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THE STOMPER

The Monthly Winemaking Newsletter of grapestompers.com  
October, 2001 Issue #15  
<http://www.grapestompers.com> 1-800-233-1505

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Welcome to the latest issue of "THE STOMPER", a newsletter of winemaking hints and other wine-related articles.

You are receiving this newsletter because you requested a subscription and have an interest in home winemaking. Unsubscribe instructions are at the end of this newsletter.

Feel free to pass along this newsletter to your winemaking friends; we only ask that it be sent in its entirety.

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\*^^ Hot Tips are sprinkled throughout the newsletter

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FEATURE ARTICLE: How to Rehydrate Yeast  
By Brant Burgess, Editor

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Fall has certainly arrived in the mountains of North Carolina, where early morning frosts and cold winds have already appeared. It's a great time of year to be inside making wine!

We had a wonderful time at our 4th Annual Wine Tasting on October 7th (hence the tardiness of this newsletter) and all of us at grapestompers.com wanted to thank you for a great turnout and a wonderful party. We got to meet a lot of our customers in person; many like Ed Csencits came from several states away to attend. We can barely wait for next year's bash!

Anyway, on with the show...

This month's winemaking article explains how a simple five-step process can vastly improve your wine's chances of success.

The rehydration of active dry wine yeast is easy to do, and when done properly, can help ensure thorough fermentation.

You can learn how to rehydrate wine yeast, as well as the reasons for doing so, on the newest page on our web site:

[http://www.grapestompers.com/articles/rehydrate\\_yeast.htm](http://www.grapestompers.com/articles/rehydrate_yeast.htm)

We hope you'll like this page, and will be able to pick up a few pointers about taking care of your yeast during water uptake.

Here's to you... and Happy Winemaking!

You can write to Brant at [webmaster@grapestompers.com](mailto:webmaster@grapestompers.com)

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## NEW PRODUCTS

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Here is a list of products recently added to our catalog:

- Item # 3168 Sangiovese Cru Select Gold Wine Kit \$77.00
- Item # 3170 Amarone Classico CS Platinum Wine Kit \$80.66
- Item # 3168 Shiraz (Aust.) CS Platinum Wine Kit \$80.66
- Item # 3284 Chardonnay (Aust.) CS Plat Wine Kit \$73.32
- Item # 3274 Soave (Italy) Grand Cru Wine Kit \$39.60
- Item # 3270 Riesling Grand Cru Wine Kit \$45.84
- Item # 2718 Wine Kit Enhancer, Red \$1.91
- Item # 2719 Wine Kit Enhancer, White \$3.12
- Item # 2688 Buon Vino Automatic Bottle Filler \$16.94
- Item # 2680 B. Vino Fill Jet Elec Bottle Filler \$293.32

We've added 6 new wine kits this month, all made by the folks at RJ Spagnols. The Cru Select (CS) line of wine kits (both Platinum and Gold varieties) contains 16 liters of juice, while the Grand Cru line has 10 liters of juice.

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BONNIE'S BIN: Breaking in the New Warehouse  
By Bonnie Brown, Manager

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Happy October to all of you home winemakers. This IS the season isn't it? We have sure been busy filling your orders. Excuse us if we are a bit behind. Lots happening, AGAIN! Is that a statement I make each month? Sounds like something I have said a lot over the past few months!

Our new building (warehouse and pack/ship) is under roof so Tom had them build the shelving. We are now moved in. It's not as organized as it will be when the building is done, but certainly usable as long as we stay to one side out of the builder's way. It is going to be so easy to work in... soon! We are enjoying it in the rough while dreaming of the finished product. It's a major step forward for us. So nice and exciting that we have been discussing the next addition!!

One positive point here, the Bodega certainly looks wonderful all cleaned out. I think we should have a wine tasting every 6 months or so! Ya get a lot done in a short time! We spent a couple of days last week moving and rearranging. Where our stock was we now have a wonderful room in which to make our wines. Nothing is crowded! There is also a relaxing area in our office where customers can sit and go over things. Overall, it is more inviting the minute you walk in the front door.

For those of you who attended our wine tasting on October 7th, THANK YOU! You helped in making it a very enjoyable day. For those who could not attend, we are sorry to have missed you. There was a variety of wines: Dandelion, plum, and Ma Barker's grape for some of the homemade wines. That was a wonderful experience in itself. I don't usually get to taste those, I just hear about them in phone calls and e-mails. It is always fun for us to meet, greet and converse with other winemakers.

See you next month.

Bonnie

GOD BLESS THE USA AND THOSE WHO DO THEIR PART!

'Tis a wonderful day in the mountains. . .

Life is too short... to drink bad wine... so make your own!

You can write to Bonnie at [bonnie@grapestompers.com](mailto:bonnie@grapestompers.com)

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THIS MONTH'S SPECIALS

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grapestompers' specials for the month of October 2001 are:

Save 10% on VDV White Zinfandel Wine Kits

AND

Save 10% on our "Home Stomper" Special

AND

Save over \$70 on the purchase of a  
Complete Winemaking Starter Kit  
which includes a RED or WHITE Concentrate  
(see wine kit selection below)

Item #	Description	Regular Price	SPECIAL Price
3229	VDV White Zin Wine Kit	43.95	39.56
2010	Home Stomper Special	33.10	29.79
3200	Complete White Starter Kit	246.68	175.00
3100	Complete Red Starter Kit	259.79	185.00

Here's what you get with the HOME STOMPER special:

- + 3 gallon glass carboy
- + Multi-fit stopper (fits carboy)
- + Airlock (Triple Riple)
- + Triple Scale Hydrometer
- + Recipe Book (#2801)
- + Packet of yeast (Montrachet)
- + Campden tablets (2 oz. - about 100 tabs)
- + Pectic enzyme (15 ml)
- + Yeast Nutrient (4 oz.)
- + Acid Blend (3 oz.)
- + Bentonite (4 oz.)

The Home Stomper special provides nearly everything you'll need to create your own homebrew from scratch - except the juice! So pick your favorite fruit, flower, or edible plant and start making wine!

Here's what you get with the COMPLETE Starter Kit:

If choosing the Complete WHITE Kit, your choice of either:  
Fume Blanc, Pinot Noir, or Chenin Blanc VDV concentrate

If choosing the Complete RED Kit, your choice of either:  
Valpolicella, Shiraz, or Cabernet/Merlot VDV concentrate

PLUS ALL THESE GOODIES:

Tom's Winemaking Video	Bottle Rinsers
Fermenter Bucket with Lid	Three-Piece Airlock
6-Gallon Glass Carboy	Carboy Brush
Bung (stopper)	Bottle Filler

Five feet of vinyl tubing      B-Brite Sanitizer  
Portuguese Hand Corker      FermTech AutoSiphon  
2 Cases of 750-ml Bottles      Spoon or Paddle (our choice)  
Bottle Washer Adapter      Brass Bottle Washer  
Bottle Drainer, 45 station

AND YOU GET THE FOLLOWING ITEMS FREE (\$16.59 value):

- Free Wine Labels (text of your choice)
- Free \$5 coupon towards your next concentrate purchase
- Free Corks (30 corks, enough for one batch)

Just think: This complete kit offers EVERYTHING a brand-new hobbyist would need to begin making his own wine. All you need to decide is which wine kit you want!

And don't forget... you can always return your winemaking video and receive a credit for \$19.95 on your next purchase... that's like getting the video for free! All we ask is that you return it in good condition.

This is the best deal we've ever offered on a complete kit, so don't miss out... order one for yourself or a friend today. Ask for RED Complete Kit # 3100 or WHITE Kit # 3200 and be sure to let us know which wine concentrate you want.

NEW! Now you can "personalize" your Complete Kit - Let's say you don't need or want some of the items that normally come with the Complete Kit... just give us a call at 1-800-233-1505 and let us know which items you don't need, and we will adjust the price of the equipment kit accordingly. Likewise, if you'd like a different wine kit, just let us know and we can adjust the price.

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TOM'S CELLAR: My Trip to Australian Wine Country  
by Tom Burgess, Owner

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I would like to share with you my impression of the wines in Australia from my recent visit to "The Barossa" area of South Australia.

This was an excellent trip and I highly recommend it! The folks were very friendly and you can see and appreciate the loving care the Australians have given their vineyards through the years. The Barossa area is a concentrated boundary about 30 miles (50 KM) north of Adelaide (a real showplace and a well laid out city on the coast of the Indian Ocean).

There are 51 wineries open to the public for you to visit in Barossa. These are all very close to each other in about a 5-mile radius of Tanunda. North of Tanunda there is Nuriootpa, South is Lyndoch and to the Northeast there is Angaston. My wife, Nancy, and I stayed near Tanunda on property that touched "Jacob's Creek"! This area produces the grape concentrate we handle here at grapestompers.com in both the Vino del Vida (VDV) and the Cellar Classic (CC) brands. All grapes are mostly handled by a co-op that runs 24 hours a day with tremendous storage capacity during the harvest season. There is very little rainfall in this region, with hot temperatures around 110 degrees F during their summer months. Water that is driven off during the concentration process is captured and recycled, so you can see water is very precious.

\*-----HOT TIP-----\*  
I just discovered a great way to crush Campden tablets. It is a little device called the "Pill Pulverizer."

I found this at Wal-Mart in the pharmacy; it is made by Apex Medical Corporation and costs just a few dollars. After all the time I have spent crushing Campden, I now do it in a matter of seconds!

It also pulverizes much finer than I ever could. What a time saver! If the "Pill Pulverizer" is not available locally, their address is:

Apex Medical Corporation  
PO Box 1235  
Sioux Falls, SD 57101-1235

Our thanks to Deanna Truran from Fairfield, IL for this tip.

Have a tip you'd like to submit?  
Send it to [tips@grapestompers.com](mailto:tips@grapestompers.com)

\*-----HOT TIP-----\*

It was interesting to note that they pay special attention to the wind when deciding how to plant the rows of their vineyards. Sunlight is very essential to their producing a great wine. It has been written that "wine is sunshine held together by water" and it is certainly true! The hills are rolling and the soil filters quickly. As you might have guessed, the sun does set in the west, but really in the northwest! We visited about 11 of the 51 wineries and ran across some unusual wines. One of our favorites was a chocolate wine known as "Choc-a-Bloc"!

In closing, I am happy to report with competition of "Virgin Blue" with "Qantas", air travel inside Australia was very reasonable (round trips ran \$100). August (their winter) was perfect weather for this mountain man. The service and accommodations were not crowded, and our dollar bought 2 Australian dollars.

When I visit a country I like to mix with the natives... My favorite place to accomplish this on this particular trip was the pub at Tununda Hotel (my kind of place!). If you've got about a day to talk, come visit me, and I'll share with you some other favorite wine places of mine and Nancy's... for instance, Yamhill County in Oregon, Waiheke in New Zealand, and Victoria, BC and others!!

See ya! Tom

You can write to Tom at [tom@grapestompers.com](mailto:tom@grapestompers.com)

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FROM OUR CUSTOMERS

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As you might imagine, our office receives quite a bit of correspondence - mostly through e-mail - here are some comments we've recently received:

Bonnie,  
Thanks for confirming the order, and tallying the total. You guys make it very easy to shop online, and your products are first rate.

Hope Tom is well.

-- Ron Clark  
Fairfield, PA

Tom,  
I just wanted to thank you for your expertise on fining wine. I called and so did my husband, fisherman Ralph, and we used the bentonite and everything came out hunky dory. With all the work the elderberry wine took, it was way worth it. I know you'd like us to be more sanitary and precise, but I'm not going to talk my husband out of making wine the way he has for 40 years. Believe me, I tried. This is the first flawed batch, and I hope the last... but it's nice to know you're there for support.

You are a peach!! Thanks again.

-- Teri Reinhart  
Fostoria, OH

Bonnie,  
You went above and beyond what anyone should ever expect in quality customer service. I just had momentary anxiety and you caught it! Anyway, thanks again - I'm sure this wine will be a "great year" when it is all said and done!

Yours,

-- Marva Griffith  
Clarksville, GA

Tom and Bonnie,  
I received my order promptly and complete! The Vintner license tag was a very nice gesture, thanks!

-- Don Steberl  
Newport News, VA

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Improved Look for Free Wine Labels  
by Brant Burgess

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If you've received free wine labels from grapestompers.com recently (you get free labels with each wine concentrate kit you purchase), you may have noticed an improved look.

What happened?

Crazy Tom must have sprung a leak in his pocket, because we have recently purchased a color laser printer!

We think you'll love the improved look and feel of your free wine labels. The best things about labels made by our new printer:

1. The colors won't fade
2. The colors won't run if the label gets wet
3. The colors are more VIVID and CLEAR
4. The labels have a shinier finish to them

Remember - all you have to do to get your free wine labels is to tell us a couple things when ordering your wine kit:

- The type of label you want. Just make your pick from the labels shown at <http://www.grapestompers.com/cat104.htm>
- The name of your winery (i.e. Smith Mountain Cellars)

We'll automatically print the vintage year and type of wine for you.

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GUEST COLUMN - Acidity and pH - Whys and Wherefores  
by Dave Burley, SC

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Summary: Making wine without knowing about pH and acidity and how to adjust them is a lot like wearing a blindfold while you drive with no steering wheel. You may get where you want to go, but not likely.

In this article, the following is discussed:

- pH and Acidity - Who cares?
- So Why Should You Care About Acidity?
- pH and Acidity in must
- Acidity Measurement
- Finding the Endpoint
- Using a pH Meter
- Why Do you care About pH?
- Acidity and pH Recommendations for Wine
- Malolactic Fermentation
- Cold Conditioning
- Chemical Acid Adjustment
- You're Now in Control

#### pH AND ACIDITY - WHO CARES?

This time of year all the grapes are coming in from California or your local mid-western vineyard or maybe from your backyard trellis. Or maybe you have some other fruits which you want to convert into nectar for those cold winter nights that may be coming your way. Assuming you obey all the rules and are careful in your sanitation, one of the surest ways to not have a good wine is to ignore the effect of pH and acidity on the final product.

If you have been a winemaker for any time period, you have probably read at least one explanation of pH and acidity. Some are confusing, especially if you don't have a technical background and already know something about it. Others don't go far enough, especially with fresh fruits. And you aren't always sure just why you care about these at all. Many of you just think it is too much trouble to try to adjust these and just add your lemon juice (even if you may not need it) and hope for good wine.

Think of pH as an intensity measurement, like temperature, and think of acidity as a quantity measure, like heat content. Now you can understand that while they may be related in a particular substance they are not identical. The pH is an indicator of the free hydrogen concentration when you measure it. The total acidity is a measure of the potential hydrogen ion contribution were it to react with a base.

Probably the most puzzling thing about pH is that it is based on a logarithmic scale so that each pH unit is ten times more or less hydrogen ion concentration than its adjacent value. Thus a pH of three may be 0.001 M in terms of hydrogen ion concentration and a pH of 4 is 0.0001 M. So remember the pH scale is not linear, but treat it like you would a temperature measurement and you will do just fine.

Those of you who learned about pH in chemistry class but didn't go on to study about weak acids, buffers, simultaneous equilibria and such are often puzzled about why pH and acidity are not more closely related in wine. That's another story we can't get into here, but suffice it to say that the wine system is a complex mixture of weak acids and acid salts which make pH difficult to predict, so the most efficient method is to determine the effect on pH in wine of added acids and bases is to do it experimentally. Another tricky thing discussed below is that long term these measurements may not be exact since insoluble but slow to precipitate salts may precipitate,

changing the pH and acidity. Fun, huh?

## SO WHY SHOULD YOU CARE ABOUT ACIDITY?

As far as the taste goes, total or titratable acidity (TA) is the key factor in whether your wine tastes acidic or flabby or just right. Sugar content of the wine can modify this perception somewhat, making higher acid wines more enjoyable.

## pH AND ACIDITY IN MUST

Here are some recommendations for various musts as a guideline:

White wines: 0.7% - 0.9% total acidity and pH of 3.1 - 3.4

Red wines: 0.6% - 0.8% and a pH of 3.3 to 3.6

For sweet or semi-sweet it is better to have the acidity in the higher range and the pH in the lower one to help balance the sweetness.

These are not the recommended levels for the final wines however (see below) as some changes to these values occur depending on other winemaking processes, especially yeast fermentation, malo-lactic fermentation and cold conditioning (more later).

So how do you determine the total or titratable acidity? First let's understand that the total acidity and the titratable acidity expressions are used interchangeably in the US and refer to the grams of tartaric acid per liter of solution. This can be expressed as parts-per-million, ppm, (which is milligrams per liter) or as a % which is grams per 100 milliliters. We will use % in this discussion as is the habit of many professional books. You may find that older books and books not published in the US may use other standards, particularly sulfuric acid or citric acid as standards. Be sure to understand what standard is being used in anything you read.

## ACIDITY MEASUREMENT

Now to the measurement of total acidity. In this measurement the acid in the wine sample is reacted with a base (sodium hydroxide) until exactly all of the acid is consumed. This is called the "equivalence point" or in common vernacular the "endpoint" (abbreviated e.p.) when doing a titration.

A titration is the method in which the acid source is placed in a beaker or flask, some water added, and an endpoint indicator (phenolphthalein) added. A known concentration of sodium hydroxide (typically 0.1 or 0.2N) is added slowly until the endpoint indicator changes color and the volume of sodium hydroxide is recorded. This value is used to determine the titratable acidity (or TA) by a simple equation which assumes a 5 ml sample of wine:

$$TA = 1.5 \times V_b \times N_b$$

Thus if you used 0.1 N NaOH then the formula would reduce to  $TA = 0.15 \times V_b$ , which many of you have seen in a popular supplier's catalog. Of course, others may have seen different formulas depending on the conditions of the titration in terms of sample size and base normality, but let's stick with this simple formula here.

Oh, if you are wondering whether or not added water will affect the outcome of this titration, it won't as you are

measuring the total quantity of acid which does not change with added water. You should use distilled water which you can buy at the grocery store under "Water". If you don't have access to distilled water, just take a 50 ml sample of your tap water and titrate it without added sample and see where the endpoint is. Usually one drop of base is sufficient to get an indicator change signaling that you can use this water. If your water takes several drops, then this correction can be used by subtracting this from the total amount of base added before you calculate TA.

#### FINDING THE ENDPPOINT

With white wines the endpoint is easy to see and you should have no trouble determining the TA. In the case of phenolphthalein, the proper procedure is to add base until the solution turns just slightly pink and remains so for about 20 seconds. Record the mls of NaOH. To check the e. p. add another drop and the color should become very dark red. This is how it should be theoretically. In real life there are some white wines that exhibit color change slightly as you add sodium hydroxide so be sure not to get fooled. Always go to the pinkish endpoint and check your mls by going slightly beyond it to a dark red. Often it is best to do a quick titration and then repeat it more carefully once you are in the ball park.

\*-----HOT TIP-----\*

I almost dropped my carboy after sanitizing it with cleaner - it was really wet and slippery!

My solution to prevent dropping slippery carboys was to carry them using two wet washcloths - one for each hand.

I grip the top of the carboy around the neck with one washcloth, and bottom of the carboy with the other.

Our thanks to Jimmy Phipps from Sparta, NC for this tip.

Have a tip you'd like to submit?  
Send it to [tips@grapestompers.com](mailto:tips@grapestompers.com)

\*-----HOT TIP-----\*

Here's how to check the acidity of red/black fruits. It is tricky since the fruit color is also pH sensitive and changes to a grey green color at about pH = 5.5.

#### CHOICE 1

Dilute the 5 ml sample to about 50 - 100 mls with distilled water (grocery store under water section). Do not add phenolphthalein until you have added enough NaOH that it gets to the dark green/grey point at which no red coloration should remain. Then add phenolphthalein and titrate to a slight reddish coloration in amongst the grey/green. Not easy but with practice you will learn. A side light in a slightly darkened room may help.

#### CHOICE 2

If you just note the point at which the color of the solution goes to the grey/green color without any reddish and this will be close enough for most wine work as this is a pH of about 5.5 and it only takes a few drops more to get to the 8.2 at which phenolphthalein changes color. Many wine labs use this method at least for a quick analysis at the beginning. The danger here is that this

endpoint is not sharp and inexperienced eyes may miss the slight rosy color from the unreacted pigment. Such an error will result in a low TA reading. Be sure you go on to the point at which no red color is indicated in a grey/green solution.

### CHOICE 3

Often when I am faced with a tricky, highly colored sample (blackberry, raspberry, elderberry which, unlike grapes, sometimes keep a slight reddish color all through the titration) I use a pH meter and plot pH versus ml's of NaOH as the sample is being titrated. I add in increments of 1 ml and near the e.p. around pH = 5 in 0.5 ml increments. This plot is "s" shaped and where it rises through pH = 8.2 is the traditional endpoint. This is a quick rise so you may go from pH = 5 to pH = 8 in only a few drops. Don't worry. Now you know the endpoint, as it is the point at which the change in the pH is the fastest versus added NaOH.

### USING A pH METER

Remember pH meters have delay in them, so most ones available do not make for titration "on the run" as an indicator does. So that's not how a pH meter is used in this circumstance. The NaOH is added in set increments of about 1 ml as described above and the pH meter reading is allowed to stabilize. A plot of the pH vs. NaOH volume will exactly indicate the end point in even the darkest inky wine or must. You can also use this to train your eye to the color changes.

There are lots of suitable pH meters available from various suppliers including wine hobby stores and by mail order. Omega has a wide variety. Check out their web address - [www.omega.com](http://www.omega.com). Costs as low as \$35 I think, but plan on less than \$50 to get one that reads to two significant figures. You can pay more, but it is not always worth it. Be sure to also buy the buffer solutions at pH = 4.0 and 7.0 to calibrate your meter and to store the pH meter wet in pH 7 buffer and not distilled water. There is also a special storage solution you can purchase. Clean the probe with pepsin (a protease) periodically. A protein layer builds up on the glass, especially if it is used for producing beer also. Also, be sure you replace the buffer weekly as it is a haven for bacteria.

### WHY DO YOU CARE ABOUT pH?

Other than using a pH meter like a thermometer to judge the actual hydrogen ion concentration, what other uses does it have in winemaking?

The pH of the grape must and wine is the key to the stability of the final wine and whether or not you get infection easily during the fermentation. pH determines the activity of sulfuric acid. At around 3.3 it is the most active. Higher pHs cause the formation of the sulfite ion and reduce the activity. Practically speaking you would like to have the pH below 3.7 in all cases. If you pick your own grapes then try to pick them at a pH of around 3.5 or lower.

What to do if your pH of the must is too high? You will need to add acid to adjust the pH. To determine how much to add, make up a known solution of tartaric acid (say 1%) and add it to a known volume of wine (say 50 ml's) until the pH drops into the desired region around pH = 3.4-3.5 or so for reds and pH = 3.3- 3.4 or so for whites. Calculate how much acid is needed to be added to your wine and what the

must's TA will be. Hopefully you will be within the above guidelines of pH and TA. But now comes a balancing act if you are in the unfortunate state of high acid wine and high pH. It does happen. If so, minimize the amount of acid you will add by sticking to the upper limits of the guidelines. Don't worry too much about this as you will likely be adjusting the acidity of the wine as discussed later.

#### ACIDITY AND pH RECOMMENDATIONS FOR WINE

Phillip Jackish in Modern Winemaking, p 103 (Cornell 1985) suggests the following range for pH and acidity for wines:

Wine	Titratable Acidity	pH
Dry White	0.65-0.75%	3.2-3.6
Dry Red	0.60-0.70%	3.2-3.6
Sweet White	0.70-0.85%	3.0-3.5
Semi-Sweet Red	0.65-0.80%	3.0-3.6
Sherries	0.50-0.60%	3.4-3.9

for Sparkling, Ports, Fruit and Flavored wines generally the same as the corresponding wine in the above table.

#### MALO-LACTIC FERMENTATION

If your grapes came from a region such as the mid-west where the acidity is high and the malic acid (green apple taste) is high, now near the end of the fermentation is the time to decide to do or not do a malo-lactic fermentation. In this bacterial fermentation (starters available from your wine hobby supplier) the malic acid is converted to lactic acid and the pH rises. To carry out this fermentation it is necessary to have low sulfite typically 0 to 20 ppm. If you choose to do this it is a good idea to determine if you have a malic acid problem by doing paper chromatography with a kit you obtain from your wine hobby supplier and follow the directions. As the fermentation progresses you will see the malic acid drop to zero and then it is time to add sulfite to the wine to get protection. Remember if you do a malo-lactic fermentation (MLF) you should not blend this wine with one which has not undergone MLF as it will eventually ferment in the bottle with subsequent formation of gas and reduction of the acidity. Not a nice thing.

#### COLD CONDITIONING

What if you can't get inside the guidelines? Don't worry too much about it if you are 0.1 units high or so, as a third technique will help you drop the acidity and the pH without much affect on the wine's taste or other organoleptic properties.

As it turns out, potassium bitartrate, the partially neutralized salt of tartaric acid, is pretty insoluble in wine, but it is slow to precipitate. It is also a buffer and controls the pH to a great extent. Removing a portion of it will affect the pH and TA. Cold conditioning the wine by keeping it near to slightly below the freezing point of water (not the wine) for a week or two will precipitate cream of tartar (potassium bitartrate crystals) which will reduce the total acidity and the pH. This will also ensure that you don't get crystals in your bottled wine.

Once the wine is cold, add crystals (about 1/8 tsp of Cream of Tartar per 5 gallons). This addition while not totally necessary will guarantee a quick and thorough precipitation as they act as seeds for the potassium

bitartrate to form. Cream of tartar is available in the spice section of your supermarket. While still cold, rack the wine off of the crystals. Once it has returned to room temperature, check the acidity and pH.

#### CHEMICAL ACID ADJUSTMENT

If you do end up with an acid wine after cold conditioning then and only then is it time to adjust the acid by reacting it chemically with potassium bicarbonate/carbonate (whichever is available) or calcium carbonate or with proprietary acid modifiers, like Acidex or Sihadex, typically containing calcium carbonate with crystals of calcium tartrate and calcium malate. Note that you should do only one of these chemical treatments, so now is the time to choose based on how far you need to go and if you have a malic acid problem.

If the acidity is within 0.3% of the desired value and the wine does not have a green apple taste from malic acid, you can likely use potassium carbonate/bicarbonate and simply neutralize any acid by adding this to get to the desired TA. Care should be taken as it will fizz. It is best to do this to a small portion of the wine and then recombine it with the bulk doing it more than one time so as to avoid missing the desired level and to avoid getting a salty taste which can occur at the upper levels of added potassium. Cold conditioning is again required to reduce the possibility of cream of tartar formation later in the wine. This will also reduce any possibility of salty taste and will often drop the pH a little more.

If the acidity is still too high after cold conditioning and outside the above 0.3% guideline and you have a malic acid problem, the use of calcium carbonate is recommended. But you should do this to only a portion of your wine and neutralize all of the acid to remove both calcium tartrate and calcium malate, which is much more soluble. Cold condition this treated wine and recombine with the bulk of the wine. This technique also minimizes the effect that calcium has on the other components of the wine as some of them are insoluble in the presence of calcium as well. Too much calcium may result in a chalky taste, so do this judiciously.

What do you do if the acidity of your must is too low? Easy - add tartaric acid but keep an eye on the pH to stay inside the guidelines. You can always add more acid but it is difficult to remove it. It is a good idea if you add more tartaric acid to cold condition again.

#### YOU' RE NOW IN CONTROL

Well, there you go. Blindfold is off and you have the steering wheel. You're in control.

Good Winemaking!

Dave Burley

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ABOUT THE AUTHOR - Dave Burley has been making wine since 1960 when he started a gallon of "applejack" made from apple juice, brown sugar and raisins in his Grandpa's barn.

He's maintained his winemaking interest through college, although information was sparse and supplies non-existent and made beer in graduate school. He moved to Wales for post doctoral research in Physical Chemistry and found to his delight that making wine and beer was legal and

supplies and literature abounded.

He has maintained an interest in both wine and beer making over the decades by digging into the more technical aspects of professional literature but has not lost the fun of fermentation. He's won two national Gold medals and a Bronze from an American Wine Society contest for his reds, Petit Syrah, Pinot Noir and Cabernet Sauvignon.

Recently Dave moved to South Carolina and picked 2000 pounds of vinifera grapes from his new vineyard and made about 120 gallons of wine from the twenty European varieties he has planted there. Since Pierce's Disease is indigenous to this area, he is beginning a program of grape breeding for P.D. resistant grapes from local grapes.

You can contact Dave at [Dave\\_Burley@charter.net](mailto:Dave_Burley@charter.net)

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#### CORKY'S WINEMAKING DEFINITION

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##### Bottle Sickness

- A temporary condition characterized by muted or disjointed fruit flavors. It often occurs immediately after bottling or when wines (usually fragile wines) are shaken in travel. Also called bottle shock. A few days of rest is the cure.

Look for other wine-related definitions by clicking on the 'Glossary' button from our home page at <http://www.grapestompers.com>

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#### NEXT MONTH'S HIGHLIGHTS

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- More Winemaking Stories from Tom's Cellar
- Another Surprise from Brant
- More Specials
- The next article from Bonnie's Bin
- Our Next Guest Column
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- New Winemaking Products

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