

Finishing: My Wine is Done Fermenting, Now what?

What to do after primary and secondary fermentations

Step #1: Balancing the Acidity – adjusting pH and TA

TA and pH ranges from The Winemaker's Answer Book by Allison Crowe

Measurement	Ranges for Reds	Ranges for Whites
TA	5.0-6.5 g/L	5.5-8.0 g/L
pH	3.4-3.65	3.10-3.45

Benefits of pH <3.65:

- 1) Optimum color hue in red wines and color stability
- 2) Reduced rate of oxidation or browning of color
- 3) Increased efficiency of SO₂ = less SO₂ needed and less bleaching of color
- 4) Optimum overall palatability (aroma and taste)
- 5) Protection from microbial spoilage

Roles of TA (titratable acidity):

- 1) TA is a better indicator of flavor and taste than pH
- 2) A high TA will taste harsh or too sour and will enhance bitterness or perception of alcohol
- 3) A low TA will taste flat or oily and less fruity

Additions to Adjust Acidity in Wine

Addition	When to use	Rate of addition
Tartaric acid	Most common. Use when pH is high, and TA is low Gets the job done quickest and is most prevalent acid in grapes/wine	Rule of thumb: 1 g/L of tartaric will lower pH by 0.1 Only add 1 g/L at a time
Malic acid	Usually whites and roses when MLF isn't desired Softer acidity than tartaric	Not as strong as tartaric: 1.2 g/L of malic will lower pH by .01
Citric acid	Whites only, usually increases acidity in mid-palate	0.50-0.75 g/L
Potassium Bi-carbonate	Base, not acid. Use when you want to raise the pH and lower the TA	0.6 g/L to reduce TA by 1.0 g/L

**The sooner the acid addition in the wine's life, the better the wine will taste*

Trouble-Shooting Acidity in Wine

Problem	Fix
Wine tastes too tart	Add sugar in the form of grape concentrate or sweeter wine Add Mannoprotein product (Mannofeel by Laffort) for weight in palate Go through MLF or Partial MLF Potassium Bicarbonate add
Wine tastes flat or flabby	Tartaric citric, or malic acid add Add tannins to build up finish
Wines tastes too sweet	Add tartaric, citric, or malic acid to balance sugar

Step #2: Balancing the Alcohol

The most important decision for a winemaker is picking the grapes at the right time!

When the grapes were picked too late:

Characteristics	Possible fix
Tastes like prune or raisins	Leave some sweetness in the fermentation Oak aging to add layers of oak aromas and flavors A finishing tannin (Quertanin by Laffort) to build up mid-palate
Higher pH	Acid addition A finishing tannin (Querplus by Laffort) to build up mid-palate
Light color	Blend in a darker wine Lower pH
High alcohol tastes “hot” or burns throat	Blend in lower alcohol wine Add sweetness to soften the finish Add Mannoprotein product (Mannofeel by Laffort) to soften the finish A finishing tannin (Querplus by Laffort) to build up mid-palate
Stuck ferment = sweet wine	Add tartaric acid to balance sweetness Oak aging to add layers of oak aromas and flavors A finishing tannin (Querplus by Laffort) to build up mid-palate

When the grapes were picked too early:

Characteristics	Possible Fix
Tastes “green”	Add some sweetness using sweeter wine or grape juice concentrate
Tastes too tart	Potassium Bicarbonate addition to raise pH
Light color	Blend in a darker wine
Tastes watery or simple	Use finishing tannins to build up mid-palate structure Use finishing tannins to lengthen the finish Add Mannoprotein product (Mannofeel by Laffort) for weight to the palate

Step #3: Protecting the Wine – SO₂ Management

Free vs. Bound SO₂:

- 1) **Bound SO₂** refers to sulfites bound to chemicals in wine such as acetaldehydes, anthocyanins, or sugars. Does not actively protect your wine
- 2) **Free SO₂** refers to sulfites available or “free” to work to protect the wine
- 3) **Total SO₂** = Free + Bound SO₂
- 4) The first few additions of SO₂ to a wine will be bound up, but will eventually stabilize (unless oxygen is present)

Roles of Sulfite in Wine (SO₂):

- 1) Anti-oxidant – prevents aldehydes (bruised apple aroma), and prevents oxidation (sherry-nutty-caramel aroma and browning color)
- 2) Anti-microbial agent – prevents spoilage from yeast and bacteria
- 3) Anti-oxidant + Anti-microbial agent = increased aging ability

Target SO₂ using pH:

The lower the pH the less SO₂ needed

pH	Target Free SO ₂ ppm
3.3	26
3.4	32
3.5	40
3.6	50*
3.7	63*
3.8	79*
3.9	99*

*I don't recommend having a Free SO₂ > 40 ppm!

Adjusting SO₂:

- 1) Too little SO₂ = spoilage and oxidation
- 2) Too much SO₂ = chemical flavor and aroma as well as bleaching of color
- 3) Use Campden pills or KMBS powder (Potassium metabisulfite)
- 4) Amount needed is pH dependent
- 5) If VA is elevated, increase amount of SO₂
- 6) SO₂ gets bound with presence of oxygen. If your Free SO₂ isn't increasing with additions, but your Total SO₂ is, there is oxidation. Quit adding more!
- 7) In the beginning, add SO₂ weekly until stable
- 8) After stable, monitor SO₂ monthly
- 9) **Calculation:**
(gallons of wine) x (desired Free SO₂ bump) x 0.0066 = grams of KMBS to add

Step #4: Protecting the Wine – VA Management

Volatile Acidity (VA) and Ethyl Acetate (EA)- bacterial spoilage caused by *Acetobacter*. Smells like vinegar or nail polish remover and has an acidic, vinegar-like finish on the throat.

Causes:

- 1) *Acetobacter* can come from fruit flies, dirty equipment, and compromised fruit
- 2) Grows best in oxygen conditions and prefers warm temps
- 3) Eats sugar

Prevention:

- 1) Keep containers topped up to avoid oxygen, or gas headspace regularly
- 2) Add SO₂ to fruit at crusher/destemmer, 40-60 ppm
- 3) Keep SO₂ level adequate on finished wine, 30-40 ppm
- 4) Avoid handling wine often and exposing to oxygen
- 5) Cellar sanitation
- 6) Lower the pH of wine
- 7) Finish primary and secondary fermentation quickly
- 8) Ferment to dryness to avoid sweet wines

Fixing problem:

- 1) Sterile filter, drop temperature, prevent oxygen
- 2) Blend away into a bigger lot of wine with low VA
- 3) Sweeten wine to soften harsh acidic finish. BE CAREFUL, MUST STERILE FILTER!
- 4) Cover with sweet oak flavor
- 5) Build up mid-palate with finishing tannins to mask harsh acidic finish
- 6) Add Mannoprotein product to soften the harsh acidic finish

Step #5: Finishing the Wine

Fining Chart:

Problem	Description	Fining Agent
Sulfide issues	Stinky aroma of rotten egg, stagnant water, garlic, onion	Copper Sulfate Ascorbic acid
Haze in whites or rose	Protein instability – white flakes	Bentonite
Astringency-a feeling of dryness or puckering sensation from lack of saliva	Excessive tannins or tannin imbalance	Add tannins to balance Autolees (Laffort) Egg white or other protein Gelatin
Bitterness	Taste on the back of the throat	Bentonite Casein
Oxidized wines	Browning of color, Port-aromas	PVPP-polyvinylpolypyrrolidone
Short finish	Wine drops at the end of palate	Mannoprotein Tannin addition
Lacks mid-palate	Donut-wine – nice front and finish but lacks mid-palate	Tannin addition