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Wine Analytical Services – A Quick Reference

An important attribute to winemaking is quantitative analysis. Several benefits from routine analysis include:

- Harvest fruit upon maturity
- Knowledge to alter wine chemistry (i.e. acid, sugar, tannin, etc.)
- Manage potential microbial problems
- Use of proper filtering techniques
- Meet TTB regulations
- Meet wine export regulations
- Enhance record keeping of each vintage

These benefits, among others, contribute to our overall ability to enhance wine quality. Although winemaking is as much an art as it is a science, managing our numbers allows us to maintain production of good, commercially viable wines.

Not all wineries can maintain an in-house analytical lab and hire an enologist for quality control. However, several wine analytical labs are available to the PA wine industry across the United States.

The use of these labs becomes *essential* during the harvest months. Because [wine grape] juice analysis has become an industry standard, we have seen easier fermentations, a greater ability to finish fermentations, and less production of hydrogen sulfide during fermentation that lingers in the bottle. Without this baseline information from juice, fermentation and final wine quality becomes a "shot-in-the-dark" process. Juice analysis of *each* lot of *every* variety:

- Determines basic harvest parameters (pH, TA, and °Brix)
- Quantifies the level of yeast assimible/available nitrogen (YAN), including ammonia concentration
- Establishes the microbial stability of the juice, must, and wine
- Quantifies malic acid concentration

I consider the following juice analysis essential if you are a production winery:

- pH
- TA
- °Brix
- YAN
- Ammonia
- Malic Acid Concentration
- Microscopic Evaluation

The same philosophy applies to wine. The appropriate way to determine that a primary or malolactic fermentation (MLF) is complete is by wine analysis. The listed wine labs will have varying units applied to their analyses, but fermentation is considered complete when **less than 0.2% (<2 g/L) sugar remains**. MLF is considered complete when the malic acid concentration is less than 30 mg/L.

Analysis that includes hydrometers, refractometers, or even Clinitest is not accurate enough to ensure that the primary fermentation is complete. Residual sugar (glucose/fructose/sucrose) by enzymatic methods is critical. "Stickies" or sweet wines in which the fermentation is stopped prior to completion require alternative analysis.

This is also true for alcohol content. Alcohol concentration by ebulliometer is not accurate enough to reflect what you write on a wine label. All wines should have their alcohol content available on the label. Alcohol by NIR or GC are the methods I prefer for accurate alcohol content.

In my book, **the minimal**, basic wine analytical tests that all commercial wineries should retain for their records include:

- pH
- TA
- Alcohol
- Volatile Acidity (VA)
- Free and Total SO_2
- Malic Acid Concentration
- Residual Sugar Concentration
- Microbial Records (unique to each winery)

Attached is a list of recognizable wine analytical laboratories in the United States. I have included information on where you should send samples and who to contact if you have questions regarding their analysis. These labs are **listed in alphabetical order**, not by preference. Additionally, I should note that several wine labs require you to register, which allows them to maintain a file or back up of your analytical testing. However, after this simple process is completed, many labs including *Enartis Vinquiry*, *ETS Laboratories*, *Napa Valley Think Thank*, and *Scott Labs* will send you free sample bottles and labels upon request. **ALL LABS HAVE SPECIFIC INSTRUCTIONS FOR SENDING IN SAMPLES. PLEASE REVIEW THEIR WEBSITES PRIOR TO SENDING IN SAMPLES FOR ANALYSIS.**

As a winemaker or enologist, you should not be afraid to contact these labs and determine what methods they are using to analyze your wines. You have every right to understand what they are testing for, how they check their precision and accuracy, as well as their limits for each test. This is why I have included contact information in the list below.

The chart included with this report is a brief overview of what each wine lab has to offer you. Please note, that *QC Labs* headquartered in Philadelphia, Pennsylvania will accept samples from wineries. ***You must call ahead to arrange mailing in samples, receiving a courier pick up, and/or analysis pricing.***

At the conclusion of this report is a series of resources available for those of you who would like more information on conducting analytical tests in-house.

List of Analytical Services

Eastern Wine Labs: http://www.easternwinelabs.com/

Need to send samples?

Eastern Wine Labs
236 New Rd.
Southampton, NJ 08088

Questions?

Phone: (609)-859-4302
Virtual Winemaker Service (**charge for 15 min.**): WineMaker@EasternWineLabs.com

Enartis Vinquiry (previously Vinquiry, Inc.): http://www.enartisvinquiry.com/

Need to send samples?

Enartis Vinquiry
7795 Bell Rd.
Windsor, CA 95492

Questions?

Windsor Office phone: (707)-838-6312
Technical Customer Service Email:
Molly Badau: molly.badau@enartisvinquiry.com
Christie Mahoney: christie.mahoney@enartisvinquiry.com

Enology Service Lab (VA Tech): http://www.fst.vt.edu/extension/enology/EnolServLab.html

Need to send samples?

Enology Service Lab
Attn: Ken Hurley
Rm. 113, FST Bldg.
Virginia Tech (0418)
Blacksburg, VA 24061

Questions?

Ken's phone: (540)-231-8690
Ken's email: enology.services@vt.edu

ETS Laboratories: http://www.etslabs.com/

Need to send samples?

ETS Laboratories
899 Adams St. – Suite A
St. Helena, CA 94574

Questions?

St. Helena Office phone: (707)-963-4806
Email: info@etslabs.com

Napa Valley Think Tank: http://nvthinktank.com/

Need to send samples?

Napa Valley Think Tank
1432 Main St.
St. Helena, CA 94574

Questions?

Tiffany Eicholz, Business Manager
Tiffany's phone: (707)-963-2055
Tiffany's email: tiffany@nvthinktank.com

NYS Wine Lab (Cornell): www.grapesandwine.cals.cornell.edu/extension

Need to send samples?

Ben Gavitt
115 Food Research Lab – NYSAES
630 W. North St.
Geneva, NY 14456

Questions?

Ben's phone: (315)-787-2263
Ben's email: bkg1@cornell.edu

Scott Labs: http://www.scottlab.com/products-6.aspx

Need to send samples?

Scott Labs Laboratory
2220 Pine View Way
Petaluma, CA 94954

Questions?

Office phone: (707)-765-6666
Maggie McBride's (Lab Director) email: maggiem@scottlab.com
Kassy Tinny's (Lab Analyst) email: kassyt@scottlab.com

QC Labs (Pennsylvania)

Need to send samples? Questions?

Always call ahead for analysis pricing, sample turn-around time, and where to mail samples. You may also call ahead for sample pick up by courier **($15 charge)** if local to a QC Lab location (labs located in the Philadelphia, Allentown, and Reading areas).
Ask for George Argiriou.
Phone: 215-355-3900

Chart Overview of Wine Analytical Labs

Company	TTB Certified	Basic Wine Analysis	Micro Analysis	Juice Analysis	Phenolic Analysis	Corks/ Barrels/ TCA	Wines for Export	Sensory
Eastern Wine Labs (NJ)		X		X				
Enartis Vinquiry	X	X	X	X	X	X	X	X
Enology Service Lab (VA)	X	X	X	X	X		X	X
ETS Labs	X	X	X	X	X	X	X	X (Davis 20 Pt. Scale)
Napa Valley Think Tank	X (July 2011)	X	X	X	X	X	X	X
NYS Wine Lab		X		X			X	X
Scott Labs	X	X	X (Plating)	X			X	X
QC Labs (PA)		X	X	X	X	X		

Chart up-to-date as of June 2011

Basic Wine Analysis: pH, TA, Free & Total SO_2, VA, Malic Acid, Alcohol, Residual Sugar
Micro Analysis: Bacteria/Yeast Plating (including for *Brett*) and/or PCR
Juice Analysis: Brix, pH, TA, YAN, Ammonia, Malic Acid
Phenolic Analysis: Color, Phenolics/Tannins

Resources:

"Chemical Analysis of Grapes and Wine: Techniques and Concepts" by Patrick Iland, Nick Bruer, Greg Edwards, Sue Weeks and Eric Wilkes. (2004) ISBN: 0-9581605-1-1

"Wine Analysis and Production" by Bruce W. Zoecklein, Kenneth C. Fugelsang, Barry H. Gump, and Fred S. Nury. (1999) ISBN: 0-8342-1701-5

http://www.enartisvinquiry.com/

- Winemakers's Corner
- Protocols
- Analytical Protocol