

Important Dates

- July—No monthly meeting!
- July 23rd Board Meeting at the Swank's 7pm
- August 6, Monthly Meeting at shop
- August 13 Board Meeting

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CELLARM^{STERS} of Los Angeles

July 2015

President's Message

I hope everyone enjoyed the talk on pH (potential of Hydrogen) at the June Monthly meeting. Turvicio Botella from Hanna instruments gave a riveting talk about pH, pH probes, pH meters and calibrating pH probes for accuracy. He stressed that the bulb in the portable field pH tester needs to be changed each year to ensure accuracy of the probe. Bench top probes probably need to be changed each year as well but meters with the ability to measure mV can use the slope formula with calibration solutions to determine if the probes are still giving accurate pH readings. If you missed the meeting check out the Hanna website and look at the FAQs, Testimonials, White Papers and Videos on pH. <http://hannainst.com/usa/subcat.cfm?id=040>

Turvicio will be returning for our August 6th meeting at the shop to

discuss SO2 analysis in wine.

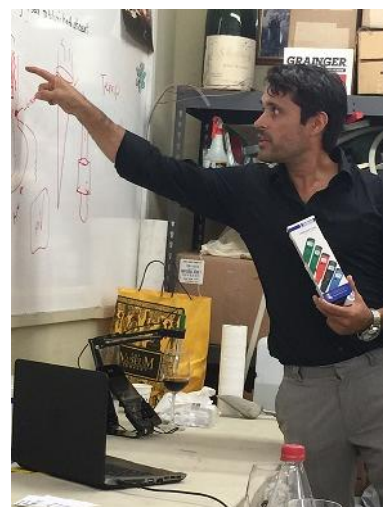
The bus trip in Paso Robles was a huge success thanks to DeeDee Mathews, Gregg Smith and Peggy Wiles. See article on page 2 for the trip report.

I hope everyone's vines are doing well. I expect to start putting nets on my Viognier at the beginning of July followed by netting the Syrah and Grenache as soon as veraison sets in and the grapes start to change color.

If you haven't contacted growers or John Daume at the shop to get grapes, now is the time. Harvest is just around the corner. We will be making a club wine this year. We plan to make a barrel of Tempranillo and possibly another barrel of Grenache if there is enough interest. Details are in the newsletter. If you are new to making wine, want to make some Tempranillo or Grenache or

would like to help mentor a newbie in the process, we would love to have you join us.

There is nothing like a nice cold, crisp food



friendly Rose wine on a summer evening. I bought several at each of the wineries in Paso Robles and plan to enjoy them on hot days ahead. We will not be having a meeting in July. I hope everyone has a wonderful 4th of July celebration. Jennifer Swank

2015 President, Cellarmasters of Los Angeles

Paso Trip Report

By Jennifer Swank

We started the weekend on Friday at a barrel tasting of Mark Waserman's delicious 2014 Vinemark Cellars wines.

On Saturday, the bus left promptly at 10:00am for Hearthstone Vineyard and Winery. We tasted some very delightful wines and enjoyed meat and cheese plates that paired perfectly with their wines. The KoKos Coconut Gouda cheese paired with their 2010 Lodestone GSM was my favorite. It was fun and educational talking with winemaker Paul Ayers, and everyone enjoyed the wines and vineyard.

The views and the wines at Calcareous were outstanding. We had an amazing tour of the vineyards and winery followed by a yummy lunch and dessert paired with Calcareous wines while enjoying 360o views of the valley. The "Lily Blanc" blend of Viognier, Roussane and Grenache Blanc was a hit in my books. Several people wanted to stay the rest of the afternoon at Calcareous, but we still had more wineries to explore.

Winemaker and owner, Victor Abascal, gave us a passionate introduction to dry farming and his winemaking style at Vines of the Marycrest. His 2012 "My Generation" blend of Zinfandel, Syrah, Mourvedre and Petite Syrah was a favorite of mine. We were also able to witness American Pharoah win the Belmont Stakes for the final race for the Triple Crown of Thoroughbred Racing. I know I had tears in my eyes when he crossed the finish line.

Judy Starr delighted everyone with her elegant wines at our final winery stop at Starr Ranch. Judy's description of her wines was in perfect balance with the setting in the shade of her glorious oak trees. In order to save my palate and be able to taste and enjoy all the wines of the day, I did spit my wines earlier in the day, but Judy's were too delicious not to drink, and it was our last stop before dinner. Judy's late harvest Viognier paired with her Lemon Squares is divine

We enjoyed some wonderful wines from Anglim Winery with dinner at Tenth Street Basque Café. We were so lucky to have winemaker Steve Anglim describe his winemaking style between courses. Steve had some delicious wines to share including a Rosé, Viognier/Roussane, Grenache, and Syrah. I really liked his Grenache and enjoyed a lovely bottle the next night with dinner.

We couldn't have had a better end to the weekend than a wine tasting with winemaker, Paul Frankle, at Sculpterra Winery. Everyone enjoyed Paul's winemaking style from his Viognier, Grenache comparison in screw cap vs. cork and his barrel tasting of Cabernet Sauvignon in French vs American Oak. I am in love with Sculpterra's Viognier and it would be a dream if I could come close to making something as good one day.



Photos by Rich Swank



CellarMasters Club Wine Sign-up now

Looking for a minimum of **twelve** people to commit as winemakers to make a barrel of wine together. There will be a \$75 dollar fee to cover your share of the grapes and wine making supplies. The vote at the management meeting is to go with Tempranillo and if we have enough interest for two barrels, the second one will be Grenache.

Matt Lester will be the lead winemaker on this project. This is a great experience to learn the skill and art of wine making from experienced club members. It is also a very fun group activity.

You will need to commit to the following:

- ◆ Pick 100 lbs of grapes (this is enough grapes to make a five gallon bucket of juice)
- ◆ Take the juice home after the de-stemming and crushing (probably at the vineyard)
- ◆ At home you will follow the protocol provided by Matt Lester for fermenting your wine
- ◆ Be available to meet with the other participants and Matt Lester. The meetings will be to learn about wine making and to work together to ensure all of the batches are made the same, to ensure success when combined in the barrel.

The deadline for signing up is July 15th. Please contact Matt Lester at lestmj2@hotmail.com.

In Memory of club member Charlie Poalillo

I had the pleasure of visiting Charlie Poalillo at his Paso Robles vineyard a few years back.



He and Joyce opened up the Poalillo tasting room for us one Father's Day.

submitted by
Jon Umhey

R.I.P. Charlie

9/14/28 - 6/11/15

Dry farmed zin was his niche.

There were only 3 vineyards in Paso when he set up shop.

Now there are over 200.

Once upon a time Charlie and Hank Donatoni were making wine in Topanga Canyon and part of the original Cellar-masters gang

I am sorry to say Charlie has passed.

But he did so as he would have wished...

in his vineyard (literally)

He joins his beloved wife Joyce in heaven.



Grapes and wine supplies for sale

FOR SALE

I am a member of the wine club and I have Petite Syrah for 50 cents a pound. Last year they were ready to pick around the 2nd to 3rd week of August, I will keep you informed on sugar bricks and pH balance if you send me your email. I live in Lancaster. Email Debbie Yaney at c21dyaney@hotmail.com



FOR SALE

It's Monty and Linda Swayze here letting you know that we will be selling our grapes again this summer (by the pound or by the ton).

We grow Grenache, Zinfandel, Alicante Bouschet, Tempranillo, Sauvignon Blanc, and Semillon, all are available this year.

We will still be selling for \$.50 per pound (minimum of 100 pounds) or \$1,000 per ton - you pick.

We also provide crushing/destemming for the small additional fee of \$.10 per pound.

This coming harvest we will have a small quantity of cleaned and de-labeled cases of bottles for \$10 per case.

We can be reached through our email address:

swayzevines@verizon.net or by phone: (661) 724-2074. Please contact us to be put on our brix update list.

Hope to see you (again?) this year

FOR SALE:

Home built wine cooler currently configured for case storage. Holds approx. 30 cases. \$435 obo

Includes Breezeaire WKCE-2200 cooler.

ext. dims. - 87"H x 56"W x 42"D

int. dims. - 73"H x 42"W x 28"D

Requires a minimum of two burly men to transport.

Used Macro Plastics T-Bin with lid-\$235 obo

Used floor corker. Made in Portugal. \$35

6 cases used/clean Burgandy bottles. \$18

Photos on request. Contact Kirk Bloom at kirkbloom@gmail.com,

FOR SALE

These items were all purchased from the Wine & Cheese Making shop in Woodland Hills when new.

We are asking \$200 total for the following items:

14- 5 gallon glass carboys, 3- 7 gallon glass carboys, 1 - 2 gallon glass carboy, 2 plastic 5 gal. carboys

4- 32 gal. Continental Huskee fermenting tubs with lids. These are food safe, of course.

Electric crusher with a 1 HP LU.C.M.E. motor, 110 volt. Motor is in need of cleaning.

1 round grape press

The items must be picked up from our home in west L.A. Karen Cryer (Gill Cryer, former member) 310-471-9680

Broccoli Cheese Casserole and Cucumber Soup



This is the recipe winner for May.

By Mimi Roberts

3 pounds of fresh broccoli florets

1/4 cup grated pecorino romano cheese or parmesan

8 oz. extra sharp cheddar cheese, grated

1 pound Velveeta cheese, small cubed

Cracker/Breadcrumb Topping:

20 crackers (whatever kind you have on hand)

1/2 cup seasoned bread crumbs

2 tablespoons minced garlic

1/3 cup chopped fresh parsley

1/2 teaspoon dried thyme

1/2 teaspoon dried oregano

1 teaspoon smoked paprika

1/4 teaspoon cayenne pepper

1 teaspoon black pepper

1 teaspoon salt (more or less to taste)

1 stick of melted butter

Preheat oven to 450 degrees.

In a large stockpot of boiling salted water, blanch broccoli florets for 3 minutes. Remove florets from water

and put them in a large casserole dish that has been lightly greased.

Sprinkle all cheeses evenly over the broccoli florets.

In a food processor, combine the crackers (crumble them with your fingers as you put them in) and all the other topping ingredients except the melted butter. Pulse until the crackers are broken down and mixture is combined. Add the melted butter in a stream as you continue to pulse. Once combined, crumble the mixture over the casserole evenly.

Bake in 450 degree oven for approximately 20 minutes or until topping is brown and cheeses are bubbly.

June winning recipe is

Cold Cucumber Soup with Yogurt & Dill and you can find it here.

<http://www.foodandwine.com/recipes/cold-cucumber-soup-with-yogurt-and-dill>

Made by Juanita Schmidt

Board Meeting Minutes June 11, 2015

Attendees: Jennifer & Rich, Bruce and Dee Dee, Dan S., Gregg O., Gregg S., Dave L., Rick & Peggy, Juanita S., Suzy & Jeff, Chelsea

Item 1. pH session by Tivurcio Botello was well received by members. Motion was approved to look into buying a pH tester as club equipment. Jennifer will look into it, and report back on models and cost for a final board decision.

Item 2. For the August meeting Tivurcio Botello has agreed to come back to give a talk on SO².

Item 3. Club wine making for new members or any member interested. See write-up on **page 3** for details. Matt Lester has volunteered to be the lead wine maker.

Item 4. Treasury report. Club balance is healthy. Paso trip was a financial

success due to the drawings and attendance. Even with the club subsidization it only cost the club \$214.00.

Item 5. Newsletter will publish club wine making guidelines and information. Interested club members need to respond asap to Matt.

Item 6. Membership. Dave has received membership dues from a number of new members. Welcome new members.



2015 Calendar



	Details	Date
Monthly Meeting	NO MEETING IN JULY due to July 4 holiday.	No meeting in July due to the holiday.
Board Meeting	At the Swank's.	July 23rd
Monthly Meeting	SO ² talk. Rosé is the August wine of the month. Food theme is Picnic foods.	August 6
Board/Planning Meetings	Second Thursday of the Month. Location TBD.	August 13

Dinner Meeting Protocol

DUES: Everyone attending should be a fully paid member of Cellar-Masters. Please make sure to pay your dues.

GUESTS are welcomed as an introduction to our club.

POT LUCK means everyone is expected to bring a dish to share.

GREEN dining is bringing your own plates, glasses, and utensils. We have emergency supplies on-ly.

WINE is meant to be shared. Please bring a bottle along and share it.

ATTENTION given to our speaker is a sign of respect.

WELCOME new people by learning their names. Ask them to join you.

CLEAN UP is everyone's job. Don't leave without doing your share. **RESPONSIBILITY** means drinking sensibly.



The Prez, Jennifer Swank at Planning Party, June.

Heritage Vines and Winemaking Part 2

We now know what grapes are growing at Olvera Street in downtown Los Angeles. Over the years, I've heard several different labels such as Champagne or Red Flame. I've also heard that they may have been Mission, always the most likely candidate because of the prevalence of that grape during the area's winemaking heyday in the 19th century. But the answer had never been confirmed until today's DNA analysis from the Foundation Plant Services facility at UC Davis cleared everything up.

I was lucky enough to get a contact at FPS through Wes Hagen. A bigger break occurred when Jerry Prangl, the lab manager responded back. He knew about the vines at Olvera Street and confirmed that they had no information on them in their database. It turned out that FPS was interested enough to waive the costs and offered to test samples from all three vines for free. The fee is currently \$345 per sample for eight DNA markers.

I requested the sample collection kit from the UC Davis/FPS website. It arrived a week later and contained the following items: stiff card stock for holding leaf samples; blotting paper (if leaves were wet); envelopes for the card stock; a half-gallon zip-top bag; a half-dozen desiccant pouches and a half cup of loose des-

iccant. The instructions were very clear as to which leaves to collect - "three leaves closest to the shoot tip are best" - and the conditions to collect them - "avoid collecting during a heat wave" or my case, an early May rain-storm. Samples were sent in late May and the three to four week waiting period began.

Monday June 15th, I got the following email:

Hi Michael,

We have the results of our DNA analysis of the three Avila Adobe Vines.

The three vines are identical to one another and they match what has become known as 'Vina Madre'. This is the famous "old Mission grape of California" growing at the San Gabriel Mission. We know from our analysis of samples from San Gabriel that this variety is a first generation hybrid between a native Southern California grape (Vitis girdiana) and the European grape (Vitis vinifera) variety 'Mission'. Yes, the names are confusing.

'Mission' was the original V. vinifera variety introduced into southern California by the Spanish missionaries starting in 1769. For ~100 years, "Mission" was the only V. vinifera variety grown in California. 'Mission' is thought to be originally from Spain where it is called 'Listán Prieto'; it had a long history of cultivation in South America under the

name 'Criolla Chica'.

Plantings of the V. vinifera variety 'Mission' in Southern California overlapped with the range of the native "Desert Grape" species, Vitis girdiana. Grape species readily inter-breed; spontaneous hybrids were inevitable.

The hybrid 'Vina Madre' apparently had traits of sufficient interest to prompt someone to take cuttings and plant it at different locations.

Was Vina Madre propagated and grown extensively for wine production? After time, was it grown instead 'Mission' (more productive, drought tolerant)? Or was its cultivation limited to plantings near dwellings, where the extremely vigorous growth would have been advantage for providing shade? I don't know. It would be very interesting to find evidence of production scale plantings.

Thank you for submitting these samples,

*Jerry Dangl
Manager, Plant Identification
Lab Foundation Plant Services*

So, what to do now? Try to make wine if possible! More on that next month.

By Michael Holland



"The three vines are identical to one another and they match what has become known as 'Vina Madre'"

See LA Cellarmasters Facebook page for more photos.

Posted by Michael.

WineMaker Magazine Conference, Willamette Valley, Oregon

May 28-June 1, 2015

I was able to recently attend this great annual conference held at the DoubleTree Hilton in downtown Portland, OR. My wife and I made this into a 3 week trip in our motorhome and after the conference spent 2 weeks leisurely driving down the Oregon and Northern CA coast before heading home to Camarillo.

The conference itself was held all day Friday and Saturday with optional winemaking boot camps offered on Thursday and a Willamette Valley wine tasting day trip held on either Thursday or Sunday.

For the boot camp, I selected Wine Chem 101, since I felt chemistry was my weakest link in the winemaking process. It was taught by Daniel Pambianchi who is WM Mag Technical Editor and author of "Techniques in Home Winemaking-The Comprehensive Guide to Making Chateau-Style Wines" which, coincidentally, was the text book that was used in the 17 week on-line course Winemaking 101 that I took a couple of years ago through Allan Hancock College in Santa Maria. Daniel is an excellent instructor and his book is a great reference.

The two day main conference was divided up into several different tracts from kit winemaking to general or advanced winemaking, to grape growing, with several group interactive workshops, wine tastings, and social events. In between the mostly 1 hour to 1-1/4 hour seminars, there was ample time to visit several sponsor exhibits and equipment/supply purchasing opportunities as well as Q&A with the knowledgeable reps.

This year's conference had amateur and a few professional winemakers from about 25 states and three coun-

tries (Canada, Brazil and Switzerland) included in the approximately 300 attendees. I was surprised by groups from many northern states including NY, MT, and WY, lots of mid-westerners, and some southern states including LA, FL, AZ, and high elevation NM. All of them with obviously a much shorter growing season and many other hardships compared to we Californians. Everyone enjoyed the interaction at the seminars, tastings and meals.

My favorite instructor was Wes Hagen from Clos Pepe Estate Vineyard in the Santa Rita Hills AVA in Lompoc. Wes is a frequent contributor to WM Magazine and is recognized as one of the most influential winemakers in the US. His wines, mainly Pinot Noir and Chardonnay, have won numerous awards and ratings of 92+. Wes was instrumental in writing up and getting approved the Santa Rita Hills AVA. He is knowledgeable, witty, and often unconventional. (Plug...for a chance to meet Wes and taste many of his wines, I am holding a private wine tasting of Clos Pepe at my home/ vineyard in Camarillo on Saturday July 18 from 3pm sharp to 5pm or so for the first 75 wine lovers who sign up—contact me at 805 338-0140 or al.gottlieb@verizon.net for details).

The Sunday wine tasting trip featured stops at 3 different wineries. My group ventured to Apolloni Vineyards (30 miles NW of Portland in Forrest Grove), and then all three vans met at Lenne (SW of Portland in the Yamhill-Carlton District). Apolloni featured estate grown Pinot Noir and Italian style white wines. The tasting room also had a gelato bar, and a cheese and sausage bar...perfect compliments to the wine tasting. A newly dug underground cave stays at a near constant 55 degrees and 95% humidity

which minimizes the frequency of topping up the all French Oak barrels. Leanne sits midway up a beautiful hill with a large deck overlooking the south facing vineyards. Its' 21 acres of estate grown vines are planted in Yamhill County's "poorest soil" — resulting in concentrated Pinot Noir. At Lenne we all were treated to a wonderful gourmet catered lunch and wine tasting.

A couple of special offers:

1. 10% off your entire cart at Vinmetrica (online vinmetrica.com) a leading maker of wine analyzers for SO₂, pH, TA, MLF and Residual Sugar. (Just enter coupon code VINWMM10 when you checkout — expires 7/1/15).
2. 10% off qualifying items such as yeasts, nutrients, acids, ML bacteria, etc. from thebeveragepeople.com in Santa Rosa, a great winemaking shop up north. Add code WM2015 to the comments/more info box when checking out online.

One recommendation: I was staying in my RV located about 10 miles away from the hotel conference center, I had to get up early and take a 35 minute ride into downtown Portland, and then walk a 1/2 mile to the venue. I would advise staying at the hotel where you can relax between classes better and interact with the other attendees more and enjoy evenings over mucho bottles of homemade wines.

Next year's Conference is scheduled for Santa Rosa, CA in the Sonoma Valley and will be headquartered at the Hyatt Vineyard Creek Hotel on May 19-21, 2016 and may feature an additional wine bootcamp day after the main conference. I hope to see you there.

by Al Gottlieb

Accurate pH Testing (reprinted by request)

We all know how important pH in wine is, but I've spent years getting more and more frustrated with testing for pH as I've often gotten inconsistent results.

For example, I often got pH meter readings with the same meter and the same must/wine that varied by over 0.4 (3.3 vs. 3.7 pH)!

Recently, however, I've discovered some information that really seems to help:

It is critically important that ALL CO₂ in the sample be driven off by vigorously shaking or lightly micro-waving the sample before testing for pH. CO₂ produces carbonic acid in solution and will give you a falsely low pH reading. Most grape must has some CO₂ in it - even during cold-soak and before yeast inoculation - due to wild yeast activity.

When adding acid, it is critical that the must be mixed completely 100% homogeneously, otherwise the particular sample you take to test could well have a inaccurately high or low pH.

The pH of a solution will change significantly as the temperature of that solution changes.

If the temperature of the sample or temp of the pH meter is unstable during the testing, the pH reading will be unstable as well - it will

"drift." pH meters give less accurate (and slower) readings the farther the sample temperature is away from 25C/77F.

The ATC (Auto Temperature Compensation) feature that many pH meters have do compensate for the loss of accuracy at sample temps at other than 25C/77F, but does not correct the pH reading back to any sort of standard (ie., what it would be at 25C/77F). For example, during cold soak, a pH reading at 40F by an ATC pH meter tells you accurately the pH of your sample, but only at that particular temp, ie, 40F, and not what the pH of the sample would be at 77F, which is what you want. Meters w/o the ATC feature will give you an IN-accurate reading at that particular temp, and you then have to apply the appropriate temperature correction in order to get an accurate reading for that particular temperature. Which, again, would not be the pH at 25C/77F, which is what you want.

It helps with accuracy and speed to have the buffers you use to calibrate the pH meter be at the same (and constant) temp as the samples you'll be testing.

If the pH meter itself is warmer or cooler than the

sample, that will cause problems as the meter's temp and the sample's temp constantly change as they both try to come to an equilibrium temp when you put the meter in the sample to test.

Conclusion: Keep the temp of the must, wine, buffers and pH meter at the same and constant temperature as close to 25C/77F as you can such that you can always be comparing apples-to-apples (and must-to-must, wine-to-wine, year-to-year.)

Best Practices: What I do now is immerse the buffers, samples, pH meters and a thermometer in a water bath (bowl of water) at room temp (close to 25C/77F) for an hour or so or until everything has stabilized at the same temp, and then calibrate and test the samples while keeping the calibration buffers and the samples in the water bath so that their temperature does not change.

The result has been fast and consistent readings with no drifting.

Yay!
Andy Coradeschi

Visit the Home Beer Wine and Cheese Shop for your wine needs in 2015

Get your order in, before we sell out! Mail, FAX or In Person at The Shop Only, Sorry , no web/email orders accepted Quantities of these super-premium varietals are very limited and we sell out very fast: It's first ordered, first reserved, until sold out.

Go to:

www.HomeBeerWineCheese.com

Come and enjoy Camarillo Custom Crush Winery on the "Ventura County Wine Trail"

<http://www.venturacountywinetrail.com/>

The CellarMasters Home Wine Club is a volunteer organization dedicated to promoting the art and science of home winemaking. We provide a forum for the exchange of information on winemaking methods and personal experiences.

Monthly meetings are normally held the first Thursday evening of the month at the "Home Beer, Wine and Cheese Making Shop" (our sponsor) in Woodland Hills, California. CellarMasters is the sole sponsor of the annual U.S. Amateur Winemaking Competition.

This is the official CellarMasters newsletter. Annual subscriptions are complimentary with CellarMasters membership. We attempt to publish monthly but harvest, bottling, and/or purely educational wine-tasting may well deter us.

CellarMasters Membership and Paying your dues

Whether you're joining the club for the first time or renewing your membership please visit our web site where you can pay your dues online via a credit card or PayPal.

Our web site address is: <http://cellarmastersla.org/>

The link to paying for your membership via PayPal is <http://cellarmastersla.org/cellarmasters-membership/>

Dues are only \$30/year if you live in the state of California and \$20/year if you live out of state. And includes all these benefits:

- ◆ A yearly subscription to [Winemaker Magazine](#). A \$25 value!
- ◆ Our monthly club newsletter filled with details of club events, winemaking tips, and all sorts of wine related happenings.
- ◆ Invitations to club events and seminars, such as our judging clinic, vine pruning clinic, and home wine-makers' home cellar tour.
- ◆ Discounts on club sponsored wine tastings, wine country bus tours, winemaker-themed dinners, and other special events held throughout the year.
- ◆ Up to a 10% discount on supplies purchased from our

club sponsor, the [Home Wine, Beer, and Cheesemaking Shop](#) in Woodland Hills.

- ◆ And, though it hardly needs mentioning, personal help and advice from fellow Cellarmasters, many of them award-winning wine makers.

If you are adverse to paying on the web you may send a check to our treasure at:

Bruce Kasson
11110 Zelzah Avenue
Granada Hills, CA 91344

You can download the form and send in a check: <http://cellarmastersla.org/contact-us/>



pH Electrode Slope Check

Purpose: Identify non-working pH electrode

To ensure your pH electrode is functioning properly, the mV values of two calibration buffers can be verified using their slope to ensure the probe is responding within the healthy, specified range. Most lab will use a 3 point calibration using 4.01, 7.01 and 10.01 however with certain industries, other buffers can be used such as 8.20 when total acidity titrations are performed. Below we will look at the equation that helps us manually ensure that our probe is responding well.

*** Note – Hanna Technical or Millesimal buffers are recommended to ensure the buffer is precise and accurate as possible.*

$$\frac{\left| \frac{\Delta mV_{pH}}{\Delta pH} \right|}{59.16} \times 100 = \text{Slope\%}$$

The 59.16 mV is being used as the theoretical maximum value for the slope to which we are comparing this electrode to.

Now, if we use pH 4.01 and 7.01 as our two buffers measuring 172.3 mV and 13.1 mV respectively, the equation would be as follows:

$$\frac{\left| \frac{mV_{pH2} - mV_{pH1}}{pH_2 - pH_1} \right|}{59.16} \times 100 = \frac{\left| \frac{13.1 - 172.3}{7.01 - 4.01} \right|}{59.16} \times 100 = 89.70\%$$

If these values were that of a probe in use, it would be recommended for the probe to be switched out and replaced. Acceptable values are between 90% and 105% however a large portion of research labs prefer 95% - 102.5% to be the range.

The offset can also be a good determination of how accurate the probe is reading. The offset value is simply determined by what the 7.01 buffer reads since ideally, it should be 0.0 mV. The variance allowed in this value is +/- 25 mV.

Some more examples are shown below in a table format:

	pH 1	pH 2	mV 1	mV 2	Slope	Offset	Actions
Example A	7.01	4.01	35.3	210.1	98.48%	35.3mV	Clean Electrode; junction may be clogged
Example B	10.01	7.01	-170.4	-3.3	94.15%	-3.3mV	Healthy Electrode
Example C	8.2	7.01	65.7	4.3	86.49%	3.3mV	Bad electrode; replace electrode