addition to the three tests mentioned above you may also want to find out the level of nutrients in your juice. Adequate nutritional levels help ensure a healthy yeast fermentation, and also help avoid problems such as: stuck fermentations, or the rotten egg smell of Hydrogen Sulfide (H<sub>2</sub>S.)

As far as nutrients are concerned, there are two tests a home winemaker would utilize: one for *Ammonia*, and one for *Assimilable Amino Nitrogen*. The results of these two tests are added together to determine the total amount of *Yeast Assimilable Nitrogen (YAN)* present in the sample. When these figures have been combined, the result (logically enough) is called *Yeast Assimilable Nitrogen Combined (YANC)*. It is this YANC figure, in combination with the sugar level of the must, that tells us the nutritional requirements of our juice. If you are interested in these numbers, you will need to use a commercial lab.

There are no home tests for nutrients, therefore you will want to crush your grapes and deliver a settled sample of juice to your nearest laboratory. (A 250ml bottle is the minimum volume requirement for most chemical analysis.) *There are three labs near the store:* [Vinqury](#) in Windsor (707) 838- 86122, [Signature Wine Labs](#) in Santa Rosa (707) 838-3027, and [ETS](#) in Healdsburg (707) 433-7051. *Contact them to find out information on cost.*

Remember that you are sending juice, and that means it is subject to fermentation. A laboratory must receive your samples before fermentation begins! Unless you take your clarified juice to the lab yourself, you should use one of two storage methods:

**Freeze the juice in the sample jar** (with the lid loose) **or pasteurize the juice**, heating it up to 180°F., keeping it there for 2-5 min. Do not boil. Cool, freeze, and ship via next day air. Talk over sampling and shipping with your chosen laboratory before you start.

## Adjusting Nutrients

Because different strains of yeast have different nutrient requirements, talking about YANC levels can quickly turn complex. For our discussion here, we will consider the **natural juice level of YANC** in one of 3 levels: Low YANC < 125 ppm, Medium YANC 125-225 ppm or High YANC > 225 ppm.

The yeasts are also divided into three levels of nutritional need: Low, Medium and High-Very High (see table on page 11). Once you know your YANC level, it may influence your choice of yeast. Choosing one with an appropriate nutrient need will minimize your nutrient additions.

After your **Yeast** choice is made select a nutrient addition program from the following table: *Low, Medium or High YANC* level and then the **Yeast Nutrient** program of *Low, Medium or High-very High*.

Note: all of this advice is based on "moderate" sugar levels up to 22° Brix. For high-sugar musts, choose yeast both low in nutrient requirements and high alcohol tolerant. Increase the yeast pitch 50% and add both 1 gram DAP and Fermaid K per gallon of juice when 1/3 of the sugar has been fermented.

Yeast Nutrient Needs				
YANC LEVEL		Low	Med	H-VH
	LOW	A	B	E
	MEDIUM	C	D	E
	HIGH	C	C	D

## Nutrient Programs

**NOTE:** *When in doubt, use Program D.*

A) Add enough DAP to bring your YANC up to 150 ppm about 8-12 hours after pitching yeast.

For program A, use these levels:

50 ppm or less YANC, add 2 grams DAP per gallon.

50-100 ppm YANC, add 1 1/2 grams DAP per gallon.

100 -125 ppm YANC, add 1/2 gram DAP per gallon.

125+ ppm YANC, add no DAP

In addition, about 1/3 of the way through fermentation, add 1 g/gal. of Fermaid K (or Yeast Food).

B) Do all of program A, plus:

Add an additional 1/2 g/gal. DAP and do a second addition of 1 g/gal. Fermaid K when roughly 2/3 of the sugar has been consumed.

C) Add no DAP. Add 1 g/gal. Fermaid K about 1/3 of the way through fermentation.

**D) Follow program C, plus add another g/gal. of Fermaid K about 2/3 of the way through fermentation.**

E) Follow program A, plus add 1 g/gal. DAP and 1 g/gal. Fermaid K about 2/3 of the way through fermentation.

## Which Nutrient...When?

**Go-Ferm** is an important nutrient used when building a yeast culture before the primary fermentation. Do not use during fermentation. See the web-site or package for complete instructions for use.

**Opti-Red®** (yeast derived nutrient) is added at the time of the first punchdown for red grapes.

**OptiMUM-White** (yeast derived nutrient) is added to white grape juice after racking off of the gross fruit lees near the beginning of fermentation.

**Fermaid K** (yeast food) is the go-to all-purpose nutrient for wine fermentations. Use at the rate of 1 oz. per 32 gallons at 1/3 drop in original brix. Repeat at 2/3 drop. Use with DAP if you know you need more nitrogen. Contains: ammonia salts, amino acids, sterols, unsaturated fatty acids, yeast hulls, vitamins, magnesium and pantothenic acid.

**Diammonium Phosphate - DAP** will raise the level of free nitrogen for a healthy fermentation. Contains only ammonium phosphate. Use varies, but 1 oz. per 32 gallons is a good starting addition.

**Autolyzed Yeast** is used to restart sluggish and stuck fermentations. Contains dried yeast providing amino nitrogen, B vitamins and yeast hulls from autolyzed yeast.

**Yeast Hulls** help prevent stuck and sluggish fermentations and with Autolyzed Yeast to restart fermentations. This is the pure cell wall membrane of whole yeast cells and is more concentrated than autolyzed yeast. Also used to absorb toxic compounds like copper sulfate.

Locate your grape variety or style, read about the yeast characteristics for the recommended strain(s). We stock all of these during harvest.

Please read page 10 for **Nutrient** programs for fermentation.

## YEAST RECOMMENDATIONS

To find fermentation specifics, read down	Assmann-Haasen	Beaujolais 71 B	Brunello BM45	CSM	Epernay 2	French Red (BDX)	ICV D254	M-2	RP15 "Rockpile"	ICVD21	Prise de Mousse	Rhone L2226	RC212	Steinberger	QA23	Uvaferm 43
Varietal	Pinot Noir	Zinfandel Syrah	Sangiovese	Bordeaux	Zinfandel	Bordeaux	Chard Red Rhones	Chard, Cabernet	Syrah, Zinfandel, Lush reds	Big Reds	White, Red	Rhone	Pinot Noir	German White	Dry Whites	Restarts, Zin, Late Harvest
Fruit Wines	YES	YES			YES			YES		YES	YES	YES	YES	YES	YES	
Enhances Fruit		YES			YES		YES	YES		YES					YES	
Enhances Mouthfeel	YES						YES	YES		YES					YES	YES
Sensory Effect *	EVC	Estery	EVC	EVC	EVC	EVC	EVC	Estery	Complex	Estery	Neutral	EVC	EVC	EVC	EVC	YES
Reduces Vegetal Character	YES			YES	YES			YES								
Stabilizes Color	YES			YES		YES	YES		YES	YES		YES				
Cold tolerant					YES						YES			YES		
Use to Restart											GOOD	GOOD				EXCEL-LENT
Temperature Range F.	68-86	59-86	64-82	59-89	50-80	64-86	50-85	59-86	59-90	59-90	50-86	59-82	68-86	40-70	59-90	55-95
Vigor	Slow	Average	Average	Average	Average	Average	Fast	Fast	Average	Average	Fast	Fast	Average	Slow	Fast	Fast
Alcohol Tolerance %	15	14	16	14	15	16	16	16	17	16	18	18	16	14	16	18
High Alcohol Tolerant			YES			YES		YES	YES	YES	YES	YES	YES			YES
Nutritional Need **	Medium	Low	Very High	High	Medium	High	Medium	Medium	Low	Low	Low	High	High	Low	Low	Low
Reaction to Oxygen ***	Medium			Low			Medium		Low	High	High	Medium			Low	
Comments	Enhances spiciness	Fruit wines	Extended Macerations	Alternate to BDX	Can be stopped	Ideal Fermentor	Complex flavor Mineral Aromas	Complex	Red Fruit, Mineral Tones	Bold Flavors Mouthfeel	Late Harvest	Can be used to ferment any wine	Good Color	Easiest to Stop Fermenting	Good production of aromas	Restarts Very Well, Red Fruit Character

### Notes to Text

\*Sensory Effect: EVC = Enhances Varietal Character, Estery = Enhances Fruitiness, Neutral = No Enhancements

\*\* See page 10 for Nutrient recommendations, especially for Medium and High Categories.

\*\*\* Also try additions of Oxygen with active stirring during fermentation to yeasts that react to O<sub>2</sub> additions.



# Sulfite, Grapes and Winemaking

Sulfur has been burned in wine containers to purify them since the days of the Roman Empire, and probably much earlier. The ancients may not have known about the world of microorganisms, but they recognized that sulfur helped make their wines last longer. We now know that sulfur dioxide gas ( $\text{SO}_2$ ) released by burning sulfur was the effective agent for retarding spoilage, and we have a more precise way of adding it these days. We make up solutions of sulfurous acid/water to known parts per million of  $\text{SO}_2$ . These solutions are stored and added in tablespoons or milliliters to the volume of wine.

After more than 34 years of teaching home winemakers the importance of adding sulfite to wine and monitoring the results with various testing methods, we are concerned that people are still not testing or scheduling  $\text{SO}_2$  additions often enough.

While we have seen improvement during these years, many wine samples are still reported with only a few parts per million of  $\text{SO}_2$ . These wines may not even yet show the effects of oxidation, but given enough time in this unprotected state, the fruitiness will fade, browning will occur and the taste will become prune and harsh. To avoid this you need to understand the basics of why sulfite works so well to protect your wine.

When you add sulfite to wine, sulfur dioxide ionizes to the sulfite ion,  $\text{SO}_3^{2-}$ , and bisulfite ion,  $\text{HSO}_3^-$ . A small fraction remains in the “molecular” form,  $\text{SO}_2$ . It is this molecular form that protects the wine from spoilage organisms and oxidation. As sulfite reacts with other wine components, it becomes “bound” to them and is no longer available to participate in producing “molecular” sulfite.

We cannot measure molecular sulfite directly. Rather, we measure “free” sulfite, and use a table of wine pH values to predict the amount of ‘molecular’ sulfite we will achieve.

This is why it is so important to frequently measure your free sulfite. No matter how high your total sulfite (within reason), it is only the free sulfite number that really counts. Don’t just guess and toss some sulfite in, analyze it first, then add it. To this end, we offer some advice on ways to keep up with testing your  $\text{SO}_2$ .

## Methods for Testing Free $\text{SO}_2$

### Aeration-Oxidation(AO) Method for Free $\text{SO}_2$

This is the original primary laboratory method for sulfite measurement in wine that helps define what “free”  $\text{SO}_2$  means. Winery laboratories are often equipped with elaborate blown-glass apparatus for this test that costs hundreds of dollars for a set. Advances in technology and simplification have brought a complete home-use aeration-oxidation (AO) system down to a price that makes sense for many hobbyists. (See page 21.) The simplified method uses the same technology and chemicals as a full laboratory setup, but at a fraction of the cost. Note that the kit as packed contains sufficient supplies for numerous tests, except there is only once ounce (30 mL) of 25% phosphoric acid reagent. That is sufficient for three tests and has the advantage of shipping without a hazardous material shipping surcharge. If you can come in to our store, we can sell you a 250 mL bottle of 25% phosphoric acid to supplement your kit, but we cannot ship it. If you are outside the Northern California wine country area, look into sourcing this reagent locally.

In the aeration-oxidation method, a wine sample is placed in a small flask and the phosphoric acid is added to force the sulfite ion over into the form of molecular  $\text{SO}_2$ . A small air pump pushes a stream of air bubbles through the acidified sample. Since sulfur dioxide is a gas, it dissolves in the air stream and transfers through a tube to a trapping solution. In the trapping solution, hydrogen peroxide oxidizes the sulfur dioxide (which is sulfurous acid) into sulfuric acid. Also in the trapping solution is an acid-base indicator that changes color as the sample gas accumulates. After the 10 or 15 minute transfer period, the trapping solution is titrated with sodium hydroxide solution to measure the acid formed. The free sulfite level can be calculated from the titration results.

### Ripper Method for Free $\text{SO}_2$

We sell the 10 pack box of Titrets, based on the Ripper method, but they are only recommended for white wine. The Ripper method is an iodine titration that is often faster, easier, and cheaper than A/O. Unfortunately, it is undermined by limitations of the chemistry involved. Any substance that reacts with iodine—including some tannins—will be measured as sulfite. Further, the acidification

of the sample for the titration tends to release some sulfite bound to anthocyanins (color compounds) in red wine, making it appear “free” when it is not. Due to these limitations, Zoecklein et al (Wine Analysis and Production, Chapman and Hall, 1995) say, Ripper “data for free  $\text{SO}_2$  in red wines may be expected to be erroneously high.” The accuracy can be improved a bit with an instrument system like the Vinmetrica, but unfortunately the chemistry is still Ripper and is notorious for reading high.

### Laboratory Testing

For those of you able to bring a sample to a laboratory, you will need A FULL, small bottle, with a fresh sample of wine. (187 mL is more than plenty). Just drop off your sample to the lab for their technicians to test. Results should be available within 24 hours.

## Scheduling $\text{SO}_2$ Additions

Initial sulfite may be added at 50-65 ppm to grapes or juice that is free of rot or mold. The presence of a lot of mold, or grapes in otherwise bad condition, might require twice that amount. Under average conditions the information that follows should keep about 20 to 30 ppm of free  $\text{SO}_2$  available throughout the wine’s cycle of production through bottling.

After ML fermentation is complete add 30 ppm, and five days later add 30 ppm again, and AGAIN one week later. Now get the wine tested for free  $\text{SO}_2$ . The test results may surprise you, as the amount of  $\text{SO}_2$  you have added seems like a lot, but has been working to clean up the wine after fermentation and will be dissipating at a rapid rate initially.

Above pH 3.5, you will notice that the amounts of free sulfur dioxide required become quite high. It is best to lower the pH by adding tartaric acid early in the fermentation cycle to lower the pH. **(But avoid an excessively high TA.)**


Continue testing every 6-8 weeks, adding  $\text{SO}_2$  as required to keep at least 20-30 ppm. available in the wine.

## Sources of $\text{SO}_2$

$\text{SO}_2$  is available as Campden tablets, effervescent Inodose or by powdered sodium or potassium metabisulfite. A premeasured Campden Tablet equals 65 ppm in one gallon (13 ppm in a five gallon jug) and is very convenient for those making small amounts of wine. You have to crush the tablet to a powder to add it.

The 2 gram Inodose tablets add 528 ppm per gallon or 9 ppm per 60 gallon barrel. They effervesce to disperse evenly in

the container. They cannot be divided accurately to dose 5 gallon carboys. Metabisulfite should be made into a liquid preparation before use, to adequately disperse it, and because it is very potent. This is also the least expensive method and accurate to measure for any size container.




## THE BEVERAGE PEOPLE

### Winemaking - Simplified SO<sub>2</sub> Additions


*(Using Sodium or Potassium Metabisulfite Powder)*

#### Prepare a 10% SO<sub>2</sub> Solution


Dissolve 100g metabisulfite into 1 liter distilled water. Stopper and use in 3 months or replace.  
*(Measure by weight or use a 4 oz. package minus one level teaspoon.)*




#### Additions of 30 ppm to various wine containers using the 10% solution



For 5 Gallons add 10 ml  
(Use a 10 ml graduated syringe.)





For 30 Gallons add 60 ml  
For 60 Gallons add 120 ml  
(Use a 100 ml graduated cylinder.)

*SERVING HOME WINEMAKERS SINCE 1980*

1845 Piner Rd. Suite D Santa Rosa, Ca 95403 (707) 544 2520  
[www.thebeveragepeople.com](http://www.thebeveragepeople.com)    [bevpeo@sonic.net](mailto:bevpeo@sonic.net)

### Molecular SO<sub>2</sub> needed for Stability

pH	.8 ppm. White Wine	.5 ppm Red Wine
2.9	11 ppm.	7 ppm
3.0	13	8
3.1	16	10
3.2	21	13
3.3	26	16
3.4	32	20
3.5	40	25
3.6	50	31
3.7	63	39
3.8	79	49

## pH and SO<sub>2</sub>

It is generally recognized that only a small amount of molecular SO<sub>2</sub> (.5 to .8 ppm.) needs to be present to provide bacterial stability in wine, but pH has an important effect on how much free SO<sub>2</sub> is needed in order to provide that amount, and that's why both pH and SO<sub>2</sub> need to be tested.

**REGARD THE TABLE OF MOLECULAR SO<sub>2</sub> ABOVE.** The amount of free SO<sub>2</sub> needed is based on the pH of the wine. A fairly safe amount for protection of the wine is either .5 ppm for Red Wines or .8 ppm for White Wines. If you know the pH, simply make sure you have the corresponding level of free SO<sub>2</sub>, or slightly more, present in the wine during storage and bottling.

## Preparing Metabisulfite Solutions

### 10% Solution

Using a gram scale, **weigh out 100 grams of Sodium or Potassium Metabisulfite and dissolve in 1 Liter of water.** Tightly stopper and store labeled: poison. When adding your sulfite additions make sure you measure carefully.

**Replace your solution every 3-4 months.**

#### 10% Solution of Metabisulfite

*(Add ppm SO<sub>2</sub> to desired amount.)*

Must/Wine (gallons)	10	20	25	30	40	50	75
	<i>(Add milliliters of 10% solution)</i>						
1	.6	1.3	1.6	2.0	2.6	3.3	4.9
5	3.3	6.6	8.2	9.9	13.1	16.4	24.6
10	6.6	13.1	16.4	19.7	26.3	32.9	49.3
25	16.4	32.9	41.1	49.3	65.7	82.1	123.2
60	39.5	78.8	98.5	118.3	157.7	187.2	295.7

### 3% Solution

Dissolve **four ounces of sodium or potassium metabisulfite powder**, in one gallon of distilled water. This is a weaker solution than the 10% solution given above. However, at this concentration, the solution is still quite strong and should be labeled: poison.

**Replace your solution every 2 or 3 months.**

#### 3% Solution of Metabisulfite

*(Add ppm of SO<sub>2</sub> to desired amount.)*

Must/Wine (gallons)	10	21	33	43	65
	<i>(Add tablespoons of 3% solution)</i>				
1	.15	.32	.50	.66	1.00
5	.75	1.60	2.50	3.30	5.00
10	1.50	3.20	5.00	6.60	10.00

## Removing Excess SO<sub>2</sub>

If you ever need to lower your SO<sub>2</sub> due to a mistake in calculation try splash racking or stirring vigorously to aerate. If the FREE SO<sub>2</sub> is still too high do the following: for every 10 ppm free SO<sub>2</sub> you want to remove, add 1 ml. of 3% hydrogen peroxide per gallon of wine. An oxidative reaction occurs immediately. Use only fresh 3% Hydrogen Peroxide, available at the drugstore. Use this method to remove up to 100 ppm - any more than this and the wine will oxidize and lose its flavor.

**Please Note:** Avoid confusing the above two solution strengths. If you have a scale that weighs in grams, and have access to a pH meter, you should use the 10% solution instructions. Have on hand Pipets or Syringes graduated in .1 ml to .5 ml, 1 ml to 10 ml volumes and a Graduated Cylinder, with a volume of 100 ml, for large additions. Otherwise, use the weaker 3% solution, using household measuring spoons.

# HOME WINE LAB TESTING...SUGAR, ACID, and pH

Having your wines tested at a commercial wine laboratory provides reliable, accurate information. But sometimes it's fun to do your own testing. Or maybe you live too far away to take advantage of commercial lab testing. Sugar, acid, and pH are readily addressable with home testing techniques.

**SUGAR** There are three principal methods for measuring sugar content at home: a refractometer, a hydrometer, or a Clinitest® kit. To make a harvest decision in the vineyard, the refractometer is the clear choice. Using the refractometer is very easy. First, calibrate it with a few drops of 20° brix reference solution. Then rinse the prism with distilled water and dry it with



lens paper or a clean paper towel. Squeeze the juice of one grape onto the prism, close the cover, and point the refractometer at a bright section of sky. Read the brix level, write it down, and go on to measure another grape until you have taken a representative sample of your crop. Be aware that you may estimate a little high, since you will probably not sample the immature, under-ripe, and second crop grapes that may find their way into your picking bins on harvest day. For a more thorough sample, collect 20 to 100 grapes in a zip-lock bag, crush them with your fingers, and measure the brix level of the resulting mixed juice.

Once fermentation begins, the refractometer can no longer be used, because alcohol confounds the refractive index measurement upon which the sugar reading is based. So, it is time to turn to your hydrometer. Originally invented by Hypatia of Alexandria, the hydrometer has a 1500-year history of reliable service. Gently place the hydrometer in a plastic or glass measuring jar (which minimizes the amount of sample needed), then fill the jar until the hydrometer floats. Spin it gently to free any attached bubbles, then note the reading at the liquid level on the hydrometer stem. Most hydrometers are calibrated in Balling (which is the same as brix), specific gravity, and

potential alcohol. Note that the third scale in no way measures alcohol directly—it is just a calculated estimate of alcohol potential based on a measurement of sugar content. Continue to take readings periodically as your wine ferments until you get to zero or below, indicating the end of fermentation.

Finally, when fermentation is all over and you want to assess the final “dryness” of your wine, turn to the Clinitest® kit. These tablets, produced for measuring sugar in urine for diabetic patients, can be adapted to measure low levels of sugar (up to one percent) in finished wine. Follow the kit instructions and compare the developed color with the chart provided. Wine is usually considered “dry” at a sugar level of 0.4% or below.

**ACID** Commercial labs use a sophisticated autotitrator to execute the traditional winemaking method for Titratable Acidity. They report in grams per 100 milliliters—roughly equivalent to percent.

At *The Beverage People*, we offer several home tests for TA. The most popular is the *Country Wines* titration kit with phenolphthalein indicator and sodium hydroxide titrating solution. This is based on the primary lab procedure for the same test, which we also offer (see below). Executed carefully at the kitchen table, it can give precise and accurate results on white wine. Because the visual endpoint of the titration is pink, many users have a bit more difficulty seeing the endpoint in grayish-pink



“red” must. If you use this kit for newly crushed red grapes, take your juice sample quickly, before the full red color develops.

Our other two TA methods use full laboratory-scale equipment. The *Indicator Method Titration Kit* and the *pH Meter Titration Kit* both use a Class A buret to add measured amounts of 0.1 N Sodium Hydroxide solution to a wine sample. The indicator method uses the pink color change of phenolphthalein to determine the endpoint and is subject to the same red-wine limitations as the Country

Wines kit. The pH Meter Method, on the other hand, uses the MW102 digital pH meter from Milwaukee Instruments for endpoint detection. That meter is unaffected by the sample color. Even finished, dark red wines can be accurately measured for TA with this system. Detailed instructions are included with both kits.

**pH** Wine pH is of interest primarily as a stability factor. As displayed in our molecular SO<sub>2</sub> table (see page 13), the effectiveness of free sulfur dioxide in protecting wine is strongly dependent on the pH. The lower the pH value, the more stable the wine in the long run. While low pH wines also taste sharper than high pH wines, the real driving force for flavor is TA—not pH. That fact highlights the value of doing both tests on your must and wine: TA for flavor and pH for stability.



Laboratories use a pH meter integrated with their autotitrator for this test. If you use the *MILWAUKEE MW102 pH Meter* (shown above) for measuring TA, you can record the initial pH value of your wine in the same manner. Another pH measurement option at *The Beverage People* is another hand-held pH meter. The *Waterproof pH Testr 20* from *Oakton* that has the feature of a watertight housing with 0.01 pH resolution. All pH meters, portable or benchtop, require calibration prior to use. Add our buffer set for a true two-point calibration for any of these meters. Calibrate with the pH 7 first, finishing with pH 4. That sequence maximizes the precision in the area of wine pH—at or below pH 4. After rinsing with distilled water, store the electrode in Storage Solution (pg.21).

Note: while precision and accuracy are excellent with both kinds of meters, portable pH meters have inherently slower response times than a meter and electrode. As a result, a separate electrode pH meter is much more suitable for TA titrations than a portable hand-held meter. Either works well if you just want to measure pH.



# FINING PROCEDURES

**Sparkolloid™** and **Bentonite** are the two most common all-purpose fining (clarifying) agents used by home wine-makers.

Either may be used with success, and in the somewhat unusual circumstance that the wine doesn't clear with the first agent, the other will generally work.

## Here's how they are used...

**Sparkolloid** is used at the rate of 1 to 1.5 grams per gallon, so to fine five gallons of wine, begin by measuring out 5 to 7.5 grams of dry Sparkolloid. Then take about 1-2 cups of water, stir in the Sparkolloid, and heat it on the stove in a saucepan.

Simmer gently (bubbles, but not boiling) for 15-20 minutes, and thoroughly stir the hot mixture into the wine.

Let stand three weeks and carefully rack away from the lees.

**Bentonite** requires that a slurry be made up a day in advance. Measure out 750 ml. of water, and heat it to boiling. Slowly stir in 1 oz. of Bentonite. Mix it thoroughly for about one minute in a blender, funnel it into a 750 ml. wine bottle, stopper it up and let it stand for a day.

Shake up the slurry, and then thoroughly stir 1/4 cup into each five gallons of wine. Rack as usual after 1 to 2 weeks.

To remove oxidation or reduce bitterness, fine with Polyclar or whole milk. To soften tannins, use either egg whites or gelatin, followed by Sparkolloid.

Always add Metabisulfite when adding a fining agent, to prevent excess oxidation during the mechanical stirring needed to blend in the agent.

Fining Agent	Rate of Use	Best Used For	Preparation	When
<b>Sparkolloid</b>	5 - 7 g/ 5 gallons	All wines	Heat 1 - 2 cups of water with Sparkolloid, simmer 15 minutes and stir into wine.	Post fermentation three weeks before racking.
<b>Bentonite</b>	1/4 cup of slurry per 5 gallons (See directions above)	All wines	Slurry with juice or water in blender	Rack in 1-2 weeks Allow 3 weeks to settle before bottling.
<b>Isinglass</b>	1 Tablespoon/ 5 gallons	White wines that haven't clarified with Sparkolloid.	Soak in 2 Cups water with 1/2 teasp. Citric Acid for 30 minutes. Add to wine.	Prior to a racking.
<b>Gelatin</b>	1/4 oz./ 5 gallons	Red wines with excess tannin.	Dissolve in 10 oz. hot water, let sit for 10 minutes. Stir thoroughly into wine.	After fermentation up to three weeks before bottling.
<b>Egg Whites</b>	1/2 egg white/ 5 gallons	Red Wines with excess tannin.	Whipped to a soft froth with some wine and water then mixed in thoroughly.	In barrel/glass a month or more before bottling.
<b>Polyclar</b> (Divergan F)	2.5-12.5 g/ 5 gallons	White wines to remove oxidation reduce bitterness.	Thorough mixing Fluffy, difficult to rack off cleanly.	Before, during or after fermentation.
<b>Non-Fat Milk</b>	100-250 ml/5 gallons	White wines to reduce bitterness, adds sweetness.	Follow with Bentonite Fining	Rack after 4 days A month prior to bottling.
<b>Whole Milk</b>	100-250 ml/5 gallons	Reduce harshness absorb aldehydes.	Follow with Bentonite Fining	Rack after 4 days A month prior to bottling.

# BARREL CARE

## Care of a New Barrel

Brand new oak barrels are about as sanitary as they can be because the wood has been heated over direct fire in the process of making the barrel. This is done in order to bend the staves into place, and also to enhance various flavor accents (such as vanilla and caramel).

## Swelling up a Barrel

Like any wooden container, however, a new barrel must be filled with water to make the wood swell and eliminate leaks. These leaks will often seal themselves in only a few hours, or a couple of days. However, the barrel should be continually refilled until the leaks stop, and the water should be changed each day to prevent off flavors caused by bacteria and/or mold growth.

## Acidifying a New Barrel

It is recommended that an acidic environment be created in a new barrel, which is about to receive wine for the first time. Dissolve in water 2 Tablespoons of *Citric Acid* for every five gallons of barrel capacity. Fill the barrel and check to make sure it isn't leaking. Drain the acid water and fill the barrel with wine.

## Cleaning at each Wine Racking

Once a barrel has been used for wine storage, additional cleaning and sanitation measures are required. At each racking, rinse the barrel thoroughly with water to remove debris. Follow

by rinsing the barrel with an acid wash. Dissolve 2 Tablespoons of *Citric Acid* in five gallons of water, sloshing this mixture around the interior surfaces of the barrel for 5 to 10 minutes. Drain, and refill the barrel with wine.

## Preparing for Storage

It is always best to keep a barrel full of wine. When this is not possible, start by removing the organic matter that has penetrated into the surface of the wood. This is done with a solution of *Proxycarb*, a sodium percarbonate based cleaner.

Use 4 oz. (or 8 Tablespoons) of *Proxycarb* for every 15 gallons of barrel capacity. Dissolve in a small amount of water, and funnel the mixture into your barrel. Fill the barrel the rest of the way with water. You may leave this mixture in the barrel for as little as 20 minutes or as much as 24 hours. If the barrel has VA (volatile acidity), double the amount of *Proxycarb* and leave for 24-48 hours.

Drain and rinse the barrel several times with water. Re-acidify the barrel using one ounce or 2 Tablespoons of *Citric Acid* for every five gallons of water. Slosh this all around and drain. Now prepare for storage.

## Cleaning Step by Step

1. Drain wine from barrel and hose out visible solids until clear.
2. Add 4 ounces (8 Tablespoons) of *Proxycarb* for every 15 gallons of barrel and fill with water, let stand 2 - 24 hours.
3. Drain out cleaner and rinse until water is clear.
4. Acidify barrel with one ounce (2 Tablespoons) *Citric Acid* for every 5 gallons water. Either make this into a volume to fill barrel, or just slosh around a 5 gallon volume and then drain.
5. No water rinse is required after the citric rinse.

## Short Term Storage

If it will be less than two months before the barrel is used again, drain the barrel, and fill with a *Sulfite* and *Citric Acid* solution. Use one teaspoon of *Potassium or Sodium Metabisulfite* powder, along with 1/3 teaspoon of *Citric Acid* per 15 gallons of barrel capacity. Add enough water to fill the barrel and bung the barrel tightly. Check to make sure sulfur can still be detected inside the barrel, replacing the solution if necessary. Rinse with water before refilling with wine.

## Long Term Storage

If it will be more than two months before the barrel is used again, drain the barrel and leave it upside down overnight. Next burn a *Sulfur Strip* in it, hanging it down at least 6 inches below the bung on a wire. Replace the bung. Remove the sulfur strip after about 15 minutes, and bung the barrel tightly. Burning sulfur releases sulfur dioxide gas into the barrel's interior.

Repeat every two weeks (as needed) until a flashlight reveals no shiny dampness in the bottom of the barrel. Bung up the barrel and store it in a dry place until needed, allowing enough time to soak up and acidify the barrel before the next use.

# COPPER TREATMENT

Burnt rubber? At Sonoma Raceway, it's a normal aroma. But if you smell it when you rack your wine, you have a problem. "Burnt rubber" is one of many unpleasant descriptors applied to the **volatile reduced sulfur (VRS)** compounds than can occur during the fermentation and aging of wine. Much easier to prevent than correct, these compounds interact with each other, and the wine, in very complex ways. Simply stated, if you detect this kind of aroma, fix it quick!

The simplest, and generally first, **VRS** to appear is **Hydrogen Sulfide, H<sub>2</sub>S**. It is commonly described as smelling like rotten eggs (peuw!). Since humans can detect the smell when the concentration in wine is only one or two parts per billion, it doesn't take much to make the wine very unpleasant. While "over sulfuring" in the vineyard (by the vineyard manager) is the most frequently cited cause (by the winemaker), those of you who grow your own grapes and then make the wine have no one else to blame! (Try to go at least 35 days between the last sulfur application and harvest). But let's face it: a much more frequent cause is lack of nutrients—primary amino nitrogen or certain vitamins—during primary fermentation. You can address prevention of that problem by analyzing your juice nutrient level as described on pg 10.

But let's suppose the odor shows up anyway (which it may). The most conservative treatment is to aerate the wine during racking—splash it into the receiving vessel (but be sure your free SO<sub>2</sub> level is up where it should be prior to the splash racking—otherwise you may oxidize your wine, turning it ...Brown and Madeira-like.)

For a more thorough approach to removing VRS compounds and their

aromas, follow the instructions that come with the products **Reduless** (and, optionally, **Noblesse**). This is the mildest and surest way to chemically remove these annoying sulfur compounds.

If you are a traditionalist and you have a sulfur problem, you may want to use the tried-and-true copper addition. When exposed to copper, the sulfide combines with the copper to make copper sulfide, which is not soluble in wine. While some books will tell you to just run the wine over a sheet of copper, our experience has not found this technique highly effective. Instead, the direct addition of a small amount of **1% Copper Sulfate Solution** is quite effective. Add it at a rate of 3/4 of a milliliter (mL) for every gallon of wine. This will give you a maximum level of 0.5 ppm (mg/L), which is the level allowed in commercial wine. If you must treat the wine more than one time to completely clear the sulfide aroma, you may want to remove residual copper by adding yeast hulls (at a rate of 5 grams per gallon), stirring frequently, and racking again in a few weeks. For the copper treatment alone, rack after a couple of days to leave the black copper sulfide behind (at part-per-million levels you may never see it, but it's there!).

If you have not promptly removed **H<sub>2</sub>S**, your wine may go on to develop more complex **VRS compounds**. Next in line are the **mercaptans**: **methyl mercaptan** smells like burnt rubber or rotten cabbage and **ethyl mercaptan** smells like burnt matches or dirty ashtrays. These are not volatile enough to remove by aeration, but copper (just as for H<sub>2</sub>S) still works. **To check for possible effectiveness, clean a copper penny in a mild acid solution (a little citric or tartaric in some water). Place your now-bright penny in a wine glass, add wine, and swirl. Let it stand for a minute or two, and the bad smell should go away if you have a copper-treatable problem.**



# 2014 WINEMAKING EQUIPMENT

## Grape Presses

Wooden cage with steel base on legs, lets you quickly and smoothly press fermented red grapes or crushed white grapes.

Model	Basket Number	Basket Diameter	Height	Capacity In Gal.	Retail Price
WE02	#25	10"	14"	5	\$360.00
WE03	#30	12"	17"	7	\$450.00
WE04	#35	14"	19"	12	\$550.00
WE05	#40	16"	21"	18	\$650.00
WE06	#45	18"	24"	25	\$725.00
WE07	#50	20"	26"	34	\$850.00
WE49	#30	(All Stainless Cage and Base and Legs)			\$875.00
WE27	#40	(All Stainless Cage and Base and Legs)			\$1095.00

**Piston Top Basket Press with Hydraulic Ram on frame with wheels.** Very easy to use, with tilt frame for draining. Size shown to right is similar to a #50 basket press.

WE50 Piston, manual Hydraulic Press on wheels #50 20" x 26" \$2590.00

**Water Bladder Press** inflates with regular garden hose pressure, pressing the grapes against the stainless steel cage, while a lid retains the grapes. (Not pictured.)

WE55	80 Liter	17"	23"	20	\$1400.00
WE46	160 Liter w/ wheels	21"	28"	40	\$2900.00

## Crushers

**Crushers: Manual rollers crush by simply turning the flywheel supplied.**

Dimensions of WE12 and 13 Bins: 21" x 32", WE35: 21" x 21"

WE12	Double roller grape crusher with paint finish.....	\$275.00
WE13	Double roller grape crusher, stainless .....	\$300.00
WE35	Boxed double roller grape crusher, stainless (OK for UPS).....	\$325.00

## Crusher/Destemmers and Destemmer Only

**Crusher/Destemmers: Manual and electric models are available, both will process around one ton per hour. Stainless steel models come with a stainless stem grate and stainless hopper.** Dimensions of hopper are 16" x 30", except extended hopper with screw feed : 16" x 36"

WE14	Manual, paint grade crusher/destemmer.....	\$450.00
WE15	Manual, stainless crusher/destemmer .....	\$550.00
WE16	Electric 110V, paint grade crusher/destemmer .....	\$800.00
WE17	Electric 110V, stainless steel crusher/destemmer .....	\$890.00
WE22	Electric 110V, paint grade crusher/destemmer with screw feed (SF) and extended hopper (EXH).....	\$900.00
WE18	Electric 110V, stainless crusher/destemmer w/ (SF) & (EXH) .....	\$950.00
WE25	Electric 110V, ALL stainless crusher/destemmer, w/SF & EXH (Shown right) .....	\$1290.00
WE25RR	Electric 110V, ALL stainless crusher/destemmer RUBER ROLLERS w/SF & EXH .....	\$1340.00
WE34	Electric 110V, ALL stainless DESTEMMER ONLY, w/SF & EXH .....	\$1290.00
WE20	Support Stand for above units with stainless chute .....	\$200.00

## Large Storage Tanks

Variable Capacity Stainless Wine Tanks - flat bottom - come with a lid, gasket, pressure relief valve and drain.

WE43	100 Liter Stainless tank (26 g.).....	\$400.00
WE40	200 Liter Stainless tank (52 g.).....	\$550.00
WE42	300 Liter Stainless tank (79 g.).....	\$650.00
WE44	400 Liter Stainless tank (106 g.).....	\$750.00
WE45	500 Liter Stainless tank (132 g.).....	\$875.00

WE19	Plastic Model 3 Spout Bottle Filler. ....	\$159.99
WE28	All Stainless 3 Spout Filler Filler comes w/ drip tray (shown above).....	\$425.00
WE29	All Stainless 5 Spout Filler Filler comes w/ drip tray.....	\$550.00

Equipment is priced for pick up at the store. Call for a freight quote for delivery.



WE50 #50 Piston Press



WE13 Roller Crusher



WE25 Crusher/Destemmer



WE28 3 Spout Bottle Filler

## Fillers



## KITS AND JUICE

### "Premium" Wine Equipment Kit



Complete with a ten gallon primary fermentor and lid, a six-gallon PET Plastic Bottle secondary fermentor, an air lock and stopper, 25 Campden tablets, a siphon assembly, a bottle filler, Mini-Floor Corker, 100 Corks, Country Wine Acid Testing Kit, Hydrometer and Test Jar, a Bottle Brush, TDC cleaner, BTF Sanitizer and the book *Home Winemaking Step By Step*, Iverson.

BNW01 .....\$224.99

(Note: For **White Wine**, kit includes 5 gallon PET Plastic Bottle in place of the bucket and lid, please identify **RED** or **WHITE WINE** on order.)

### Pure Italian Juice Wine Kits

Mosto Italiano® kits are aseptically packaged in plastic pails, that also serve as the primary fermentor. 23 liter kits are a complete package of ingredients to make 6 gallons. Ready in three months.

(R = red, W = white)

CO30 **Cabernet Sauvignon** (R) .....\$114.99  
CO31 **Chardonnay** (W) .....\$94.99  
CO33 **Gewurztraminer** (W) .....\$94.99  
CO39 **Pinot Grigio** (W) .....\$94.99  
CO32 **Sangiovese** (R) .....\$109.99  
CO36 **Sauvignon Blanc** (W) .....\$94.99  
CO34 **Shiraz** (R) .....\$109.99  
CO35 **Zinfandel** (R) .....\$104.99



### Canned Grape Concentrate

**Choose your Varietal**, 46 oz 68° Brix.

(CO06) **Burgundy** \$19.99 (CO03) **Cabernet Sauvignon**, \$19.99  
(CO08) **Chardonnay**, \$18.99  
(CO02) **Chenin Blanc**, \$14.99 (CO05) **Muscat** \$21.99,  
(CO01) **Zinfandel** \$19.99 (CO07) **Petite Sirah** \$18.99

### Seedless Fruit Puree

Each can of fruit puree from Oregon is seedless, with all the



goodness preserved in the processing, full of aroma and a deep rich taste and color. Use one can in five gallons of beer, two cans to flavor a mead or four cans to make wine. The classic

wine recipe using four cans of puree, will yield 24 wine bottles of superb fruit wine. Finish it with the addition of a simple syrup just to smooth the flavor and intensify the berry taste. Reminds us of summer even in the dead of winter and tastes great for several years, if you can wait that long, but is ready to drink in three months. 49 oz. can.

FL44 **Raspberry Puree** .....\$19.99  
FL47 **Blackberry Puree** .....\$21.99  
FL46 **Apricot Puree** .....\$19.99  
FL48 **Sweet Cherry Puree** .....\$14.99

## FRUIT HANDLING

MS35 **Grape Picking Shears**, .....\$8.99  
MS16 **Grape Picking Knife**, Plastic handle .....\$6.99  
MS31 **Tote Bins for grapes**, Cross stacking, nesting tub  
Hold 30 lbs .....\$18.99  
QE36 **Grape Masher. (Cap punch tool) 24" long** .....\$34.99

### Mesh Pressing Bags:

PS31 **14" X 17"** w/drawstring ..... \$6.99  
PS16 **20" X 22"** ..... \$5.99  
PS15 **24" X 20"** w/drawstring ..... \$11.99  
PS20 **26" X 28"** w/drawstring ..... \$14.99  
QE39 **Stainless Coarse Mesh Strainer** 10 1/4" ..... \$16.99  
PS51 **China Cap Strainer**, 12" perforated stainless,  
cone shaped high-volume strainer for all fruits ..... \$24.99

## YEAST & BACTERIA

### Dry Wine Yeasts

Choose your yeast strain from the information chart provided on page 11. Use one to two grams per gallon and see pages 4 and 6 for directions on how to use the yeast. (*Shelf life is 3-4 months*)

	10 g	4 oz
YEAST	All \$1.99	\$18.99
Assmanshausen	WY38	WY37
Epernay 2	WY22	WY12
French Red	WY30	WY20
Prise de Mousse	WY23	WY13
Rhone #L2226	WY35	WY34
		<b>\$21.99</b>
Beaujolais 71B	WY25	WY15
Brunello BM45	WY45	WY47
CSM	WY53	WY56
ICVD21	WY41	WY16
ICV D254	WY44	WY43
M2	WY50	WY49
QA23	WY65	WY67
RC212	WY55	WY57
RP-15	WY24	WY42
Steinberger	WY29	WY19
Uvaferm 43	WY28	WY18

### Malolactic (ML) Bacteria Cultures

WY32 **ML Culture, Yeast #4007** 125 ml. pack inoculates 5 gallons directly. With instructions. .... \$7.99  
WY51 **ML Culture, Enoferm Alpha Strain**, 2.5 g. pack inoculates 66 gallons directly. With instructions..... \$27.99  
WY66 **ML Culture, Enoferm Beta Strain**, 2.5 g. pack inoculates 66 gallons directly. With instructions..... \$27.99

### Malolactic Prevention

WY60 **Lysozyme liquid "Lyso-easy"** 250 ml. .... \$30.99

## SUPPLIES

A17 Ascorbic, 1 oz. ....	\$4.50
A05 Citric, 2 oz. ....	\$1.69
A14 Malic, 2 oz. ....	\$1.99
A10 Tartaric, 2 oz. ....	\$2.99
A24 Acid Blend, Citric, Tartaric & Malic, 2 oz. ....	\$1.99

## Acid Reduction Agent

FN39 Potassium Bicarbonate (With Instructions) 4 oz. ....	\$ 4.99
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## Sugar

AD15 Corn Sugar, 5 lbs .....	\$6.99
AD16 Corn Sugar, 10 lbs .....	\$11.99

## Enzymes

QR04 Pectic Enzyme, 1 oz. ....	\$1.85
QR61 Lallzyme ® EX Red Wine Enzyme 10 g .....	\$5.99
QR63 Lallzyme ® Cuvee Blanc White Wine Enzyme 10 g .....	\$6.99

## Yeast Nutrients

QR11 Yeast Nutrient, Diammonium Phosphate, 2 oz. ....	\$1.99
QR42 Go-Ferm ®, Mixing instructions are included for preparing yeast starters. This is not a fermentation nutrient. 3 oz.....	\$4.99
QR33 Autolyzed Yeast, 2 oz. ....	\$2.99
QR16 Yeast Hulls, 2 oz. ....	\$3.99
QR06 Fermaid K™ Yeast Food. Complete nutrient mix with trace minerals, use 1 oz. per 30 gallons. 3 oz. ....	\$3.99

## Optimized Yeast Nutrients

QR72 Opti-Red ® Yeast Derivative Nutrient, 50 g.....	\$4.99
QR74 OptiMUM-White ® Yeast Derivative Nutrient, 50 g .....	\$5.99

## Optimized Malolactic Nutrients

QR38 Acti-ML Nutrient for MLF for 66 gal. 50g. ....	\$5.99
QR35 Opti ML Blanc Nutrient for White or Rosé MLF for up to 66 gallons. 50g. ....	\$5.99

## Sulfites

CS24 Sodium Metabisulfite, 4 oz. ....	\$2.99
CS20 Potassium Metabisulfite, 1 lb. ....	\$5.99
CS17 Campden Tablets, Pack of 25. ....	\$ .99
CS16 Campden Tablets, Pack of 100. ....	\$2.99
CS33 2 g IO Inodose Effervescent SO <sub>2</sub> Tablets, 3 pack. One tablet delivers 9ppm SO <sub>2</sub> in 60 gallons of must or wine.....	\$2.99
CS34 5 g IO Inodose Effervescent SO <sub>2</sub> Tablets, 3 pack. One tablet delivers 22ppm SO <sub>2</sub> in 60 gallons of must or wine.....	\$3.29

## Fermentors

Note: All Plastic Carboys take a #10 Stopper, All current Glass Carboys takes a #6.5 Stopper. Also see Breather Silicone Bungs which fit all of the Carboys without the use of an Airlock.

GL45 5 Gallon Plastic Better Bottle™ .....	\$29.99
GL58 5 Gallon PET Plastic Bottle .....	\$27.99
GL59 6 Gallon PET Plastic Bottle .....	\$28.99
GL02 3 Gallon Glass Carboy .....	\$33.99

Note: Check the web for larger sizes of ingredients, cleaners and sanitizers.

GL01 5 Gallon Glass Carboy .....	\$40.99
GL40 6 Gallon Glass Carboy .....	\$48.99
GL04 6.5 Gallon Glass Carboy .....	\$49.99
P01 6.5 Gallon Plastic Bucket with Wire Handle .....	\$11.99
P02 Lid for 6.5 Gallon Bucket .....	\$2.99
P61 13 Quart Stainless Steel Pail with Bail Handle.....	\$21.99
P17 Poly Drum Liner, 6 mil, fits up to 60 gal.....	\$5.99
P04 10 Gallon Heavy-Duty Plastic Bucket with molded handles. ....	\$20.99
P05 10 Gallon Lid .....	\$7.99

20, 32 and 44 Gallon Buckets and Lids are available for pickup at the retail store.

## Drilled Rubber Stoppers

	SKU	Top	Bottom	Price
#2	FST09	13/16"	5/8"	\$ 0.69
#6	FST12	1 1/16"	29/32"	\$ 1.09
#6.5	FST13	1 11/32"	1 1/16"	\$ 1.29
#7	FST14	1 7/16"	1 3/16"	\$ 1.39
#8.5	FST16	1 11/16"	1 7/16"	\$ 1.99
#9	FST17	1 3/4"	1 15/32"	\$ 1.99
#10	FST19	1 31/32"	1 5/8"	\$ 2.79
#10.5	FST20	2 5/64"	1 3/4"	\$ 2.79
#11	FST21	2 13/64"	1 7/8"	\$ 4.29
#12	FST23	2 1/2"	2 1/8"	\$ 4.79

Most sizes are available solid, at the same price.

## Air Locks and Breather Bungs

FST04 Three Piece Fermentation Lock .....	\$1.29
FST05 S-Shape One Piece Fermentation Lock .....	\$1.29
FST47 Carboy Silicone Breather (fits all carboys) .....	\$8.99
FST42 Breather #11 Silicone - 2" .....	\$7.99
FST510 Breather #10, Silicone- fits PET plastic .....	\$7.99
FST49 Breather #9 Silicone - 1.5" .....	\$7.99
FST57 Breather #7 Silicone- fits glass carboys .....	\$4.99

## Solid Barrel Bungs

FST29 Silicone Bung Solid #8 (Fits 1L Flask).....	\$2.99
FST40 Silicone Barrel Bung - Joined Size 45 x 54 mm..	\$7.99

## Cleaning and Sanitizing

CS12 Soda Ash, Barrel cleaner 1 lb. ....	\$1.99
CS29 Sodium Percarbonate, All purpose cleaner 1 lb. ..	\$4.99
CS26 TDC™ Glass Cleaner, 4 oz .....	\$4.99
CS31 TDC™ Glass Cleaner, 1 Liter. ....	\$13.99
CS02 BTF™ Sanitizer, 4 oz .....	\$6.99
CS03 BTF™ Sanitizer, 32 oz .....	\$18.99
QE29 Bottle Brush.....	\$4.99
QE30 Carboy Brush .....	\$5.99
QE31 Double Ended Keg Faucet Brush .....	\$3.99
QE45 Bottle Washer -The Blast .....	\$13.99
QE09 90 Bottle Draining Tree .....	\$39.99
QE44 Carboy Draining Stand .....	\$8.99

## Oak Alternatives

**Liquid Oak Extract**, from pure Dark French Oak, 4 oz.

B42 Use to taste, 4 oz. could treat 3-4 gallons. .... \$5.99

**Oak Chips**, 1 lb. Use up to 3 oz. per 5 gallons of red wine.

B46 **American Medium** ..... \$5.99

B24 **French Medium** ..... \$7.99

B25 **French Dark** ..... \$7.99

**Oak Cubes**, 8 oz. Use 2-3 oz. per 5 gallons.

Specify ..... \$12.99

B44 **French Medium Plus** (Dark), or B32 **French Medium**

**Chain-O-Oak™ Staves** (Tank or Barrel insert)

(30% surface of new oak in a 60 gallon barrel.)

B78 **American Medium** \$59.99, B79 **American Dark** . \$59.99

B74 **French Medium** \$69.99 or B75 **French Dark** . .... \$69.99

## Cellaring Tannins

QR65 **FT Rouge Soft** - Enological Tannin, 100 g ..... \$7.99

QR67 **FT Blanc Soft** - Enological Tannin, 50 g..... \$5.99

QR70 **Tannin Riche** derived from 100% Toasted French Oak.

Adds finesse to average wine. Use 1/4 to 3g per 5 gallons of red wine, 10g ..\$5.99 or QR69 50g size. .... \$21.99

QR79 **Tannin Complex** derived from traditional oak and the Quebracho tree from South America. Use 1 to 6 g for every 5 gallons of wine, 50g ..... \$10.99

QR77 **Tannin Refresh** Unique tannin product derived from untoasted French Oak. Increases complexity without the aromas of smoke or toast. Use 1/4 to 4 g for every 5 gallons of wine, 10g ..... \$5.99 or QR78 50g size. .... \$24.99

## Oak Barrels

**Small American Toasted Oak Barrels:**

B01 **American Oak, 1 gallon (SCT)**..... \$124.99

B02 **American Oak, 2 gallon (SCT)**..... \$139.99

B03 **American Oak, 3 gallon (SCT)**..... \$169.99

B04 **American Oak, 5 gallon (SCT)**..... \$204.99

**Vinegar Barrels are Paraffin/Wax Lined (P):**

B10 **American Oak, 2 gallon (P)** ..... \$124.99

B11 **American Oak, 3 gallon (P)** ..... \$139.99

B12 **American Oak, 5 gallon (P)** ..... \$149.99

**Charred Oak Barrels for Spirits:**

B49 **American Oak, 3 gallon (SCC)** ..... \$169.99

B08 **American Oak, 5 gallon (SCC)** ..... \$204.99

## Barrel Spigots

**Wood Spigots by length** (Check the website for other sizes):

SP32 **3"** opening fits 1/2" hole size ..... \$4.99

SP33 **5 7/8"** opening fits 11/16" hole size ..... \$9.99

SP35 **8"** opening fits 15/16" hole size ..... \$10.99

## Racking Equipment

HS03 **5/16" i.d. hose per foot** ..... \$ .69

HS04 **3/8" i.d. hose per foot** ..... \$ .69

HS14 **7/16" i.d. hose per foot** ..... \$ .79

HS05 **1/2" i.d. hose per foot** ..... \$ .89

HS06 **1/2" i.d. thick wall hose per foot** ..... \$ 1.09

QE11 **Racking Tube Holder for 5/16" or 3/8" hose** ..... \$3.99

FST02 **Hose Shutoff Clamp for 3/8" hose** ..... \$1.69

QE33 **Racking Tube Holder for 7/16 or 1/2" hose** ..... \$5.99

FST03 **Hose Shutoff Clamp for 1/2" hose** ..... \$2.99

**Auto-Siphon Racking Tubes:**

QE42 **Auto-Siphon (AS) for 5/16" or 3/8"** ..... \$14.99

QE43 **Auto-Siphon (AS) for 7/16" or 1/2"** ..... \$19.99

QE14 **(AS) Racking Tube Holder for 5/16" or 3/8" hose** \$3.99

QE16 **(AS) Racking Tube Holder for 7/16 or 1/2" hose** . \$3.99

## Pumping Equipment

PS09 **Pump- diaphragm style**, 110V motor with 1/2" ports.

Also will need to add two PS48 Hose Barb fittings (\$2.99 each) to connect to 1/2" thick wall hose. .... \$189.99

F31 **Filter/Strainer** for Pumps (Use with 1/2" hose) ..... \$29.99

PS47 **1/2" Female Hose Barb** for F31 above. Need two. . \$1.99

PS36 **Procon Brass Pump**, 4 GPM, 1/4 HP ..... \$369.99

FX06 **Brass pump hose barb fitting**, 1/2"x1/2" . .... \$2.99

PS35 **Procon Stainless Pump**, 4 GPM, 1/4 HP ..... \$479.99

PB05 **Stainless pump hose barb fitting**, 1/2"x1/2" . .... \$7.99

## Fining Agents

FN06 **Sparkolloid™**, 1 oz. .... \$ 1.99

FN32 **Bentonite**, 2 oz. .... \$ .99

FN07 **Isinglass**, 1 oz.. .... \$ 8.99

FN03 **Fining Gelatin**, 75 bloom, grade B, 1 oz. .... \$ 1.99

FN22 **Polyclar VT (PVPP)** (With Instructions) 1 oz. .... \$ 1.99

FN46 **Flashgum R® Gum Arabic Liquide**. 25% solution, 4 oz. .... \$ 6.99

## Sulfur Reducing Agents

FN47 **Reduless®**, 10g. Yeast hulls with copper ..... \$ 3.99

FN91 **Noblesse®**, 10g. .... \$ 4.99

TE24 **Copper Sulfate Solution (1%)**, 4 oz. .... \$ 4.00

## Filtering

F05 **Buon Vino Super Jet Filter**, Plate & frame filter

includes electric diaphragm pump ..... \$450.00

(Must use with F31 above. Filter prevents damage to pump)

**Pads** for Super Jet Buon Vino (Set of Three):

F09 **8 Micron Coarse** ..\$4.99, F22 **2 Micron Medium** \$4.99

F21 **0.5 Micron Sterile**, Comes w/backing papers ..... \$5.99

F23 **25 Backing Papers** for Filter Pads ..... \$4.99

F03 **10" Cartridge Filter Housing**, Clear, poly housing,

Use with 10" filters ..... \$44.99

**10" Filter Cartridges:**

F10 **3 Micron Coarse** ..... \$12.99

F11 **1 Micron Fine** ..... \$12.99

F12 **.5 Micron Sterile** ..... \$14.99

**Hose Barb for Filter Housing** Need two. Specify size:

PS02 Fits **3/8" hose** ...\$1.29 or PS03 Fits **1/2" hose**....\$1.99



# WINE LABORATORY

## Sugar & Alcohol Testing

TE40 <b>Economy Hydrometer</b> has Brix, Specific Gravity, and Potential Alcohol scales, 9".....	\$10.99
TE42 <b>Deluxe Hydrometer 3 scale with Thermometer</b> Use with the tall test jar below, 11" .....	\$15.99
TE39 <b>Hydrometer Proof and Traill</b> .....	\$10.99
TE65 <b>Residual Sugar Test Kit</b> . 36 tests. ....	\$26.99
TE23 <b>Refractometer</b> , 0-32° Brix, Automatic Temperature Compensation, boxed w/padded carrying case .....	\$69.99
TE32 <b>20° Brix Calibration Solution</b> , 2 oz.....	\$3.99
TE13 <b>Vinometer</b> , Estimates alcohol in dry wine .....	\$7.99

## Sulfite and Acid Testing Kits

TE113 <b>Economy Aeration-Oxidation Free SO<sub>2</sub> Test Kit</b> See page 12 for list of supplies, Instructions included....	\$119.99
TE26 <b>Country Wines Acid Test Kit</b> .....	\$10.99
TE29 <b>Sodium Hydroxide Refill</b> (Neutralizer) (for TE26) 4 oz., 0.1 normal .....	\$5.49
TE116 <b>Phenolphthalein Refill</b> (Indicator) (for TE26) 1 oz.....	\$3.99
TE113 <b>TA Titration Kit - INDICATOR Method</b> <b>Includes:</b> Buret Stand, 10-mL Class A glass Buret with Teflon Stopcock, Buret Clamp, 10-mL Syringe, 10-mL Graduated Pipet, Pipet Safety Bulb, 250-mL Flask and 0.1 N Sodium Hydroxide, Phenolphthalein Indicator solutions.....	\$109.99
TE104M <b>TA Titration Kit - pH Meter Method</b> <b>Includes:</b> the TA Titration Kit above minus the 250 mL Flask and adds the Milwaukee pH meter, pH Buffer Kit and 400 mL Borosilicate Glass Beaker.....	\$249.99

## pH Testing

TE203 <b>Milwaukee pH Meter</b> Manual, portable pH Meter, Milwaukee model MW102, 0-14pH, ATC. Comes with 9V Battery, pH and Temperature Probes, and 4, 7 sachet buffer solutions. Resolution 0.01 pH and 0.1 degree C. Accuracy (25C) .02 pH.. ..	\$119.99
TE203-RP <b>Replacement Electrode</b> for MW10 .....	\$49.99
TE73 <b>Waterproof pH Testr20</b> Digital, battery operated, accuracy to 0.01 pH. Automatic temperature compensated, double junction electrode can be replaced. ....	\$104.99
TE35 <b>Replacement Electrode</b> for pH Testr20.....	\$69.99
TE206 <b>Complete pH Buffer Solutions Set</b> with 4 oz. each of pH 4.0 and 7.0 in jars. Store cool. ....	\$6.99
TE209 <b>Electrode Storage Solution</b> 2 oz. ....	\$6.99
TE72 <b>pH Buffer Capsules</b> pH 4.0. and 7.0 Capsules, to dissolve in 100ml. distilled water to calibrate your meter. ....	\$3.99

## Malolactic (ML) Testing

TE20 <b>Malolactic Chromatography Kit</b> , 6 papers, 4 oz Solvent, 100 pipets, 3 Acid Standards, funnel and Instructions.....	\$39.99
TE17A <b>Replacement Solvent</b> , 4 oz. ....	\$10.99
TE22 <b>Replacement Paper</b> , 3 Sheets .....	\$4.99

TE18 <b>Replacement Acid Standards-</b> Set of 3 (Lactic, Malic, Tartaric) .....	\$8.99
TE19 <b>Replacement Capillary Pipets</b> , 100 pack .....	\$8.99

## Labware

### Regular Test Jar for 10" Hydrometer.

TE55 <b>Plastic</b> , 10" .....	\$4.99
TE08-PMP <b>100 ml. Graduated Cylinder Plastic</b> (Clear Polymethylpentene) .....	\$10.99
TE08 <b>100 ml. Graduated Cylinder Glass</b> .....	\$12.99
TE111 <b>250 ml. Graduated Cylinder Glass</b> .....	\$14.99

### Tall Test Jar for 11" Hydrometer

TE56 <b>Plastic</b> 1 1/2" x 14" .....	\$5.99
TE12 <b>1 ml. Syringe</b> , .....	\$ .99
TE28 <b>10 ml. Syringe</b> , .....	\$1.25
TE62 <b>10 ml. Pipet</b> , Pack of 20 .....	\$17.99
TE36 <b>10 ml. Pipet</b> , Each. ....	\$1.29
TE231 <b>100 ml. Graduated Beaker Borosilicate glass</b> . ....	\$2.99
TE232 <b>400 ml. Graduated Beaker Borosilicate glass</b> .....	\$4.99
TE233 <b>1000 ml. Graduated Beaker Borosilicate glass</b> .....	\$12.99
TE86 <b>100 ml. Graduated Beaker Polypropylene</b> .....	\$ .99
TE87 <b>400 ml. Graduated Beaker Polypropylene</b> .....	\$1.99
TE92 <b>1000 ml. Graduated Beaker Polypropylene</b> .....	\$2.99
TE83 <b>1000 ml. Polypropylene Beaker w/handle</b> .....	\$10.99
TE84 <b>2000 ml. Polypropylene Beaker w/handle</b> .....	\$12.99
TE85 <b>3000 ml. Polypropylene Beaker w/handle</b> .....	\$20.99
TE82 <b>125 ml. Borosilicate Erlenmeyer Flask</b> . (#5 stopper) .	\$8.99
TE10 <b>500 ml. Borosilicate Erlenmeyer Flask</b> . (#6.5) .....	\$8.99
TE09 <b>1000 ml. Borosilicate Erlenmeyer Flask</b> . (#8) .....	\$14.99
TE127 <b>2000 ml. Borosilicate Erlenmeyer Flask</b> . (#10) .....	\$18.99

## Thermometers

TE50 <b>Wine Thermometer</b> , 0-220°F., 1.75" Dial x 8" Stem, with pan clip, recalibratable, Stainless, USA.....	\$28.99
TE90 <b>Must or Juice Thermometer</b> , 2" Dial x 12" Stem, with pan clip, recalibratable, Stainless, USA.....	\$36.99
TE37 <b>Floating Glass Thermometer</b> , 8"(40-210°) F. and 0-100°C).....	\$8.99
TE81 <b>Fermometer Strip</b> , Monitors temperature from 36 to 78°F., stick to tanks or carboys to read surface temperature .....	\$2.99

## Wine Thieves

TE49 <b>Wine Thief</b> , Plastic, One piece.....	\$5.99
TE48 <b>Wine Thief</b> , Plastic, Assembled of 3 pcs .....	\$7.99
TE51 <b>Wine Thief</b> , Glass 12" .....	\$12.99
TE77 <b>Glass Straight Wine Thief</b> , 18" .....	\$49.99
TE05 <b>Glass Angled D- Ring Wine Thief</b> , 18" .....	\$59.99

## Digital Scales

TE38 <b>Pico™</b> 0.1 to 500g, 0.005 ozs. to 1.1 lbs., perfect for winemaking additives .....	\$39.99
TE98 <b>Primo Digital Scale</b> - 1g to 5Kg (also measures 1 oz. to 11 lbs.) NSF Listed .....	\$44.99

# FINAL STEPS

## Wine Handling

QE34	Orange Carboy Handle, 3, 5 and 6 gallon size ....	\$7.99
QE47	Blue Carboy Handle, 6.5 gallon size .....	\$7.99
MS02	Carboy Carrier, Nylon Web .....	\$14.99
P16	10 Quart Plastic Pail, Pour out lip and Handle.....	\$12.99
P18	14 Quart Plastic Pail, Pour out lip and Handle.....	\$20.99
All funnels are white, food-grade plastic.		
P61	13 Quart Stainless Steel Pail with Bail Handle .....	\$21.99
QE37	Barrel Funnel, 16" .....	\$19.99
QE24	Carboy Funnel, 8" Anti-Splash .....	\$10.99
QE23	Funnel, 10" .....	\$9.99
QE22	Medium, 6" Bottle Funnel .....	\$4.99
QE21	Small, 4" Bottle Funnel .....	\$2.99

## Barrel Maintenance

CS24	Sodium Metabisulfite, 4 oz. ....	\$2.99
CS20	Potassium Metabisulfite, 1 lb. ....	\$5.99
B39	Sulfur Strips, 2 strips .....	\$ .59
B38	Sulfur Strips Bundle of 70 strips .....	\$18.99
B40	Sulfur Disks aprox. 15 (5 g) .....	\$4.50
B65	Sulfur Disk Holder, Stainless Steel .....	\$15.99
MS06	Mildewcide, Barrel Coating, 16 oz. ....	\$9.99
B13	Hoop Nails, Pack of 20.. ....	\$1.75
B14	Spiles for Barrels (Fills holes) Pack of 10 .....	\$1.99

## Bottles

(Note: actual shipping rates will apply)

GL61	Claret 750 ml. Green Push-Up 12/cs .....	\$11.99
GL05	Claret 750 ml. Flint Push-Up 12/cs.....	\$11.99
GL66	Burgundy 750ml. Antique Green 12/cs.. ....	\$11.99
GL16	Claret 375ml. Flint (clear) 12/cs (also available in green GL03).....	\$17.99
GL63	Claret 375ml. Flint 12/cs Screw Top.....	\$14.99

## Corkers and Cappers

BE01	Double Lever Italian Corker.....	\$36.99
BE19	Mini-Floor Corker, Nylon Jaws .....	\$74.99
BE21	Heavy Duty Floor Corker, Chrome Jaws .....	\$179.99
BE07	Super "M" Standup Crown Capper .....	\$44.99
BE05	Emily Hand held Crown Capper .....	\$20.99

## Bottle Fillers

QE17	Bottle Filler, for 5/16" or 3/8" hose .....	\$4.99
QE02	Bottle Filler, with spring for 5/16" or 3/8" hose. ...	\$4.99
QE20	Bottle Filler, for 7/16" or 1/2" hose .....	\$7.99
WE19	Plastic tray 3 Spout Bottle Filler, .....	\$149.99
WE28	Stainless Steel Model 3 Spout Bottle Filler, Includes bottle tray .....	\$425.00
WE29	Stainless Steel 5 Spout Bottle Filler, Includes bottle tray .....	\$550.00

## Wine Corks and Bottle Closures

WC11	1 3/4" Chamfered Corks, 25 pack .....	\$10.99
WC06	1 3/4" Chamfered Corks, 100 pack .....	\$40.99
WC14	1 3/4" Twin Disk Corks, 100 pack .....	\$28.99
WC07	1 3/4" All Natural Corks, 100 pack .....	\$38.99
WC13B	1 3/4" Twin Disk Corks, 1000 pack .....	\$249.99
WC02B	1 3/4" All Natural Cork, 1000 pack .....	\$339.99
TC20	Plastic Champagne Stopper .....	\$ .15
TC21	Champagne Wire .....	\$ .10
TC18	28 mm. Black Top Bar Top Cork.....	\$ .29
TC28	28 mm. Black Top Bar Top Cork, 100 pack.. ....	\$ 26.99
S01	28 mm. Metal Screw Cap.. ....	\$ .20
S02	38 mm. Metal Screw Cap .....	\$ .39
S03	28 mm. Plastic Polyseal Cap .....	\$ .45
S04	38 mm. Plastic Polyseal Cap .....	\$ .90
BE11	Crown Caps, 144 caps .....	\$4.99

## Bottle Design

**Bottle Sealing Wax** Available in 7 colors - ranges from \$12.99-\$16.99 per pound. SL26 *Black*, SL27 *Burgundy*, SL28 *Gold*, SL29 *Silver*, SL31 *Blue*, SL30 *Red*, or SL32 *Green*.

**Heat Shrink Plastic Sleeves**, Apply to bottle neck with boiling water (212°F.) or heat gun. *Specify:* SL18 *Silver*, SL33 *Green*, SL20 *Gold*, SL19 *Burgundy*, or SL49 *Black*.

**Heat Shrink Sleeves** quantity of 12 .....

**Oversize Heat Shrink Sleeves** quantity of 12 *Also for Euro-neck Burgundy bottles Oversize Sleeves are:*

SL01 *Maroon*, or SL03 *Black*. ....

**Gum-Backed Label Making Paper.** L38--*White*,

8 1/2 x 11 solid sheet, 18 Sheets .....

L46 **Removable White Matte Labels**, Laser & Inkjet, 4" X 5", 4 per sheet, 12 Sheets .....

L47 **Standard White Matte Labels**, 4 " x 3.3", 6 per sheet 10 Sheets .....

MS15 **Label Glue**, 16 oz. ....

MS24 **Iceproof Label Glue**, 32 oz.....

MS26 **Manual Label Gluer**, Glue Pot. ....

## Finishing Supplies

MS42 **Private Preserve™**, Nitrogen gas blend in a can .

FN35 **Wine Conditioner**, Sucrose with Potassium Sorbate. Treats about 10 to 20 gal. to taste. 500 mL.....

FN18 **Potassium Sorbate**, 1/2 oz. treats 10 gallons. Stir into sweetened wine and bottle. ....

FN39 **Potassium Bicarbonate**, lowers acidity in wine/must. Treat wine with 3.4g per gal. to lower .1 TA, 4 oz. ....

MS33 **Wine Agitator** - The Whip, Nylon, Degasser, 15" .

## Miscellaneous

KEG58 **Food Grade Lubricant**, 4 oz. ....

MS03 **Silicone Spray Lubricant**, 10 oz. ....

MS09 **Gondola Enamel**, Food grade paint, 16 oz. ....

MS43 **Wine Away™** 12 oz. Spray bottle .....

## WINEMAKING BOOKS AND VIDEO

### BK140 *Home Winemaking Step by Step*

Iverson..... \$17.99

### BK20 *Micro Vinification*

Dharmadhikari and Wilker..... \$46.99

### BK12 *Techniques in Home Winemaking*

Pambianchi..... \$ 21.99

### BK40 *Modern Winemaking*

Jackisch ..... \$49.99

### BK54 *How and Why to Build a*

*Wine Cellar*, Gold..... \$20.00

### MG13 *WineMaker Magazine*

current issue ..... \$4.99

### BK142 *Winemaker's Recipe Handbook*

Massaccesi ..... \$ 4.99



## ADDITIONAL BOOKS ON RELATED TOPICS

### Grapes

BK80 *Great Grapes*, Proulx .....\$3.99

BK129 *Vineyard Simple*, Powers .....\$24.99

BK67 *The Backyard Vintner*, Law .....\$19.99

### Cider

BK70 *Cider, Making, Using and Enjoying*,

Proulx & Nichols .....\$14.99

BK47 *Craft Cider Making*, Lea.....\$15.99

BK 165 *The New Cider Handbook*, Jolicoeur .....\$39.99

BK79 *Making the Best Apple Cider* .....\$3.99

### Mead

BK77 *Making Mead*, Morse .....\$18.99

BK05 *The Compleat Meadmaker*, Schramm .....\$19.99

### Other Hobbies

CH73 *The Cheesemaker's Manual*, Morris .....\$39.99

BK32 *The Joy of Cheesemaking*, Druart and Farnham..\$14.99

CH74 *Making Artisan Cheese*, Smith .....\$21.99

CH98 *Artisan Cheesemaking at Home*, Karlin .....\$29.99

BK166 *The Home Creamery*, Farrell.....\$16.99

BK100 *American Farmstead Cheese*, Kindstedt .....\$40.00

BK01 *Brewing Quality Beers*, Burch .....\$7.99

BK84 *Making Vinegar at Home*, Romanowski .....\$6.99

BK03 *Homemade Vinegar*, Watkins .....\$7.99

BK36 *The Compleat Distiller*, Nixon & McCaw .....\$25.00

BK76 *Home Sausage Making*, Reavis .....\$16.99

## ORDERING

Place your order ONLINE at [www.thebeveragepeople.com](http://www.thebeveragepeople.com) or call our TOLL FREE ORDER LINE, (800)544-1867. We accept Visa, Mastercard, American Express, or Discover cards.

To place your order by check, please note the following, if you live in California, add 8.75% sales tax on non-food items. **Tax exempt Food items are:** concentrates, sugars, purees, and flavorings. **All items shipped to points outside California are not taxable.**

### Fastest Shipping in the Business:

We normally ship **UPS Ground** service the same day the order is received, if received by 1 pm. Ground service to Zones 2 and 3 receive one day service. Zones 4 and 5 receive 2 to 3 day service. Customers



in Zones 6, 7 and 8 will normally receive their merchandise in 4 to 5 working days.

For faster service to Zones 5-8, and for perishables such as liquid yeast, we recommend **UPS Standard Air** service, or **UPS 2 DAY Air** service.

Add **\$6.00** for standard shipping to California, Nevada, Oregon and Washington. All other states and out of the country will pay actual shipping.

Customers in Alaska and Hawaii please take note that *priority mail* service from the Post Office is recommended.

We will add \$0.30 per Gel pack when shipping refrigerated items.

## ABOUT US

The Beverage People is proud to operate both a retail and on-line-order supply firm for 34 years in the heart of the Sonoma County Wine Country.

Our staff wishes you the very best with your new hobby and look forward to hearing from you. Mention that you are a new customer, so we may give you a free article from a past newsletter to help answer your fermentation questions.

The Beverage People News is a publication of The Beverage People, America's most respected homebrewing and winemaking supply company.

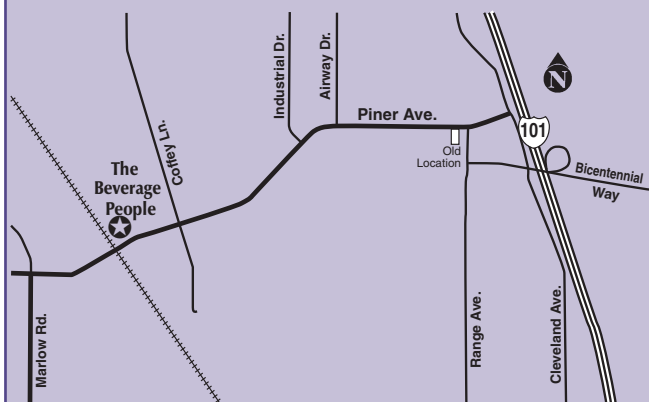
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**The Beverage People**  
1845 Piner Rd. Suite D  
Santa Rosa, CA 95403

*Postmaster: Please deliver July 17-25*

PRSR STD  
U.S. Postage  
PAID  
DMS INC



**Our Hours:**  
*Monday through Friday 10 - 5:30 Saturday 10-5*

## Rental Equipment



### CRUSHERS

Apple Mill, Grinder and Press, motorized	\$50.00
Grape Crusher, Manual	\$20.00
Grape Crusher/Destemmer, Manual	\$50.00

### PRESSES

#30 7 gallon Basket	\$30.00
#35 12 gallon Basket	\$40.00
#45 25 gallon Basket	\$50.00

### FILTERS/PUMPS

Transfer Pump Brass with hose	\$10.00
Transfer Pump Stainless with hose	\$20.00
Buon Vino Plate Filter includes one set of pads	\$35.00

### BOTTLING

3-Spout Bottle Filler	\$15.00
Wine Bottle Corker	\$10.00
Glue Labeller, Manual	\$10.00

Rentals are for 24 hrs. from noon to noon, and reservations are accepted up to 7 days in advance. We require a \$50 cleaning deposit on most equipment. A cancellation must be made by noon the day prior to your reservation.

Call 544-2520 during business hours to manage your reservation. Please do not leave messages after hours.

## August 23, 2014 Winemaking Class

If you are new to winemaking, or just want a refresher, plan to attend our beginning winemaking class.

You will be given a step by step run through of the winemaking process with demonstrations of equipment and testing supplies. This will be an opportunity for you to get your questions answered and gain confidence in the ease of becoming a home winemaker.

Purchase your class by calling (707) 544-2520. Held in the store classroom, 2:00 pm August 23 until 4:30 pm. Class fee is \$30.00 payable to *The Beverage People*.

## Our local Harvest Fair Wine Competition

<http://www.harvestfair.org> for 2014 entry forms and bottles. Estimated entry dates are August 18-29. Drop off from 8-5 weekdays at the Premium Office of the Sonoma County Fairgrounds 1350 Bennett Valley Rd. Santa Rosa. Entry is \$8.00, and needs 2 bottles.

## Additional Wine Competition Deadlines

Based on information from 2014. Check websites for 2015.

*May drop off entries to our store for all the following events.*

Geyserville	<a href="http://amateur-wines.com">http://amateur-wines.com</a>	March 5
Marin County Fair	<a href="http://www.marinfair.org">http://www.marinfair.org</a>	May 22
Sonoma/Marin Fair	<a href="http://sonoma-marinfair.org">http://sonoma-marinfair.org</a>	April 17
Orange County Fair	<a href="http://www.ocws.org">http://www.ocws.org</a>	May 17
California State Fair	<a href="http://www.castatefair.org">http://www.castatefair.org</a>	April 18

## Got Grapes?

Our grape listing book is a resource for both the winemaker and the grower. Local grape growers can list their grapes for sale. Winemakers can source their fruit by coming in to the shop and taking a look at the listings. If you would like to place a listing, please send us a list of grapes available, pricing, and any other information about your grapes you would like to include. Don't forget to provide your name, address and phone.

**(707) 544-2520    [www.thebeveragepeople.com](http://www.thebeveragepeople.com)    (800) 544-1867**