Soda
Cider
Beer

THE BEVERAGE PEOPLE

Wine
Vinegar
Mead

2004 Summer Wine Supplies and Beverage People News

New Items.

A review of what is new for wine-making in 2004.

See page 3.

Winemaking Supplies and Catalog.

Winemakers find supplies to fit your needs.

See page 16.

Thanks for the photo ***"Sonoma County Six Pack"*** *from Squire Fridell at GlenLyon Winery. The abundance of grapes throughout California brings lots of beginning winemakers to our hobby. If you're new to winemaking, read our How-To starting on page 4 of this publication.*

The Nutrient Low-down - SAP and SNAP

by Byron Burch

If you are a home winemaker who'd like a bit more consistency in your wines (and who wouldn't?) we have good news for you. We at *The Beverage People* have made arrangements for a testing program that will make it easier for you to understand what's going on with your wine, and how to take it in the direction you'd like it to go, avoiding pitfalls along the way.

In cooperation with *Vinquiry*, the commercial laboratory in Windsor, two panels of juice tests have been designed for home winemakers, depending on their particular situation.

First is what we call the "SAP" panel (sugar, acid, and pH). The second panel, which we call "SNAP," adds a couple of tests having to do with the amount of nutrients present in your juice.

We will explain how the testing program works at the end of the article, but first, let's talk about the reasons for these particular tests.

The *SAP* Panel

This is our basic panel. Included tests are Sugar, Total Acid, and pH. These are the three tests deemed most essential in the majority of winemaking situations.

Sugar

Most home winemakers know at least something about testing for sugar. Just about everybody understands that it's the sugar level that gives your wine its alcohol content, so there's at least one obvious reason to be concerned about the sugar level of your juice.

I have only rarely needed to add sugar to dry red wine musts, but if the grapes come in lower than 22° Brix, I will add sugar. (Amateur winemakers can do so legally). A pound of Cane Sugar dissolved in ten gallons of wine will raise raise the Brix just over one degree.

There are other reasons to be concerned about your sugar content, and it's not just a matter of whether the grapes are ripe. For example, if you want to make a "Port-type" wine, it is helpful to start with grapes that are up around 30° Brix or so. The closer you can get, the less brandy you'll eventually have to add to stabilize the wine.

On the other hand, if you want to make a dry table wine, it is important to use a yeast strain that can handle the level of sugar in the grapes you have. Every wine yeast strain has an alcohol tolerance level, above which fermentation simply stops.

For example, the *CSM* yeast strain has a low alcohol tolerance of 14%. That means it could be a risky yeast to use if you want to make a dry wine and your grapes come in above 25° Brix. Alcohol tolerances for the various wine yeasts we carry are given in the Yeast Recommendations chart on page 13.

Aside from these reasons for testing your juice for sugar content, the original Brix is one thing we'd want to know to help us in trouble-shooting a suspected fermentation problem.

Total Acid

Most home winemakers are also aware of the significance of testing for the Total Acid (TA) level. I think the best way to grasp the idea of Total Acid is to think of it as the measure of tartness.

Unripe grapes are high in acid and low in sugar. As ripening occurs, the acid level drops, and the sugar level rises. A grower must try to harvest during the window when both are within their desirable ranges.

For a dry table wine, the desired acid level is generally between .65% and .70% as tartaric (Note that this can also be expressed as 6.5 to 7 parts per thousand).

Dry wines with significantly higher

See SAP pg. 2.

SAP cont. from page 1.

acid levels when they are bottled may taste excessively tart and unpleasant. On the other hand, if the acid level is lower than .6%, wines may seem flat, and lacking in character.

It should be noted also that sugar and acid in wines tend to balance each other out, so that one may mask the level of the other.

In other words, if a wine is sufficiently sweet, it may still be in balance even if the acid is high, even up over 1% (as in some German wines). You may be able to balance up an overly harsh, acidic wine by sweetening it with sugar syrup, and a sweet but flabby wine may be improved by raising the acid level with a little Tartaric Acid.

There are several ways of reducing high acid levels. These include Malolactic Fermentation, as well as the addition of Calcium Carbonate, Potassium Carbonate, or Potassium Bicarbonate. The age of the wine and it's storage conditions, may dictate which adjustment method is used.

pH

New winemakers are often confused about total acidity and pH, tending to try and collapse the two concepts into one, but they are very different things.

I think the easiest way to get the general idea is to think of pH as a measurement of the stable acids in wine, while a Total Acid test, by measuring tartness, includes all acids, stable or not.

This should be easy to understand if you think of Acetic Acid (vinegar). The presence of this volatile acid adds nothing to the stability of a wine. Obviously, in fact, the reverse is true. It will, however, contribute tartness. This makes it necessary to be concerned with both Total Acidity and pH to cover all the bases in the course of making a wine.

Fortunately, most of the time, an appropriate TA level means that a wine's pH will, at least, be reasonable as well. However, it is possible for a high pH reading, combined with a high TA, to indicate a potential problem wine.

In any case, the lower the pH, the less Sulfite needs to be present to provide protection for the wine against spoilage. Please refer to the chart on page 8 and the discussion of "pH and SO_2" on that page.

Note that a wine's pH is also a factor (along with SO_2 and alcohol content) affecting whether or not a malolactic fermentation can be successfully induced.

If the pH is too low, it may keep the Malolactic bacteria from carrying out their assigned task. Remember that a low pH can stabilize a wine against bacterial action whether you want it to do so or not.

In recent years, *BP* has sold two strains of malolactic bacteria. "***Enoferm Alpha***" is said to work successfully down to a pH of 3.1, an alcohol content of 14% by volume, and SO_2 up to 50 ppm. "***MCW***" works down to an even 3.0 pH, alcohol up to 15%, and SO_2 of 30 ppm. This year we're adding a third, "***Bacchus***," which is actually a blend of three strains. The figures for Bacchus are 3.1, 13.5%, and 20 ppm.

Summary of SAP Tests:

By testing these three components in your wine; Sugar, Acid, and pH, the SAP Panel provides the minimum level of information that a serious home winemaker will generally want to have. With this information backing up some good grapes, you should be able to make the best of just about any situation you encounter.

The *SNAP* Panel

In addition to the three tests of the SAP Panel, the SNAP Panel provides detailed information in the area of nutrients. 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.

As far as nutrients are concerned, there are two tests a home winemaker could 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.

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:

Stainless Pump PS35

Low YANC < 125 ppm
Medium YANC 125-225 ppm
High YANC > 225 ppm

We also divide the yeasts into three levels of nutritional need (see table on page 13). These are LOW, MEDIUM AND HIGH-VERY HIGH.

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.

With your yeast choice comes your selection of a nutrient addition program from the following table by first choosing 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, see **Exceptional Fermentations** *next page.*

Yeast Nutrient Needs

YANC LEVEL	*Low*	*Med*	*H-VH*
LOW	**A**	**B**	**E**
MEDIUM	**C**	**D**	**E**
HIGH	**C**	**C**	**D**

Nutrient Addition Programs

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

see SAP next page .

SAP cont. from pg 2.

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.

Helpful Estimating Tools

You will need to base your additions of nutrients on an estimate of your juice yield. It helps to know that Zinfandel and Syrah are likely to give you roughly eight gallons per 100 lbs. of grapes, and Cabernet Sauvignon only five and a half. Most other grapes will yield six and a half to seven gallons. Some variation is inevitable, and should not cause much concern.

DAP is an inexpensive source of inorganic Nitrogen and makes a major contribution to *YAN*. One gram per gallon adds about 50 ppm Nitrogen.

Fermaid K is a complex source of Nitrogen, and also contributes other important vitamins and trace minerals. One gram per gallon adds about 25 ppm Nitrogen.

Exceptional Fermentations

If the sugar level of your must is 25° Brix or higher, yeast and nutrient requirements are much higher than for low to medium sugar musts.

First, make sure to select a yeast strain which has both relatively low nutrient requirements and sufficiently high alcohol tolerance.

Second, either the yeast pitching rate, or the nitrogen level needs to be increased. To increase the yeast, simply add 1 1/2 grams of dried yeast per gallon of juice, instead of the usual one gram.

Alternatively, add an additional gram of ***DAP*** per gallon of juice when 1/3 of the sugar has been fermented with an equal amount of ***Fermaid K.*** This applies to any high sugar must with less than 300 ppm *YANC*.

New Supplies

Guardian Corks

The best synthetic cork. Works best with all floor corkers and can be used with the double lever model. Makes a low cost, quality seal. WC08 (100).....$24.95

Books

Vineyard Simple, by Powers. I wish I had this book back in 1999 when I put in my hobby vineyard! Clear, concise instructions and excellent illustrations for the first-time grape grower.
BK129.....$21.95

Micro Vinification, by Dharmadhikari and Wilker. Great book for moving your winemaking from beginner to intermediate or advanced.
BK20.....$34.95

Wine Grape Varieties in California, UC Extension. Useful for identifying wine grapes or grape vines. Includes good color photos and illustrations of grape vine structure and trellising systems.
BK71.....$30.95

New Plastic Carboys

The Better Bottle PET plastic carboys are a great alternative to glass for storing your wine. Lightweight, unbreakable, non-breathing. These take a #10 rubber stopper.
5 Gallon GL45M.....$24.95
3 Gallon GL13M.....$22.95
(In store price is $3.00 less each)

Glass Wine Thiefs

Very attractive and functional thiefs, come in an angled 24" shape, or a curved 24" shape (to pass between stacked barrels.) TE59 and TE89 respectively $42.95

Our New Pump

We recently upgraded our standard pump to all stainless steel. We are still offering the brass model, for only $295.95, but now the best is available at a reasonable cost. See photo page 2.
PS35.....$395.95

NEW ML Strain"Bacchus"

1 gram package is direct pitch for 5 gallons,
WY40.....$10.95

Summary of SNAP Tests:

SAP tests are included in the SNAP panel. Additional testing for ammonia and assimilable Amino Nitrogen, allow you to make adjustments to nutrients that will enhance the performance of your yeast of choice. Overall improvements in wine quality may include enhanced aromas, deeper flavors and better mouthfeel, as well as a better aftertaste. Not bad for a few grams of nutrient.

The Testing Program

Our SAP and SNAP Panel testing program is a collaboration between ourselves and *Vinquiry*, the commercial wine laboratory in Windsor. Here's how the program works:

(1) Before picking your grapes, you purchase from *BP* either a **SAP** or a **SNAP** testing panel for your wine. We give you a numbered voucher to take to *Vinquiry*, along with a 225 ml. sample bottle for the juice.

(2) When your grapes are crushed, you deliver the voucher and the sample bottle full of clear, settled juice to *Vinquiry at 7795 Bell Road, Windsor, CA 95492.*

(3) Vinquiry sends the results both to *BP* and to you, so you can consult with us, if you feel it necessary, for help in interpreting the results.

Costs

The **SAP** Panel (TE98) is priced at $26.00, and the **SNAP** Panel (TE99) is priced at $72.00. If you are ordering by mail, there is no additional shipping and handling charge when combined with a mail order that meets our minimum free shipping. If ordering separately, the charge for sending the bottle and voucher is $4.00. Vouchers are non-refundable, and must be used the harvest they are purchased. You are responsible for delivering your samples to Vinquiry.

Handling & Shipping Juice

Remember that you are sending juice, and that means it is subject to fermentation. *Vinquiry* must receive your samples before fermentation begins! Unless you are in a position to take your clarified juice to *Vinquiry* yourself, you should do one of two things:

One option is to freeze the juice in the sample jar (with the lid loose). When the sample is solidly frozen, reseal it and ship it via next day air service.

A better alternative is to pasteurize the juice, heating it up to 180°F., keeping it there for 2-5 min. Do not allow it to boil. Cool, freeze, and ship via next day air service. ***Indicate to the folks at Vinquiry how the sample was treated.*** Please call us at 707-544-2520 if you have further questions.

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.

You will need the following:

1. Siphon Hose and Racking Tube
2. Hydrometer (Saccharometer) and Test Jar
3. Acid Testing Kit
4. Sulfite Test Kit
5. Crusher or Stemmer/Crusher
6. Press
7. Corker
8. Thermometer
9. Pressing Bag (optional)
10. Funnel
11. Bottle Filler
12. Small Bucket

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.
3. Extra glass 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.

INGREDIENTS

1. Wine Yeast, (1 gram) per gallon of must or juice.
2. Grapes, (16 lbs.) per gallon of wine.
3. Tartaric Acid as needed.
4. Sulfite as needed.
5. Yeast Food (5 grams per 100 lbs.)
6. Fining Agent, such as Sparkolloid.
7. ML Starter 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 .7%, add enough tartaric acid to bring it to that level.

3 **Test for sugar with your hydrometer.**
Correct any deficiencies by adding enough sugar to bring the reading up to 22% (22 degrees 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_2) level between 50 and 130 parts per million (ppm).

The amount needed will depend on the condition of the grapes, with moldy grapes getting the most concentrated dose.

5 **Unless you have found it necessary to add more than 65 parts per million SO_2 in step 4, yeast should be added immediately.** If using more than 65 parts per million SO_2, you must wait six hours before doing so. Add also 1/4 oz of yeast food for every 100 lbs. of grapes. Your yeast culture (or dry wine yeast) should be spread somewhat evenly across the surface of the crushed grapes (now called "must"). Stir it in thoroughly after eight to twelve hours.

6 **The must should be stirred twice a day until fermentation begins.** The beginning of fermentation will be obvious, as the grape skins will be forced to the surface, forming a solid layer (called a "cap").

Once the cap has formed, it should be pushed or "punched" back down into the fermenting juice twice a day until it is ready to be pressed. You may use your hand or a stainless steel punch-down tool to push down the cap.

7 **At some point, while fermenting on the skins, the must temperature should be allowed to reach as high as 90° F., at least briefly.** This will help extract color from the skins. The rest of skin fermentation should take place at 60-75°F.

8 **Add ML starter** (optional) to the wine about half to two thirds through fermentation. You may also add this at the end of fermentation if you have the Enoferm Alpha or Bacchus strains of bacteria.

9 **When the desired level of color has been achieved** (usually from five to fourteen days of active fermentation) **your wine should be pressed to separate the wine from the skins.** Funnel the wine into secondary fermentors, filling them 3/4 full.

Winemaking Equipment from crush to bottle.

Crushing and stemming your grapes.

Time Line for Red Wine Fermentation.....

Active Yeast Fermentation in Primary Fermentors	Pressed wine moved to Secondary Fermentors, stored 3/4 full	Rack off gross lees and top up containers	Rack off lees again and sulfite, test for ML, store in cool place for aging, topping and sulfiting every couple months. Add Oakboys	Racking off lees, adjusting sulfite, fining or filtering, or just topping up	Rack to bottling container, adjust flavor with oak extract, add sulfite, cork and store. ...Usually in time for next harvest.
...5 to 14 days	...1 to 2 weeks	...1 month	...4 to 6 months	...1 to 3 months	

Attach a fermentation lock, and allow the containers to set until all visible signs of fermentation have ceased (at least a week or as long as two weeks.)

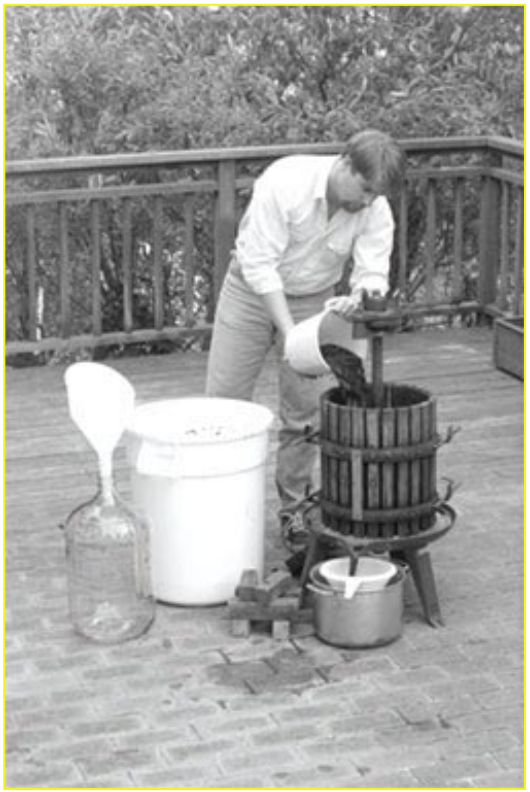
10 **At the end of fermentation, when no more bubbles are coming up through the lock, rack the wine off the gross lees.**
Place wine in storage containers (glass, stainless steel, or oak). Top up the containers and let stand for a month.

11 **One month later, rack the wine away from the lees again,** add sulfite to about 20 ppm, and keep in topped up containers for four to six months. You must top up barrels, from respiration, and visible inspect carboys. This is a good time to add oakboys or oak chips. Add sulfite every few months. If you innoculated for ML, test the wine to be sure it is complete.

12 **Around May or June of the following year, you might want to fine the wine** for clarity (following the instructions supplied with your fining agent.) **Optional treatment** would be the more aggressive clarification via filtration. If the ML fermentation hasn't finished, keep the sulfite level below 20 ppm and warm the storage containers for a month to encourage completion.

13 **By late July or August** (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, cork them, and lay them down for bottle aging.**
At bottling time, adjust the sulfite to at least 30 ppm, if you plan to store the wine. If possible store your filled bottles on their sides. Otherwise, store them with the corks down. Most red wines will benefit from at least one year's additional aging.

See *"Procedures"* cont. 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. Keep the grapes as cool as possible.

2 **Test for total acidity.** If the acidity is less than .7%, 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% (20 ° brix) for most varieties (22% for Sauvignon Blanc and Chardonnay.)

4 **When these tests and corrections have been completed, the must should be sulfited.** Estimating that you will get roughly a gallon of juice from every 16 lbs. of grapes (varies with the variety), add enough sulfite to give you a sulfur dioxide (SO_2) level between 50 and 120 parts per million (ppm.).

The amount needed will depend on the condition of the grapes, with moldy grapes getting the most concentrated dose.

5 **Stir in pectic enzyme at the rate of one ounce to every 200 lbs. of grapes.** Place the crushed grapes in a covered container to stand from 2 to 18 hours (longer for the "big, less fruity" varieties. 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 into a glass, stainless steel, or oak fermentor which is filled no more than 3/4 full.** Yeast should be added, a fermentation lock attached to the fermentor, and fermentation allowed to procede. Add also a 1/4 oz. of yeast food for every 5 gallons of juice.

8 **When visible signs of fermentation end, the wine must be racked off the lees,** sulfited, and placed in topped up storage containers (glass, stainless, or oak). Let stand for a month.

9 Rack off the lees and fine. Add sulfite and store stopped full in a cool location.

10 **In February or March, rack and sulfite the wine again, placing it back in topped up containers.** This is a good time to filter the wine if you are going to do so.

11 Add Oakboy or oak extract now.

In late April or early May, 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_2 is needed to bring the level to 30-35 parts per million.

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. Stabilizer per gallon to kill any remaining yeast.

Light, fruity, white wines may be enjoyed within two months after bottling.

Time Line for White Wine Fermentation.....

Juice Fermentation with Yeast in Primary Fermentors 3/4 full	Rack finished wine to clean Fermentors, topped full. Settle out lees. Sulfite	Rack off lees and fine or filter. Add sulfite and keep cool. Add Oakboy.	Rack to bottling container, add sulfite, fill and cork bottles.
...1 to 2 weeks	...1 month	...2 to 4 months	...In the spring

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

Fruit Wine Procedures

Use the following procedures for 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 and other ingredients except Sodium Bisulfite and Yeast and mix well.

4. Add 5 tablespoons of Sodium Bisulfite stock solution and mix well. (See pg. 9 for stock sulfite recipe.)

5. Cover with loose plastic sheet or lid and allow to cool and dissipate the sulfite for 12 hours or overnight.

6. Stir in the Yeast.

7. Once fermentation begins, stir or push the pulp down into the liquid twice a day.

8. 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 or it will foam out and spill.

9. When bubbles are no longer actively rising through the wine, siphon the wine back together into one full carboy. Fine with Sparkolloid (see pg. 10 for mixing Sparkolloid), add a teaspoon per gallon of sulfite stock solution and let set for four weeks under the airlock.

10. Rack (siphon) away from the sediment, top full with a neutral wine and leave under airlock for 3 weeks up to 4 months.

11. For bottling, rack into an open container, and add 1 1/2 teaspoons sulfite solution per gallon. Sweeten with sugar syrup to taste and add 1/2 teaspoon Wine Stabilizer per gallon.

12. Siphon into bottles, cork, and set aside to age for at least 3 weeks.

Recipes

Blackberry or Loganberry Wine

20 lbs. Blackberries or
12 1/2 lbs. Loganberries
12 lbs. Corn Sugar
5 gallons Water
2 1/2 tsp. Yeast Nutrient
2 1/2 tsp. Pectic Enzyme
5 Tbl. stock Sodium Bisulfite solution (initially)
9 tsp. Tartaric Acid
5 grams Epernay II Wine Yeast

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

Blueberry Wine

15 lbs. Blueberries
12 lbs. Corn Sugar
5 gallons Water
2 1/2 tsp. Yeast Nutrient
2 1/2 tsp. Pectic Enzyme
5 Tbl. stock Sodium Bisulfite solution (initially)
9 tsp. Tartaric Acid
5 grams Epernay II Wine Yeast

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

Raspberry Wine

15 lbs. Raspberries
12 lbs. Corn Sugar
5 gallons Water
2 1/2 tsp. Yeast Nutrient
2 1/2 tsp. Pectic Enzyme
5 Tbl. stock Sodium Bisulfite solution (initially)
9 tsp. Tartaric Acid
1 1/4 tsp. Grape Tannin
5 grams Epernay II Wine Yeast

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

Cherry Wine

22 1/2 lbs. Sweet Cherries or 15 lbs. Sour Cherries
12 lbs. Corn Sugar
5 gallons Water
2 1/2 tsp. Yeast Nutrient
2 1/2 tsp. Pectic Enzyme
5 Tbl. stock Sodium Bisulfite solution (initially)
9 tsp. Tartaric Acid
(Omit Acid with Sour Cherries)
1 tsp. Grape Tannin
5 grams Epernay II Wine Yeast
Original Brix: 20
Total Acid: .6-.65%

Plum Wine

15 lbs. pitted Plums
12 lbs. Corn Sugar
5 gallons Water
2 1/2 tsp. Yeast Nutrient
2 1/2 tsp. Pectic Enzyme
5 Tbl. stock Sodium Bisulfite solution (initially)
7 tsp. Tartaric Acid
5 grams Epernay II Wine Yeast

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

Cranberry Wine

15 lbs. Cranberries
1 lb. Raisins
12 lbs. Corn Sugar
5 gallons Water
2 1/2 tsp. Yeast Nutrient
2 1/2 tsp. Pectic Enzyme
5 Tbl. stock Sodium Bisulfite solution (initially)
5 grams Epernay II Wine Yeast

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

Tropical Fruit Wine

8 lbs. Chopped Pineapple fruit
3 lbs. Chopped Mango fruit
4 lbs. Banana fruit, sliced
12 lbs. Corn Sugar
5 gallons Water
2 1/2 tsp. Yeast Nutrient
2 1/2 tsp. Pectic Enzyme
5 Tbl. stock Sodium Bisulfite solution (initially)
5 grams Epernay II Wine Yeast

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

Apricot Wine

17 1/2 lbs. Apricots
12 lbs. Corn Sugar
5 gallons Water
2 1/2 tsp. Yeast Nutrient
2 1/2 tsp. Pectic Enzyme
5 Tbl. stock Sodium Bisulfite solution (initially)
9 tsp. Tartaric Acid
1 tsp. Grape Tannin
5 grams Epernay II Wine Yeast

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

Sulfite Procedures

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 (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.

By adding minute and carefully measured amounts of Sodium (or Potassium) Metabisulfite at selected stages during the winemaking process, wine's natural pattern of progression past the wine stage, and toward spoilage, can be retarded. An additional benefit is that sulfur dioxide is an effective antioxidant.

When you add sulfite to a wine, not all of it remains free to fight the good fight against microbes. Only "free" molecular SO_2 does that. Some sulfur dioxide becomes "bound". In other words, it reacts with compounds in the wine to form other compounds, and therefore, it's kept on the sidelines, unable to do battle where you need it most. It's important to test for free SO_2, so that you may accurately add sulfite, rather than haphazardly dropping in a few teaspoons.

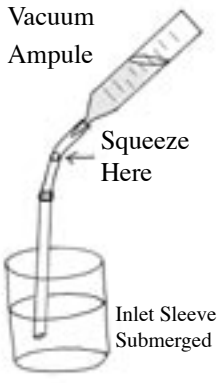
Our directions that follow explain two simple methods for using the Ripper Method to test the free SO_2.

The Titret® Kit takes place inside of a glass ampule. These vacuum sealed, graduated ampules, come with an inlet bead-valve that allows you to titrate slowly by squeezing the valve. You have to keep the inlet tube submerged or the vacuum will be broken by air entering. *The kit instructions recommend a holder that is no longer available, and which made the test more difficult to execute.*

The Acidometer® Kit by Vinoferm also uses the Ripper Method. Using the graduated cylinder and a solution that combines starch and iodine, (the Iodic solution), titration is a simple matter of pipeting in the iodic solution until the color end point is achieved.

The Titret Kit

Begin the test by inserting the loose plastic inlet sleeve over the tapered end of the glass ampule. Bend the plastic sleeve 90 degrees to break the tip of the ampule. As you do this hold on tightly at the junction of the sleeve and the ampule to prevent the sleeve from sliding off. Next locate the glass bead/valve inside the plastic inlet sleeve. Squeeze this bead to open the passageway for the vacuum in the ampule to pull wine inside the tube. As you squeeze, a color change will occur turning the sample inside the tube dark blue/black. Continue squeezing until a white wine turns light pink or clear. In the case of red wines, it will return to the original sample color. The titration is finished at this point and the ampule is stood up on its flat end. Let the contents of the ampule settle and then read the liquid level at the graduated line of the vial. This is the amount of free SO_2 present in the wine.



The Acidometer Kit

The Acidometer method uses the graduated cylinder to hold the sample wine or juice, while the Iodic solution is pipeted in to achieve a color that is blue for white wines and a dark bluish red (blood red) for red wines. Once the color change is observed, you multiply the reading from the graduated cylinder by 10 to get the free SO_2 number. It is as accurate an any winery Ripper.

This kit may be the best method yet for red wine testing at home. But, the color transition is also difficult to see, even winery lab techs need time and experience to accurately judge the color change. Follow these hints and practice a few times, till results are consistent. To reduce the possibility of a false high reading, you must quickly reach the titration point because the iodine solution will react over time with the bound form of SO_2 . The light source is also important to accurately observe the color change. Use a bright white background with a high intensity lamp. Also use a 10 ml. graduated pipet, to fill the cylinder and stopper the cylinder with a solid #2 rubber stopper, for mixing in the iodic solution. Iodine will stain your fingers and clothes, so use with caution.

The false high reading from the Ripper method can be as high as 10 ppm, so be sure to do your test frequently enough that the additions of sulfite will always maintain some free SO_2 , thus protecting the wine from bacterial spoilage or oxidation.

Scheduling SO_2 Additions

Sulfite additions can vary somewhat depending on the condition of the fruit and the quality of the storage conditions. Initial sulfite may be added at 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,

Molecular SO_2 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

might require twice that amount. Under average to good conditions the information that follows should keep about 20 to 30 ppm of free SO_2 available throughout the wine's cycle of production through bottling. Add sulfite for white wines at every racking and at least two to three times for red wines.

Schedule these additions as you rack your wine to remove it from gross lees and possible fining agents, and then after racking in early spring. The whites may be ready for bottling at this time. Red wines may require a fourth racking before bottling in the late summer.

At bottling time, you should test your SO_2 level, and adjust to 30-35 ppm in the wine. Wines that will be consumed within three months of bottling will not normally need this sulfite addition at bottling time as long as they are stored in a cool place until served.

pH and SO_2

It is generally recognized that only a small amount of molecular SO_2 (.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_2 is needed in order to provide that amount, and that's why both pH and SO_2 need to be tested.

Regard the *Table of Molecular SO_2* to the left. The amount of free SO_2 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_2, or slightly more, present in the wine when it is bottled.

Above pH 3.5, you will notice that the amounts of free sulfur dioxide required become quite high. Adding enough to create an appropriate level may raise the total SO_2 high enough to have a negative effect on the wine's flavor. It is best not to approach the problem that way. Instead, the pH should be lowered early in the life of the wine by the addition of Tartaric or Phosphoric Acid.

Sources of SO_2

SO_2 is available as Campden tablets, effervescent, Efferbaktol tablets, 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.

New for home winemakers are 2 gram Efferbaktol® tablets that deliver 528 ppm per gallon (9 ppm per 55 gallon barrel) and effervesce to disperse evenly in the container. They are perfect for working in barrels, but pricey and hard to divide to accurately dose 5 gallon carboys. Potassium Metabisulfite should be made into a liquid preparation before use, to adequetely disperse it, and because it is very potent. This is also the least expensive method.

Make a strong solution if your additions are to larger vessels, and a weak solution for carboys.

Preparing a Strong 10% Stock Solution

Using a gram scale, weigh out 100 grams of Potassium Metabisulfite and dissolve in 1 Liter of water. Tightly stopper and store labeled: "poison'! For additions of sulfite in large lots, you will prefer to use the information provided in the following table. Just make sure that your 10% stock solution is fresh and measured carefully.

10% Solution of Metabisulfite

(Desired final SO_2 concentration in ppm.)

Must/Wine	10	20	25	30	40	50	75
(gallons)	*(Add milliters of 10% solution)*						
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
50	32.9	65.7	82.1	98.6	131.4	154.3	246.4

Preparing a Weak 3% Stock Solution

Dissolve four ounces of sodium or potassium metabisulfite powder, (a package size readily available in retail stores) in one gallon of warm water. This is weaker than the 10% solution given above, in fact it is about a 3% solution.

At this concentration, the solution is still quite strong and should be clearly labeled and kept out of reach of children. This stock solution will remain at relatively full strength for up to six months if the jug is kept capped.

3% Solution of Metabisulfite

(Desired final SO_2 concentration in ppm.)

Must/Wine	10	21	33	43	65
(gallons)	*(Add tablespoons of 3% solution)*				
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_2

If you ever need to lower your SO_2 because you doubled the dosage or made some other wildly uncareful calculation, do the following: for every 10 ppm free SO_2 you want to remove, add 1 ml. of 3% hydrogen peroxide per gallon of wine. This is an oxidative reaction that occurs immediately. Us only fresh 3% Hydrogen Peroxide, available at the drugstore. Use this method to remove up to 100 ppm, more than this and the wine will oxidize and lose its flavor.

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

Fining Procedures

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

Either may be used with success in most situations, 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.

Simmer 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 one ounce 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 thoroughly stir roughly 1/4 cup into each five gallons of wine. Rack away from the lees in about 10-14 days

To remove oxidation or reduce bitterness, fine with Polyclar. **To soften tannins**, use either egg whites or gelatin, followed by an all purpose fining agent such as Sparkolloid. Add Metabisulfite when adding a fining agent, to prevent excess oxidation during the mechanical stirring or pumping needed to blend in the agent.

Fining Agent	Rate of Use	Best Used For	Preparation	When
Sparkolloid	5 - 7 grams/ 5 gallons	All wines	Heat slurry of 1 - 2 cups water with Sparkolloid, simmer 15 minutes and add to wine stirring.	After fermented, three weeks before a racking.
Bentonite	10-40 grams/ 5 gallons	White wines	Slurry with juice or water in blender.	Add to must prior to fermentation.
Isinglass	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.	Prior to a racking.
Gelatin	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.
Egg Whites	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 at least a month before bottling.
Polyclar (Divergan F)	2.5-12.5 grams/ 5 gallons	White wines to remove oxidation reduce bitterness.	Thorough mixing	Before, during or after fermentation.
Non-Fat Milk	250 ml/5 gallons	White wines to reduce bitterness, adds sweetness.	Follow with Bentonite Fining	Rack after 4 days A month prior to bottling.

Sugar, Acid and pH Testing Procedures

SUGAR

There are two methods to measure the percent sugar (Brix): hydrometry and refractometry. A hydrometer will also be used to track the progress of fermentation. Note that a refractometer will not read accurately after fermentation begins.

You must establish a routine for sampling fruit from various parts of the vineyard, due to variations in conditions or microclimates throughout the vineyard. So be sure to take grapes from clusters that represent the true mix of ripening your vineyard is experiencing. If you have a lot of area, divide it into a quadrant and block off the areas that you will sample. Then either sample and record to a notebook, averaging the total sugar from these results, or pick grapes from all over into a bucket, bring this back to be crushed together, mixing all the grapes you have collected and then use this juice to create a test sample.

Ripe grapes will reach a Brix of 21 percent and above for white wines and 23 percent and above for red wines. Overly ripened grapes are just as troublesome as underipened grapes, so it is important to monitor the maturing process closely.

Testing with a hydrometer.

Crush your collection of grapes and extract by straining a volume of juice sufficient to float a hydrometer in its test jar, or appoximately, 4 oz. of juice. Pour the juice into the test jar and twirl the hydrometer in the juice to release any CO_2 gases in solution. These tiny bubbles can stick to the hydrometer and cause it to lift, increasing the chance of an erroneous reading. Now you will let the hydrometer settle into the liquid, reading the paper scale where the juice contacts it at its surface. (For accuracy, read the level at the liquid level, not the interface of liquid on the hydrometer, as this point is actually slightly higher than the surrounding liquid owing to an increase of pressure from the tool against the liquid.) Measure from the scale what total of sugar is present. There are usually three scales on a hydrometer. Measure fruit and wine juice from the Brix or Balling scale which is equivalent to percent sugar.

Testing with a refractometer.

Alternately, and especially for those of you growing your own grapes, a refractometer will be used to measure sugar in the field. From the juice of a single grape, a sugar reading can be taken along with the readings from other representative grapes in the vineyard to yield the average percent of sugar. The following standardizations are useful when using a refractometer.

First, standardize the refractometer against the zero point on the prism by using a drop of distilled water and looking through the eyepiece in direct light to see the sugar scale in the backdrop. There is a set screw on the refractometer that can be adjusted if this reading is not zero. If you can't find the screw refer to your instruction manual.

The refractometer, and sampling tube.

Next, check the refraction of a standard sugar solution. Place a drop of 20° Brix sugar solution on the prism and read the percent sugar against the scale in the background. If it is not reading 20, then adjust the set screw once again. Now your refractometer is ready to use with fruit. An ATC (for Automatic Temperature Compensating) Refractometer will compensate for temperature changes, but costs more. However, if you have a non-compensating refractometer, there are plenty of books that carry the compensation scale. Otherwise make sure the sample tested is about 60° Farenheit for the most accurate reading.

ACIDITY

The "TA" or total acidity of grapes is as important to the flavor balance of wine as the grape sugar content. The balance of flavors produced in perfectly ripened fruit makes not only the best flavored wine, but the least troublesome wine to produce. Therefore tracking changes to the TA in ripening fruit is as important as monitoring the change in sugar.

Immature fruit is usually excessively acidic, burning and even acrid tasting while overripe fruit tastes flabby and soft, lacking the sparkle of crisp fruit. Fortunately, as ripening proceeds, and sugar increases, acids, particularly malic, are respiring and thus decreasing in intensity. At the point where both sugar and acid are balanced for the wine style, the harvest can commence.

Ideally, the total acidity of grapes would not exceed .9% and also would not be less than .5%. Excessively high or low acids can be corrected, but never provide the exact flavor of perfectly ripe fruit.

Using the Country Wines Acid Test Kit

To run an acid test with this kit, measure 10 ml. of Juice or Wine into the sample jar and add 3 or 4 drops of Phenolphthalein, the indicator solution. Swirl to mix. Rinse out the syringe/pipette with distilled water and refill with 10 ml. of the Sodium Hydroxide neutralizer. Add a drop to the sample one at a time, swirling the mix as you add it. Continue adding the neutralizer until the sample turns a distinct pink, that holds for longer than 15 seconds.To do this test,

Acidity continued next page.

From Acidity previous page.

choose a well lighted location with a white background.

Also keep a sample of the untreated juice, of the same volume, in a clear cup next to the test sample. You will more quickly see the marked color change in this way. Red wine pigments will alter the pink color to a gray tone or even darker. Keep track of how many milliliters of neutralizer are added to the sample. However much you use will be multiplied by a factor that accounts for the particular strength of the neutralizer used. The kit we sell uses a neutralizer that is .1N Sodium Hydroxide, which is multiplied by a factor of .075 to achieve the final reading.

You may wish to verify your results by using a pH meter. Full titration will be achieved when the neutralizer additions raise the pH to 8.2. See the use of pH instructions that follow for how to measure pH.

Using the Vinoferm Acidometer Acid Test Kit

A "new" kit has returned to the market that allows home winemakers to accurately and quickly measure TA. The Acidometer, by Vinoferm consists of a graduated glass cylinder, a 100 ml. bottle of Blue Indicating Solution and a packet of litmus paper. This kit is particularly good at testing red wines.

It is easy and simple to use. Fill the cylinder with wine or juice to the 0 mark. (Note: if using a pipete this is 10 ml. of solution.) Add the indicating solution drop by drop until the solution turns from green to blue in white wines, or red to purple in red wines. The litmus paper confirms that all the acid is neutralized. Then the TA is read directly from the fill line of the cylinder. No further calculation is necessay. In our tests, using several wines, the results compared favorable with laboratory anaylsis. In three samples, fresh juice, dry white wine, and a dry red wine the results were almost identical. In a dessert wine with 10% residual sugar, the kit erred on the low side by .3 grams/Liter, 6.2 instead of the 6.5 the Lab returned.

Our friend and former employee, Jeff Sternfeld, who ran these tests at a wine lab for us recommends three additional components to make the kit more user friendly. Rather than pouring in the 10 ml. sample, get a 10 ml. pipet to accurately set up the starting point. Use a #2 rubber stopper to close the cylinder when dispersing the neutralizer in the cylinder, it's cleaner and keeps the sample uncontaminated. Last, use a bright light, even a high intensity desk lamp, to better see the color change in red wines.

pH

Although Total Acidity is the best measure of a wine's flavor balance, pH is really the best measure of a wine's stability. The two scales are not correlative because the acids in grapes are weak acids and also because of the presence of potassium ions. Most wines have an acceptable pH ranging from 3.1 to 3.6. The problems associated with too low pH are usually poor quality fermentations, especially Malolactic fermentation. In addition, high pH indicates a wine susceptable to bacterial spoilage, particularly at a pH above 3.7.

Testing for pH

pH can be tested either by strips, or by a pH meter. A pH meter is more expensive, and more difficult to maintain and use than strips are, but it is absolutely required for accuracy.

Always remember that the lower the pH, the higher the acidity. Thus, a wine with a pH of 3.2 has more natural stability against bacterial spoilage than a wine with a pH of 3.4 or 3.5, and much more than a wine with a pH of 3.7 or 3.8.

To test your juice or wine with a pH meter, first make sure you are working with a degassed sample. The presence of CO_2, as is also the case with testing TA, interferes with the test results. Prepare a sample by boiling it briefly and adding deionized water back to the original volume. Or alternatively, stir the wine or juice and let it stand for an hour, which will work if no active fermentation is taking place.

Next calibrate your meter by following the manufacturer's directions, or by making up a standard buffer preparation to pH4 and another to pH7. Make a fresh solution after several uses to avoid contaminating and shifting the pH of the standard. Let the electrode stand in the pH7 buffer for several minutes and then follow the meter instructions to calibrate that sample. Repeat for pH4 and then repeat with the juice or wine. Post your readings to a log. You may find that it will be useful later when doing SO_2 additions to preserve the wine. *Note: if you leave your meter unused for several months, it may not be calibratable*. You can avoid this, by routinely soaking the electrode in buffer pH4. Place a cotton ball soaked in buffer pH4 inside the cap for storage.

Note: Make your own buffer solution of 3.56 pH by mixing 50 ml of deionized water with one teaspoon of Potassium Bitartrate. Mix well and then calibrate the meter.

Yeast Recommendations

Locate your grape variety or style, read about the yeast characteristics for the recommended strain(s). Remember that the option is always to use what is freshest and available to you, if all of these strains are not in supply. We try to stock all of these during harvest. See page 18, for instructions on rehydrating dry yeast. See pages 2-3 for Nutrient programs for yeast.

Choose a Yeast: To find fermentation specifics, read down	**Assmanshausen**	**Beaujolais 71B**	**Brunello BM45**	**CSM**	**Epernay 2**	**French Red** (BDX)	**K-1**	**M-2**	**Montrachet**	**P. Champagne**	**Prise de Mousse**	**Rhone L2226**	**RC212**	**Steinberger**	**Simi White**	**Wadenswill 46**
Varietal	Pinot Noir	Zin, Syrah	Sangiovese	Bordeaux	Zinfandel	Bordeaux	White, Red	Chardonnay Cabernet	Chardonnay Cabernet	Chardonnay Cabernet	White, Red	Rhone	Pinot Noir	German	Chardonnay	Whites
Fruit Wines	YES	YES			YES			YES			YES	YES	YES	YES		
Enhances Fruit		YES			YES			YES			YES	YES	YES	YES	YES	
Enhances Mouthfeel	YES							YES							YES	
Sensory Effect *	EVC	Estery	EVC	EVC	EVC	EVC	Neutral	Estery	Complex	Neutral	Neutral	EVC	EVC	EVC	Estery	EVC
Reduces Vegetal Character	YES			YES	YES			YES							YES	
Stabilizes Color	YES			YES		YES						YES				
Cold tolerant					YES						YES			YES		YES
Use to Restart							GOOD			GOOD	GOOD	GOOD				GOOD
Temperature Range F.	68-86	59-86	64-82	59-89	50-80	64-86	50-95	59-86	59-85	59-80	50-86	59-82	68-86	40-70	59-85	50-86
Vigor	Slow	Average	Average	Average	Average	Average	Fast	Fast	Average	Fast	Fast	Fast	Average	Slow	Slow	Fast
Alcohol Tolerance %	15	14	16	14	15	16	18	16	16	17	18	18	16	14	14	14
High Alcohol Tolerant			YES			YES		YES	YES	YES	YES	YES	YES			
Nutritional Need ****	Medium	LOW	Very High	High	Medium	High	High	Medium	Very High	Medium	LOW	High	High	LOW	Medium	Medium
Reaction to Oxygen * **				LOW			LOW				High	Medium				
Comments	Enhances spiciness	Fruit wines	Extended Macerations	Alternate to BDX	Can be stopped	Ideal Fermentor	Vigorous	Complex	High H_2S Formation	Vigorous	Late Harvest	Late Harvest	Good Color	Easy to stop	Mouthfeel	Late Harvest

Notes to Text

* Sensory Effect: EVC = Enhances Varietal Character, Estery + Enhances Fruitiness, Neutral does not enhance these characteristics.

** See pages 2 - 3 for Nutrient recommendations, especially for Medium and High Categories.

*** Also try additions of oxygen with active stirring during fermentation to yeasts that react to oxygen additions.

For Great Oak Flavor, Try OakBoy™ or Chain of Oak™

OakBoy™, is a 15" long piece of pure toasted French or American Oak, planed on all four sides, and grooved longitudinally, for maximum surface exposure. The shape and size of this wooden stick allows for easy treatment of wine stored in glass carboys. It gives a gentle, slow extraction of oak flavor and does an especially good job of accenting oak aromas. This treatment very closely duplicates the activity of wine in a new barrel.

OakBoy flavor choices are: French Medium toast, French Dark toast, American Medium toast and American Dark toast. We are recommending the addition of 1 to 2 pieces of wood per carboy, with a 1 to 2 month contact period. The longer contact period will increase mouthfeel and heighten aromas. And best of all, you can remove the stave from the carboy or rack away from it. Manufactured by Innerstave, Oakboy is available in a 6 pack, and has a long shelf life. Need only a few staves this year? The rest will be usable next year. B80, American Medium is $21.95 and B82 American Dark is $22.95. B81, French Medium is $24.95 and B83 French Dark is $25.95.

For use with full size 60 gallon barrels, which have lost their oak-i-ness, we are also selling another Innerstave innovation, called Chain of Oak which as the name implies,are separate oak staves that tie together with nylon ties, which then folds into a barrel. The bung opening must be at least 2". These chains are sold in packages of 17 staves, and can be used in smaller barrels if the bung opening is large enough by using less than all 17 staves. B78 Chain of Oak, American Medium is $45.95, B79 Chain of Oak, American Dark is $49.95. B74 Chain of Oak French Medium is $49.95 and B75 Chain of Oak French Dark is $54.95.

Homemade Oak Flavoring

Homemade Oak Extract is a sound alternative to barrel storage. The marriage of flavors takes place in glass or stainless steel storage containers instead of barrels and therefore needs to be racked at least as frequently as a barrel to slowly introduce oxygen. Other than maintaining that program, the effects of oak flavor and aroma will very nearly match the tastes imparted from storage in oak cooperage. To make up your extract you will need a few supplies, as well as the oak chips.

You will need:

8 oz. Oak Chips, Plain or Toasted
25 oz. Vodka (or Everclear)
2 Quart Mason Jars with Lids
1 yd. Cheesecloth
Small Funnel
100 ml Graduated Cylinder
.5 ml Pipet or Syringe
5 Clean Wine Glasses

To make the extract, fill one Mason jar with the oak chips and fill the jar completely with vodka. Cover and let stand for 24 hours. Line a funnel with several layers of folded cheesecloth and place over the second Mason jar. Pour in the oak and vodka mixture, stand until well drained. You will normally collect approximately 10 to 12 oz. of Liquid Oak Extract. You may further clarify this liquid by straining a second time through a paper coffee filter. Pour the extract into a clean bottle and store until needed.

Trial additions: **measure 100 ml of wine into the graduated cylinder** and add .5 ml liquid oak extract. Pour 1 oz. of this flavored wine into a wine glass and mark .5 ml. Add 1 oz. of wine to the graduated cylinder. Add another .5 ml liquid oak extract. Pour 1 oz. of this second flavored wine into a second wine glass and mark .85 ml. Add 1 oz. of wine to the graduated cylinder and repeat this process 3 more times to give you five wine glasses marked .5, .85, 1.1, 1.28, and 1.41 ml. Now taste and smell these different wines until you decide which amount is the most desirable.

Now, **to treat five gallons of wine**, multiply your favorite amount (in ml) by 188. For example: your favorite sample wine glass holds is the sample with 1.28 ml added. Multiply 1.28 x 188 = 241 ml. Add this extract per 5 gallons of wine you are flavoring. Taste it now and again in three weeks. The wine will appear to have lost some of its fruitier flavor and aromatic components, but after several weeks, the extract will "marry" to the wine and the fruit will reappear. We recommend you do the extract addition several weeks before bottling, in case you want to increase the amount of oak by making a second addition.

Sample	*Dosage*	*Add to 5 gallons*
Glass #1	.50 ml	x 188 = 94 ml.
Glass #2	.85 ml	x 188 = 160 ml.
Glass #3	1.10 ml	x 188 = 207 ml.
Glass #4	1.28 ml	x 188 = 241 ml.
Glass #5	1.41 ml	x 188 = 265 ml.

A Glossary of Wine Nutrients

Yeast Food
Use at the rate of 1 oz. per 32 gallons prior to fermentation and prior to ML. Provides a complete and balanced food for yeast. Use in conjunction with DAP for additional nitrogen with difficult wines such as late harvest, stressed grapes or wines to go through malolactic fermentation. Contains ammonia salts, amino acids, sterols, unsaturated fatty acids, yeast hulls, vitamins, magnesium and pantothenic acid.

Diammonium Phosphate - DAP
Use at the rate of 1 oz. per 32 gallons to raise the level of free nitrogen for a healthy fermentation. Use in conjunction with Fermaid K for best results. Contains only ammonium phosphate.

Autolyzed Yeast
Use at the rate of 1 oz. per 32 gallons of juice or must. Add to restart sluggish and stuck fermentations. Add during fermentation and may be repeated. Contains pure dried yeast providing amino nitrogen, B vitamins and yeast hulls from autolyzed yeast.

Yeast Hulls
Use this product to 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 use in over-clarified juice and to absorb toxic compounds. (Use rate is also 1 oz. per 32 gallons)

Barrel Care Procedures

Fresh oak barrels are about as sanitary as it gets because the wood has been heated over direct fire in order to bend the staves to shape and is often additionally toasted for flavor accents such as vanilla and caramel. When a barrel is new, it must be swelled with water to check for leaks. Oftentimes, leaks will seal themselves in only a few hours or days. However, the water should be refilled until the leaking stops, and it should be changed every day to prevent staling or molding and creating an off flavor.

To provide for an acidic environment **for receiving the new wine**, we recommend an addition of 2 teaspoons of citric acid for every (5) five gallons of barrel being treated. Add this as soon as the barrel is finished soaking. Make sure the barrel is tight and then drain and fill with wine.

After a barrel is used for wine storage, additional measures of cleaning and sanitation must be followed. At each racking, rinse out the barrel with water, to remove debris, and **rerinse the barrel with an acid wash**. Again make up a solution of water with 2 teaspoons of Citric Acid for every 5 gallons. You can just use a 5 gallon amount to swash around inside the barrel for 5 or 10 minutes and then drain it and fill with your wine. The small residual amounts of acidity left in the wood are not harmful just so long as you don't overdo it.

Finally, **when the time comes to store the barrel**, it is best to **wash out the inside with a cleaning compound**, instead of only water. You want to remove the organic material left from the wine that penetrated into the wood surface. To do this you will **make up a solution of Proxy-Clean®, which is a peroxide based cleaner**. Mix 4 oz. of Proxyclean for every 15 gallons. Mix this into a small amount of water and funnel this into the barrel along with enough water to fill the barrel. Soak for a minimum of 20 minutes, up to a day to remove stains and penetrate the wood for cleaning.

Follow up the cleaner with several flushes of water and then **reacidify the barrel** with a soaking of water and citric acid, again using 2 teaspoons acid to 5 gallons water.

For storage, drain this solution and **burn 1/2 to 1 full sulfur wick**, and bung tight to sterilize the barrel. This wick treatment will need to be repeated every two weeks until a flashlight does not reflect off water left in the barrel. The dry barrel can now be bunged and left in a dry storage area.

An **alternative** to the wick treatment for sanitation, is to k**eep the barrel filled with a solution of water and citric acid, to which potassium or sodium metabisulfite has been added**. This solution releases the gas sulfur dioxide, the same as burning the sulfur wick. Add 4 teaspoons of sulfite powder with 2 teaspoons of citric acid for every 15 gallons of water. Bung up and keep full of water until needed. Use this option when the barrel will be refilled within a month or two of draining.

You will have to **rinse out the residue of either the wick or the sulfite treatment with plain water**.

#30 Basket Press

2004 Winemaking Supplies Catalog

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	$265.00
WE03	#30	12"	17"	7	$325.00
WE04	#35	14"	19"	12	$395.00
WE05	#40	16"	21"	18	$475.00
WE06	#45	18"	24"	25	$550.00
WE07	#50	20"	26"	34	$650.00

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"	$1595.00
WE51	Piston, manual Hydraulic Press on wheels #60	24" x 30"	$1895.00

#50 Piston Press

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	#42	17"	23"	20	$1095.00
WE46	#54 with wheels	21"	28"	42	$1995.00

WE13 Roller Crusher

Crushers and Stemmer/Crushers

Crushers: Manual rollers crush the grapes by simply turning the flywheel supplied. The rollers gently burst the whole grape.

Dimensions of Bin: 21" x 25"

WE12	Paint finish	$225.00
WE13	With all stainless hopper *(Shown right.)*	$275.00

Stemmer/Crushers: 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 Bin: 18" x 31"

WE14	Manual, paint grade stemmer/crusher	$425.00
WE15	Manual, stainless stemmer/crusher	$525.00
WE16	Electric 110V, paint grade stemmer/crusher *(Shown middle right.)*	$625.00
WE17	Electric 110V, stainless steel stemmer/crusher	$775.00
WE22	Electric 110V, paint grade stemmer/crusher with screw feed and extended hopper *(Dimensions of Bin: 18" x 35")*	$725.00
WE18	Electric 110V, stainless stemmer/crusher with screw feed and extended hopper	$875.00
WE25	Electric 110V, **ALL** stainless stemmer/crusher with screw feed and extended hopper *(Shown bottom right)*	$1095.00
WE20	Support stand for above stemmer/crushers	$250.00

WE16 Stemmer/Crusher

WE25 Stemmer/Crusher

Large Storage Tanks

Variable Capacity Stainless Wine Tanks, come with a floating lid, pressure relief valve and drain.

WE43	100 Liter Stainless tank	$325.00
WE40	200 Liter Stainless tank	$425.00
WE42	300 Liter Stainless tank	$500.00
WE44	400 Liter Stainless tank	$700.00
WE45	500 Liter Stainless tank	$775.00
WE41	600 Liter Stainless tank	$850.00

Filter/Pumps

Large capacity filter with pump processes wine through 10 pads with 8" square surface. This is 3 times larger than the *Buon Vino Jet Filter (see pg.19)* we sell and rent.

WE60	10 Plate Filter/Pump (85 gal./hr.)	$975.00
WE10	6 Plate Filter/Pump (55 gal./hr.)	$650.00

Large capacity pump with stainles steel body and reverse switch, 110V., uses 1 1/4" hose.

WE61	S/S Large pump	$1025.00

Equipment is priced for pick up at the store. The basket presses sized #25 to #40 can be broken down for shipping via UPS. All other equipment should be picked up at the store. Call for a freight quote for delivery of any large pieces of equipment.

INGREDIENTS

Ingredient Kits for Winemaking

Two cans of concentrate of your choice are included with instructions for 5 gallons of wine. Choose from the list below, and we include the yeast, sugar, acid blend, and a pack of wine labels.

BDW02 .....$34.95

Choose your flavor or use this list to order individual cans

(C002) **Chenin Blanc** or (C004) **Chablis**, ...$10.95

(C006) **Burgundy** or (C005) **Ruby Cabernet**.....$12.95

Boxed Concentrated Wine Kits

Aseptically packaged, not as concentrated as the above cans, these kits are a complete package of ingredients, boxed for shipping. Excellent flavors and aromas , ready to drink in less than three months. Each15 liter kit makes 6 gallons of wine.

C011 **Barolo** (R) $69.95
C022 **Pinot Grigio** (W) $74.95
C014 **Johannisberg Riesling** (W) $69.95
C018 **Chilean Merlot** (R) $69.95
C019 **Sauvignon Blanc** (W) $64.95
C017 **Gewurztraminer** (W) $74.95
C021 **French Cabernet Sauvignon** (R) $79.95
C020 **Pinot Noir** (R) $74.95
C009 **Cabernet/Merlot** (R) $74.95
C012 **Chilean Chardonnay** (W) $64.95
C015 **Aussie Cabernet/Shiraz** (R) $84.95
C037 **Luna Rossa, *big RED*** (R) $84.95
C010 **Lodi Old Vines Zinfandel, *rich*** (R) $104.95

Each 7.5 liter kit makes 11.5 liters of wine.

C013 **Port** (R) *or* C023 **Dry Sherry** (W) $45.00

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.

C030 **Cabernet Sauvignon** (R) $84.95
C031 **Chardonnay** (W) $79.95
C032 **Sangiovese** (R) $84.95
C033 **Gewurztraminer** (W) $74.95
C034 **Shiraz** (R) $84.95
C035 **Zinfandel** (R) $84.95
C036 **Sauvignon Blanc** (W) $79.95

Seedless Fruit Puree

Each 49 oz. 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. Ask for our wine recipe handout. FL44 **Raspberry Puree**, FL45 **Blackberry Puree**, FL46 **Apricot Puree** *or* FL48 **Dark Sweet Cherry**

49 oz. can $12.95

EQUIPMENT KITS

Wine Equipment Kit

Complete with a ten gallon primary fermentor and lid, a six-gallon glass secondary, an air lock and stopper, 25 Campden tablets, a siphon assembly, a bottle filler, two lever hand corker and 25 corks, Acid Testing Kit, Hydrometer and Test jar, a bottle brush and the book *Winemaker's Recipe Handbook*.

BDW01.....$119.95

Mead Equipment Kit

Includes a 7-gallon glass primary and 5-gallon glass secondary fermentor with stopper and airlock, a siphon assembly, bottle filler, an Acid Test kit, Hydrometer and Test jar, the "Emily" Capper, caps, a spoon, sanitizer, a bottle brush and the book *Making Mead* by Morse. BD60.....$119.95

Meadmaker's Ingredient Kit

9 lbs. of our honey with yeast, nutrients, acid blend, sulfite, priming sugar and instructions, makes 5 gallons of sparkling mead.

BD50 .....$39.95

SUPPLIES

Acids

A17 **Ascorbic.** 1 oz. $1.85
A05 **Citric.** 2 oz. .....$ .95
A14 **Malic.** 2 oz. .....$ .95
A10 **Tartaric.** 2 oz. $1.95
A24 **Acid Blend.** (Citric, Tartaric & Malic). 2 oz. ..$1.25

Fermenting & Preserving Aids

AD15 **Corn Sugar.** 5 lbs $5.95
QR04 **Pectic Enzyme.** 1 oz. $1.85
FN18 **Potassium Sorbate.** 1/2 oz.....$ .99
FN35 **Wine Conditioner/Stabilizer.** 500 ml. $3.95
QR11 **Yeast Nutrient (DAP).** 2 oz. $1.50
QR33 **Autolysed Yeast,** 2 oz. $1.50
QR16 **Yeast Hulls,** 2 oz. $2.95
QR06 **Fermaid K™** Yeast Food. Complete nutrient mix with trace minerals, use 1 oz. per 30 gallons. 3 oz. ..$2.95

Nutrients cont.

QR50 **Yeast Nutrient for Meads.** (Our special blend)
Use 2 oz. per 5 gallons. 2 oz. $1.75
QR38 **Acti-ML** (Nutrient for ML - 66 gal.) 50gr. $5.95

Wine Yeast & Malolactic

YEAST

Choose your yeast from the information given on page 13. Use one gram per gallon. Shelf life is 3 to 4 months, if kept refrigerated much of that time. To make a starter: Boil 4 oz. of distilled water, cool to 100°F, add dry yeast and agitate for 10 minutes. Then spread over juice or grape must. Stir in and stir again in 24 hours.

10 grams $1.25
WY27 ***Pasteur Champagne*** (all-purpose yeast)
WY23 ***Prise de Mousse*** (low foam,yeast for whites)

10 grams $1.75
WY38 Assmanshausen (Pinot Noir, Zinfandel)
WY25 Beaujolais 71B (Fruity, aromatic reds)
WY45 Brunello BM45 (Sangiovese, Macerations)
WY53 CSM (Cab Sauv., Merlot, Cab Franc)
WY22 Epernay 2 (Fruit wines and Blanc de Noirs)
WY30 French Red (Cabernet, Merlot, Zinfandel)
WY24 K-1 (Kills competing wild yeast)
WY50 M2 (Premium Chardonnay and Cabernet)
WY26 Montrachet (All-purpose if no sulfur used)
WY29 Steinberger (Riesling and Gewurztraminer)
WY35 Rhone #L2226 (Syrah, Rhone)
WY55 RC212 (Pinot Noir, other blush wines)
WY31 Simi White (French White) (Chardonnay)
WY28 Wadenswil 46 (Pinot, Riesling)

MALOLACTIC

WY32 ML Culture, ***MCW Strain.*** 2 gram pack inoculates 5 gallons directly. May be built up to treat up to 500 gallons. Comes with instructions. $14.95
WY40 ML Culture, ***Bacchus***.1 gram pack for 5 gal..... $10.95
WY51 ML Culture, ***Enoferm Alpha Strain***, 2.6 gram pack inoculates 60 gallons directly. With instructions $19.95

Fining Agents

FN06 **Sparkolloid™** 1 oz. ..... $ 1.75
FN32 **Bentonite** 2 oz. ..... $ .69
FN07 **Isinglass** 1 oz.. ..... $ 3.95
FN03 **Fining Gelatin** (75 bloom, grade B) 1 oz. ..... $ .99
FN16 **Tannin.** 1/4 oz. ..... $ .95
TE24 **Copper Sulfate Solution.** 4 oz. ..... $ 4.00
FN22 **Polyclar VT (PVPP)** (With Instructions).1 oz. ..... $ 1.95

Cleaners & Sterilants

CS09 **Chlorinated TSP** 1 lb. $3.95
CS12 **Soda Ash** (Barrel cleaner) 1 lb. $1.50
CS24 **Sodium Metabisulfite** 4 oz. $2.25
CS20 **Potassium Metabisulfite**1 lb. $4.95
CS17 **Campden Tablets** Pack of 25. ..... $.95
CS16 **Campden Tablets** Pack of 100. ..... $2.95
CS14 **Efferbaktol SO² Tablets** Pack of 3 ..... $2.95
B39 **Sulfur Strips** 2 strips ..... $ .59
B38 **Sulfur Strips** Bundle of 70 strips $16.95
CS06 **Sanibac™ Chlorine Sanitizer** 1/2 oz. ..... $ .69
CS03 **BTF Iodophor Sanitizer** 1 Liter $11.95
CS29 **Proxyclean®** (Barrel Wash) 1 lb. $4.95

EQUIPMENT

Transferring

QE11 **5/16" Racking Tube.** $3.95
FST02 **Hose Shutoff Clamp for 5/16" hose.** ..... $.69
QE33 **1/2" Racking Tube.** $4.95
FST03 **Hose Shutoff Clamp for 1/2" hose.** $1.25
QE17 **Bottle Filler for 5/16" hose.** $3.95
QE20 **Bottle Filler for 1/2" hose.** $5.95
PS26 **Transfer Pump**, phenolic head, electric $139.00
F01 **Filter/Strainer** for Pumps (Use with 1/2" hose) $16.95
PS36 **Procon Brass Pump**, 4 GPM, 1/4 HP $285.95
PS35 **Procon Stainless Pump**, 4 GPM, 1/4 HP..... $395.95

PS04 *Pump hose barb fitting*, 3/4" x 1/2" barb. Plastic $1.99
PS05 *Pump hose barb fitting*, 3/4" x 5/8" barb. Plastic $1.99
PS04 *Pump hose barb fitting*, 1/2" x 1/2" barb. Brass $2.95
PS04 *Pump hose barb fitting*, 1/2" x 1/2" barb. Stainless steel $10.99

PS35 Procon Stainless Pump with PS04 fittings

Funnels:
QE24 **Carboy** $9.95
QE23 **9" Barrel** $9.95
QE22 **5" Bottle** $3.95
QE21 **3" Hose** $2.50

Strainers for Funnels:
QE26 **Coarse Mesh #14** $1.95
QE27 **Fine Mesh #100** $1.95

Mesh Pressing Bags:
PS32 **12" X 19"** $4.95
PS16 **18 3/4" X 19"** (may be slightly larger) $5.95

Miscellaneous

TE49 **Wine Thief.** Plastic. One piece. $4.95
TE48 **Wine Thief.** Plastic. Assembled of 3 pcs $7.95
TE52 **Wine Thief Glass** (3/4" by 15") $9.95
TE59 **Wine Thief.** Angled 24" w/"D" Ring Handle and tough Borosilicate Glass. $42.95
KEG58 **Food Grade Lubricant.** 4 oz. $3.25
MS09 **Gondola Enamel.** Food grade paint. 16 oz. . $10.95
MS42 **Private Reserve™.** Nitrogen gas $9.95
MS32 **Grape Picking Shears.** $16.95
MS16 **Grape Picking Knife.** Plastic handle $8.95
QE36 **Grape Masher** (cap punch tool) 24" long $29.95
QE10 **Grape Masher** (Heavy Duty) 36" long $54.95
MS41 **Food Grade Shovel** 14" x 17" x 42" $44.95

Filters

F05 **Buon Vino Super Jet Filter.** Plate & frame filter includes pump and will process 30 to 45 gallons per set of pads. Change pads and continue. Pump is also useful alone for racking wine. $355.00

Pads for Super Jet Buon Vino (Set of Three):
F09 **5-7 m. Coarse** ...$3.95
F22 **0.8 m. Fine** $3.95
F21 **0.5 m. Sterile** $4.95
F23 **25 Backing Papers** for Filter Pads $4.95
F01 **Flojet Filter Strainer.** 1/2" Barbed. Use in line to protect your pump. $16.95

F03 **10" Cartridge Filter Housing.** Best for early cleanup of wine and larger volumes than the *Buon Vino*. Choose a cartridge from list below. The smaller the micron rating, the more sediment is removed. Clear, poly housing $34.95

10" Filter Cartridges:
F10 **3 micron** Coarse $12.95
F11 **1 micron** Fine $12.95
F12 **.5 micron** Sterile $14.95
F41 **.5 micron, reuseable** Sterile.....$39.95

Hose Barb for Filter Housing. *Need two. Specify:* PS02 **3/8" hose.** or PS03 **1/2" hose.**.....$1.29

Containers

P01 **6.8 Gallon Plastic Bucket** with Wire Bale Handle, Graduation marks in half gallons & Locking lid. $9.50
P17 **Poly Drum Liner** (4 mil, 60 gall.) $4.95
P04M **10 Gallon Heavy-Duty Plastic Bucket** with molded handles. $19.95
P05 **10 Gallon Lid** $5.95
20, 32 AND 44 GALLON SIZES and lids are available at the store.
QE44 **Carboy Draining Stand.** $8.95
QE34 **Carboy Handle.** 3, 5 and 6 gallon size $6.95
QE47 **Carboy Handle.** 7 gallon size $6.95

Glass Carboys EASIEST TO SANITIZE

GL02M **3 Gallon Glass Carboy.** $20.95
GL01M **5 Gallon Glass Carboy.** $25.95
GL040M **6 Gallon Glass Carboy.** $27.95
GL04M **7 Gallon Glass Carboy.** $27.95
In-store prices: 17.95, 20.95, 23.95 and 23.95 for the 3,5, 6 and 7 gallon carboys.

Plastic Carboys Lightweight, NO TASTE NO ODOR

GL13M **3 Gallon BETTER BOTTLE Carboy.** ..$22.95
GL45M **5 Gallon BETTER BOTTLE Carboy.** ..$24.95

Oak

Oak Chips, 1 lb sacks
B46 **American Medium Toast. .....** $5.95, *or Specify:* B24 **French Medium Toast** or B25 **French Dark Toast**. $6.95

OakBoy™ Carboy Inserts, 6 grooved staves
B80 **American Medium.** $21.95,
B82 **American Dark.** $22.95,
B81 **French Medium** $24.95, or B83 **French Dark**. $25.95

Chain-O-Oak™ Barrel Inserts, 17 staves and ties
B78 **American Medium.** $45.95, B79 **American Dark** $49.95,
B74 **French Medium** $49.95 or B75 **French Dark**. $54.95

New Oak Barrels: (Kiln Dried)
B04 **American Oak, 5 gallon** $139.95
B05 **American Oak, 10 gallon** $189.95
B06 **American Oak, 15 gallon** $209.95
(Air Dried)
B47 **American Oak, 26 gallon** - medium toast..... $295.00

Used French Oak Barrels: (Shaved and Rebuilt from full size barrels, with new Hoops) (Barrels come with medium toast.)
B84 **French Oak, 10 gallon** $255.00
B85 **French Oak, 15 gallon** $275.00
B43 **French Oak, 20 gallon** $285.00
B48 **French Oak, 30 gallon** $295.00

Small American Oak Barrels:
B01 **American Oak, 1 gallon** $89.95
B02 **American Oak, 2 gallon** $95.95
B03 **American Oak, 3 gallon** $104.95

Vinegar Barrels are paraffin lined (P):
B10 **American Oak, 2 gallon** *(P)* $85.95
B11 **American Oak, 3 gallon** *(P)* $95.95
B12 **American Oak, 5 gallon** *(P)* $119.95
B64 **French Oak 10 liter, with spigot** *(P)* $129.95

Bungs & Barrel Supplies

FST44 **Silicone Bung "R"** (30 X 44 mm) (#8-#9 size).....$5.95
FST40 **Silicone Bung** (47 X 54 mm) (#11 size).....$6.95
B16 **Redwood Bung** (specify diameter).....$2.95
B21 **Hardwood Bung** (specify diameter) $3.95
B37 **Barrel Wax** 4 oz. $3.25
MS06 **Mildewcide** Barrel Coating, 16 oz. $6.95
Spigots: Wood. B29 **4 3/4"** $7.25, B35 **9 1/2" (#2)** $15.95
Additional spigots 2 1/2" to 12" in length are available.
B13 **Hoop Nails** Pack of 20.. .....$1.25
B14 **Spiles for Barrels** (Fill holes) Pack of 20 .....$1.75
B42 **Liquid Oak Essence.** 4 oz. size treats 20 gallons of red wine, 25-30 gallons of white wine. $5.95

Fermentation Locks

FST04 **Three Piece Fermentation Lock** $1.09
FST05 **Fermentation Lock Red Top** $1.09
Breather Bungs, Waterless Silicone Air Lock and Bung:
FST42 (fits most carboys) $4.95
FST47 (fits 5 gallon glass or plastic carboys) $7.95
FST46 (fits most recoopered barrels, #9) $5.95
FST45 (fits 2", #11 size) $6.95

Drilled Rubber Stoppers

#	Code	Top	Bottom	Price
2	FST09	13/16"	5/8"	$ .60
6	FST12	1 1/16"	29/32"	$ .95
6.5	FST13	1 11/32"	1 1/16"	$ 1.00
7	FST14	1 7/16"	1 3/16"	$ 1.20
8	FST15	1 5/8"	1 5/16"	$ 1.35
8.5	FST16	1 11/16"	1 7/16"	$ 1.45
9	FST17	1 3/4"	1 15/32"	$ 1.55
10	FST19	1 31/32"	1 5/8"	$ 1.75
10.5	FST20	2 5/64"	1 3/4"	$ 1.85
11	FST21	2 13/64"	1 7/8"	$ 1.95
11.5	FST22	2 15/32"	2"	$ 2.50
12	FST23	2 1/2"	2 1/8"	$ 2.70
13	FST24	2 11/16"	2 9/32"	$ 2.95

Most sizes are available solid, at the same price.

SIPHON HOSE

Sold by the FOOT

HS03 **5/16"** i.d. ..... $ .49
HS04 **3/8"** i.d. ..... $ .49
HS05 **1/2"** i.d. ..... $ .69
HS06 **1/2"** i.d. thick wall. ..... $ .99
HS07 **5/8"** i.d. thick wall. $1.19
HS08 **3/4"** i.d. thick wall. $1.29

Bottling Supplies

BE01 **Italian Lever Corker.** $28.95
BE19 **Mini-Floor Corker.** *Nylon Jaws* $59.95
BE03 **Heavy Duty Floor Corker.** *Brass Jaws* $105.00
QE09 **90 Bottle Draining Tree.** $26.95
WE19 **Plastic Model 3 Spout Bottle Filler.** $139.00
WE28 **Stainless Steel 3 Spout Bottle Filler.** $295.00
WE28 **Stainless Steel 5 Spout Bottle Filler.** $359.00
WC11 **1 1/2" Chamfered Corks**. 25 pack $6.95
WC12 **1 3/4" Chamfered Corks**. 25 pack $10.95
WC14 **1 3/4" Twin Disk Corks.** 100 pack $22.95
WC08 **1 3/4" Guardian® Corks.** 100 pack $24.95
TC19 **All -Plastic Wine Bottle Stopper ea.** ..... $ .30
TC20 **Plastic Champagne Stoppers** ea. ..... $ .10
TC21 **Champagne Wires** ea. ..... $ .05
TC18 **28 mm Black Top Bar Top Cork** ea.. ..... $ .25

Stainless Bottle Filler
Three Spout (WE28)

Heavy Duty
Floor-Model Corker (BE03)

10 Plate Wine Filter
(WE60)

Transfer Pump (PS26)

S01 **28 mm Metal Screw Caps ea.** ..... $ .12
S02 **38 mm Metal Screw Caps.** ea. ..... $ .15
S03 **28 mm. Plastic Polyseal Caps** ..... $ .25
S04 **38 mm. Plastic Polyseal Caps** ..... $ .50
Bottle Seal, Wax Available in 6 colors $8.95
SL26 *Black*, SL27 *Burgundy*, SL28 *Gold*, SL29 *Silver*, or SL30 *Red*, SL32 *Green*. 1 lb., Melt to make decorative seal.
Push-On Plastic Bottle Sleeves. For domestic wine bottles only. *Specify :* SL23 *Burgundy*, SL24 *Gold*, SL25 *Green*, SL21 *White* or SL22 *Black*. Dozen ..... $ 1.09
Heat Shrink Plastic Sleeves. Apply to bottle neck with hair dryer or heat gun. *Specify*: SL18 *Silver,* SL33 *Green,* SL20 *Gold*, SL19 *Burgundy,* SL09 *Blue* or SL49 *Black w/ Gold Band.* Dozen ..... $ 1.19
Decorative Wine Bottle Labels. Blank with room to write. 25 per pack, Gum Back. $2.75
MS15 **Label Glue** 16 oz. $5.95
MS24 **Iceproof Label Glue** 16 oz. $9.95
MS26 **Manual Label Gluer** Glue Pot. $239.95
BE07 **Super "M" Crown Capper** $37.95
BE10 **Plain Crown Caps** 1 gross (144 caps) $3.50

GL12M **Green Bordeaux Bottles** 750ml**.** 12/cs. $14.95

Tapered Corks, Solid

Size	Code	Top	Bottom	Price
# 9	TC05	23.8mm	18.6mm	$ .16
#14	TC06	31.8mm	25.8mm	$ .50
#16	TC07	34.9mm	27.9mm	$ .65
#17	TC23	35.9mm	29.9mm	$ .75
#18	TC08	38.1mm	30.9mm	$ .85
#20	TC09	41.3mm	34.1mm	$ .95
#22	TC10	44.5mm	37.3mm	$ 1.05
#24	TC11	47.6mm	40.5mm	$1.20
#26	TC12	50.8mm	43.6mm	$1.35

WINE LABORATORY

Sugar & Alcohol Testing

TE40 **9" Economy Hydrometer** has Brix, Specific Gravity, and Potential Alcohol scales. $7.95

TE41 **9" Wine (Brix) Hydometer** $9.95

TE42 **10 1/2" Hydrometer with Thermometer.** Needs the tall test jar. $16.95

Precision Hydrometers (Brix only).

Specify range: TE43 **-5° to +5°**,TE44 **0° to 8°**, TE45 **8° to 16°**, or TE46 **16° to 24°** $20.95

TE47 **20° to 50° Brix** $20.95

TE39 **9" Hydrometer Proof and Traille** $7.95

TE65 **"Santa Rosa" Residual Sugar Kit.** 36 Tests (with instructions). $19.95

TE15 **Replacement Reagent Tablets** for Residual Sugar Test Kit (36 pack). $16.95

TE07 **Replacement .5 ml. Pipet.** ..... $ .75

TE14 **Replacement Test Tube.** ..... $ .75

TE23 **Refractometer**, 0-32° Brix, ATC, comes with a carrying case $99.95

TE32 **20° Brix Solution.** Sugar solution used to standardize the refractometer. 2 oz..... $2.50

TE13 **Vinometer.** Measures alcohol content in dry wine $7.95

Labware

Regular Test Jar for 9" Hydrometer.

TE55 **Plastic.** $4.95

TE53 **Glass.** $8.95

Tall Test Jar for 10 /12" Hydrometer.

TE56 **Plastic.** $5.95

TE54 **Glass.** $9.95

TE07 **0.5 ml. Pipet.** Each. ..... $ .75

TE06 **10 ml. Pipet.** Pack of 10. ..... $8.95

TE62 **10 ml. Pipet.** Each. $1.25

TE08 **100 ml Graduated Cylinder.** $11.95

TE10 **500 ml. Pyrex Erlenmeyer Flask.** $6.95

TExx **1000 ml. Polypropylene Beaker w/handle** $9.95

TExx **2000 ml. Polypropylene Beaker w/handle.** ... $10.95

TExx **3000 ml. Polypropylene Beaker w/handle.** ... $12.95

Sulfite and Acid Testing Kits

TE02 **Titrets® Free SO_2 Test Kit.** Pack of 10. ..... $16.95

TE26 **Country Wines Acid Test Kit** $8.95

TE29 **Sodium Hydroxide Refill** (Neutralizer) (for TE26) 4 oz., 0.1 normal $4.95

TE58 **Phenolphthalein Refill.** (Indicator) (3 dram)... $1.95

TE61 **Accuvin Titratable Acid** (10 tests) $24.95

TE30 **Acidometer, Precision Acid Test Kit** $19.95

TE66 **Blue Hydroxide Refill** (for TE30) (100 ml.) .. $4.95

TE82 **Iodic Solution** Tests free SO_2 with the TE30 Acid Kit components. (100 ml.) $8.95

pH and ML Testing

TE60 **Accuvin pH** (10 tests) $22.95

TE68 **Waterproof pH Tester2 Meter. ATC.** Digital, battery operated, accuracy to 0.1 pH.Auto temperature compensated, electrode can be replaced. $79.95

TE69 **Replacement Electrode for Waterproof pH Tester2 .....** $39.95

TE72 **pH Buffer Capsules.** (pH 4.0. and 7.0). One each capsule, to dissolve in 100ml. distilled water to calibrate your meter. $1.95

Kit for testing Malolactic Fermentation

TE20 **Malolactic Chromatography Kit**. With 7 papers and 4 oz Solvent..... $39.95

TE17 **Replacement Solvent**. 4 oz. $10.95

TE22 **Replacement Paper 5 Sheets**. $3.95

TE19 **Replacement Pipets** (100). $6.95

TE67 **Accuvin Malic Acid** (10 tests) $30.95

Thermometers

TE38 **Spot Check Probe Thermometer.** 0-220°F., Recalibratable, Type 304 Stainless, 1" Dial x 5" Stem $18.95

TE90 **Laboratory Thermometer.** 0-220°F., Recalibratable, Type 304 Stainless, 2" Dial x 12" Stem, comes with clip for side of kettles $32.95

TE91 **Floating Glass Thermometer. 12"** (0-220° F. and -15-100°C). $14.95

TE37 **Floating Glass Thermometer. 8"**(40-210° F. and 0-100°C). $8.95

TE81 **Fermometer.** Monitors temperature from 36 to 78°F., glue-backed to read the surface temperature of carboys. $2.95

MS33 **Wine Degasser/Blender.** Stainless top attaches to drill, spinning the nylon rod to stir or de-gas wine $16.95

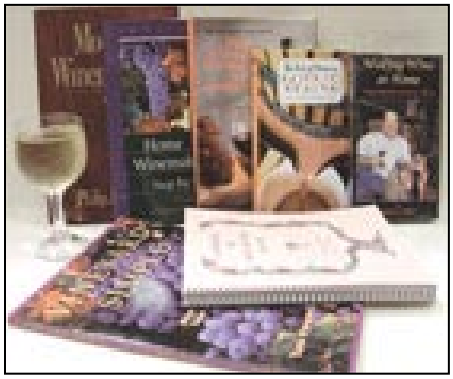
WINEMAKING BOOKS AND VIDEO

BK56 ***Making Table Wine at Home*** Cooke & Lapsley. ..... $ 15.95
BK140 ***Home Winemaking Step by Step*** Iverson. $17.95
BK20 ***Micro Vinification*** Dharmadhikari and Wilker. $34.95
BK38 ***The Art of Making Wine*** Anderson & Hull. ..... $ 11.00
BK142 ***Winemaker's Recipe Handbook*** Massaccesi. ..... $ 4.95
BK40 ***Modern Winemaking*** Jackisch. $36.95
BK44 ***Knowing and Making Wine*** Peynaud. $89.95

BK61 ***Complete Handbook of Winemaking*** American Wine Society. $14.95
BK54 ***How and Why to Build a Wine Cellar***, Gold. $20.00
BK59 ***A Handbook For Must and Wine Analysis*** A cookbook approach to analysis, for home labs. Barrus & Evans. $24.95

MG11 ***Practical Winery and Vineyard Magazine***, current issue. $3.95

BK109 ***Making Wine at Home, "The Video",*** Cutler, 1 hour and 15 min. $29.95



GRAPE GROWING,CIDER AND MEADMAKING BOOKS

Grapes

BK80 ***Great Grapes,*** Proulx $3.95
BK71 ***Wine Grape Varieties in California*** UC Extension. $30.95
BK121 ***Vineyard Simple,*** Powers $21.95

Cider

BK70 ***Sweet & Hard Cider***, Proulx & Nichols $14.95
BK72 ***Making Cider***, Deal $9.95
BK79 ***Making the Best Apple Cider*** $3.95

Mead

BK77 ***Making Mead***, Morse $14.95
BK51 ***The Compleat Meadmaker***, Schramm $19.95

Other Fermentations

BK84 ***Making Vinegar at Home*** $4.50
BK74 ***Making Cheese, Butter, Yogurt*** $3.95
BK75 ***Cheesemaking Made Easy*** $14.95
BK76 ***Home Sausage Making*** $14.95

ORDERING

Questions? Retail hours are 10:00 to 5:30 Tuesday through Friday and Saturday 10:00 to 5:00.

We are also open on Mondays from August through December. We're always ready to answer questions for our customers.

Ordering Instructions:

For the most personal service, call our TOLL FREE ORDER LINE, (800) 544-1867, which may be used with your Visa, or Mastercard.

To place your order by mail, please note the following, if you live in California, add 7.50% sales tax on non-food items. **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 2 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 overnight Air service, or UPS 2 DAY Air service.

Rates are quoted at www.ups.com, or call our toll free 800 number.

Customers in Alaska and Hawaii please take note that priority mail service from the Post Office is recommended for packages up to 15 lbs. Heavier packages without perishables can be sent more economically via ground, parcel post.Shipments to Alaska, Hawaii and out of country will travel by carrier of customer request. We're sorry, but we must add shipping charges to these orders, regardless of free shipping offers.

For items totaling less than $50.00, add $6.00 for shipping to California, Nevada, Oregon and Washington. All other states, add $8.00.

The Beverage People is a family owned and operated retail and mailorder supply firm with over 25 years experience.

Byron Burch, our owner is also the author of *Brewing Quality Beers*, a textbook for homebrewing that has sold over a quarter million copies.

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.

The Beverage People
840 Piner Rd. #14
Santa Rosa, CA 95403

ORDER FORM

Fastest shipping guaranteed!
Phone Orders 800-544-1867
Advice 707-544-2520
Fax Orders 707- 544-5729

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TELEPHONE

We accept checks, money orders and credit cards:

CREDIT CARD NUMBER **EXP. DATE** **'V' CODE** **NAME AS IT APPEARS ON CARD**

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NON-FOOD ITEMS

CODE	QUANTITY	DESCRIPTION OF ITEMS		PRICE	TOTAL

Taxable sub-total:

California residents add 7 1/2 % sales tax:

FOOD ITEMS (Malt, Sugar, Beer Yeast, Vinegar, Soda and Concentrates)

Non-taxable sub-total

Complete sub-total

Shipping and handling

Total enclosed

Fastest Shipping.
Fax order to
(707) 544-5729

Our Guarantee:

All our supplies are quaranteed for one year, except yeast which is perishable and should be refrigerated upon arrival. Best used in 60 to 90 days.

Order Form:

1. Organize the items by non-food/taxable and food/non-taxable to properly apply sales tax. If unsure of tax status, a list is located on page 22. (California orders only. Out of state are all non-taxable.)
2. Print legibly if sending it by fax or mail.
3. Add no money for shipping if items total over $50.00. For items totaling less than $50.00, add $6.00 for shipping to California, Nevada, Oregon, Washington, and all other states, add $8.00.
4. Orders with *50 lb. sacks of grain malts, Selection or Mosto Italiano Wine Kits, wine barrels larger than 5 gallons*, or *Beer Keg Systems* ask for UPS ground shipping charge. This generally costs $10.00 to $15.00 per item, but is the exact UPS charge for your shipping zone.
5. Two cases of beer or wine bottles or two carboys per order, do not incur additional shipping charges, every additional case or carboy add $2.50 .
6. Bulk items not listed in catalog are subject to actual shipping costs.
7. Wine equipment such as grape presses and stemmer/crushers and large presses are shipped via truck, freight collect. Tanks will be charged for crating prior to shipping.

Feel free to make copies of this form.

The Beverage People
Byron Burch, Proprietor
840 Piner Rd. #14
Santa Rosa, CA 95403

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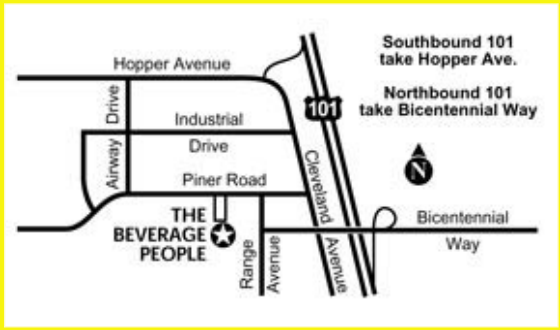
Summer 2004



Visit us at the retail store: Hours:
August thru December: Mon. - Fri.10:00 to 5:30, Sat. 10:00 to 5:00.
January thru July:, regular hours, except, closed on Monday.

Wine Equipment Rentals

CRUSHERS

Apple Mill, Grinder and Press, motorized	$45.00
Grape Crusher, manual	$20.00
Grape Stemmer/Crusher, manual	$45.00

PRESSES

#30 7 gallon Basket	$25.00
#35 12 gallon Basket	$30.00
#45 25 gallon Basket	$40.00

FILTERS/PUMPS

Transfer Pump	$10.00
Buon Vino Plate Filter	$30.00

BOTTLING

3-Spout Filler	$10.00
Wine Corker	$10.00
Glue Labeller	$10.00

Rentals are for 24 hrs. from noon to noon, reservations accepted up to 7 days in advance. Call 544-2520 to make your reservation.

Fall Winemaking Class

Phone *The Beverage People* at 707 544-2520 to reserve a place in our winemaking classes. There is a $10.00 fee. You will get your questions answered, go over equipment and processes. Space is limited, so call today. Class will meet Saturday, August 21 at 3 pm. Bring a bottle of your wine to critique, class is held outdoors at the retail store.

Grape Growers Wanted

We keep a book at our shop giving information provided by grape growers with small lots of grapes for sale to amateur winemakers. The program has effectively bridged the gap between the grower needing to find a home for some excess crop and the winemaker looking for a supply to harvest.

If you would like to place a listing, please send us a list of grapes available, with your **name, address and phone number**. Please **also indicate**:

The estimated Picking Date
Varietals available
Minimum/Max avail
Price with/or without picking
Age of vines, location of vineyard.

Competitions for Winemakers

Marin County Fair, Entries due last week of May or so. Contact Marin County Fairgrounds. We normally deliver the entries for you, if you have sent in forms and money in advance.

Orange County Fair, Entries due June 1st., Contact Jim Graver, chairman of Orange County Wine Society 714 708 1636. Again, we normally deliver the entries for a small fee, but you must send in the forms in advance.

HomeWinemakers Classic, Napa County, contact via the web at www.drycreek.org. This is a limited competition and fills up. So contact them in April to be included. Event tickets are on sale at the store, Mark your calendar now for the Classic 2004: Saturday, July 17, 2004, 4:30 -7:00, St. Supéry Winery.

California State Fair. Contact fair www.tomatoweb.com/shw. Deadline for entries is June 30.

Harvest Fair of Sonoma County. Contact fair office at 545-4203, we have forms. Deadline for entries is the last week of August. Opportunity for local winemakers to judge, contact Robert Bennett, 433-4574 to be included on a panel.