

TA — Tartaric Acid? Total Acid? Titratable Acid? Why is TA so complicated?

By Dr. Brenda Baker

Each of those TA's refer to a different part of the juice chemistry.

Tartaric acid is a weak organic acid, and the most common acid in grape juice. In fact, grape juice contains the highest concentration of tartaric acid compared to any other fruit and is used for the production of Cream of Tartar (a key ingredient in Snickerdoodle cookies, among other uses).

In addition to tartaric acid, grape juice contains other weak organic acids, most notably malic acid and citric acid. As wine is produced, lactic acid and acetic acid also appear.

Total Acidity refers to the complete concentration of all the weak organic acids in grape juice or wine.

To be classified as a weak organic acid means that there are removable hydrogens that separate from the molecule at a certain pH. In tartaric acid, one hydrogen is half removed at pH 2.98, and the second hydrogen is half removed at pH 4.34.

Titratable Acidity is the term for measuring the degree of hydrogen removal. As typically measured in the wine industry, the pH of a juice/wine sample is monitored by a strong base (such as sodium hydroxide) being slowly added until the pH reaches pH 8.2.



That strong base removes the hydrogens from the weak organic acid. The resulting calculation is Titratable Acidity, and measures how strong the weak acids are in the juice/wine — or put another way — the “sourness” of the liquid. This is different from pH, which measures how much acid exists, regardless of how strong it is.

How is Titratable Acidity (TA) reported?

It depends on the country. In Europe, TA is reported in grams of sulfuric acid per liter. In the United States, TA is reported in grams of tartaric acid per 100 mL (or sometimes grams per liter).

Wait? g sulfuric acid/L? How can that be? There is no sulfuric acid in grape juice.

Acid equivalent is the answer. Different acids have different strengths, so acid equivalent is a way to convert the strength of one acid into its equal strength of another acid. In the United States, the acid equivalent is used to report the TA into tartaric acid equivalents, even though there are other acids in juice/wine.

For example, a common TA for juice might be the following:

0.65 g tartaric acid equivalent/100 mL

6.5 g tartaric acid equivalent/L

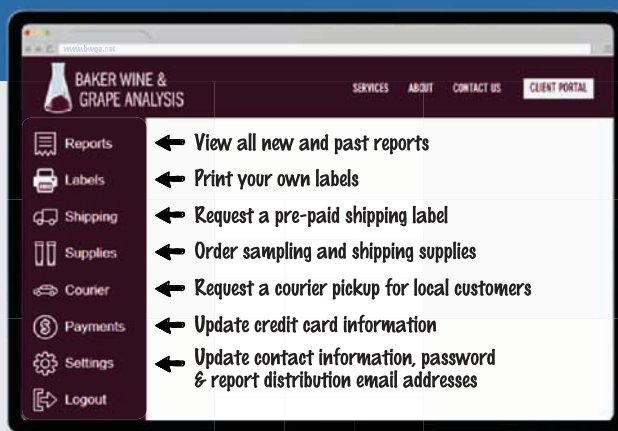
4.25 g sulfuric acid equivalent/L

Although knowing Tartaric Acid concentration and/or Total Acidity concentration may be useful for some winery procedures, typically Titratable Acidity is the measurement that most winemakers need for their daily work with juice or wine.

Client Portal

Log into your account on the Client Portal at bwga.net and check out the features!

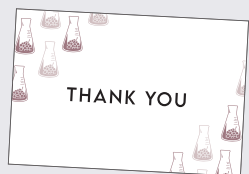
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**Spread the word,
reap the rewards!**
Who do we love?
You!

And you, our customers,
are our most valuable
referral source.

As a token of our
appreciation, **any new
customers that you
refer to BWGA will
earn you a reward of
\$100** in lab analysis.

Just make sure we know
you sent them.

Employee of the Month: Astoria-Pacific A2

**One of Baker Wine & Grape Analysis' most used machines
is the Astoria Pacific A2**, our method for checking Free and
Total SO₂. We thought we would share some facts about how
we run your samples and how this machine works.

TOTAL SO ₂				
MOLECULAR SO ₂	SULFITE SO ₃	BISULFATE HSO ₃	UNSTABLE COMPOUNDS (sugars, organic acids, ketonic acids)	STABLE COMPOUNDS (acetaldehyde)
FREE SO ₂			BOUND SO ₂	

Take Two! The A2 has two
channels, one for Free SO₂, and a
second, heated channel for Total
SO₂. The heat breaks up the
bonds formed by the bound SO₂.

Go with the flow! The A2 is a
Segmented Flow Analyzer, a
fancy way of saying that a
continuous stream of reagents is
incorporated into the analyzer,
divided by air bubbles which
allows for discrete chemical

reactions in a fast, organized way.
Whew! This means we can use
less reagents yet maintain a
low-level of detection.

Freedom! Wine is acidified and
run through a membrane, which
liberates the SO₂ from the wine.
Next, a dye is introduced and
causes a color reaction. The more
SO₂, the bigger the color change.
The color intensity is then read
spectrophotometrically by



comparing the color from the SO₂
in the wine sample to the color
produced by known standards.

Like Me! Multiple studies show
that the A2 method is
comparable to the aeration/
oxidation method.

Learn More! We are happy to
answer any questions you may
have about our method and the
A2. If you would like some
additional *light* reading, check
out AWRI's synopsis on SO₂
measurement in wine found here:
[https://www.awri.com.au/
wp-content/uploads/2018/12/
s2037.pdf](https://www.awri.com.au/wp-content/uploads/2018/12/s2037.pdf)

Wine Stability

It's time to think about bottling!

Spring is a popular stability time at
the lab. Here's a summary of the stability
analyses that we offer, the price, and
volume required for the tests. We have
complimentary 200mL and 400mL bottles
at the front desk.

Order of timing for White and Rose wine:

- 1) Make all final tannin and acid additions
- 2) Heat (protein) stabilize
- 3) Cold (tartrate) stabilize



Tartrate crystals



**Protein haze in
Sauvignon Blanc**

photo: researchgate.net

Analysis	Details	Volume needed	Turnaround time	Price
Bentonite Trial	How much Bentonite is needed to heat (protein) stabilize my White or Rose wine? Choose 5 Bentonite rates and the specific Bentonite that you'd like us to use. Includes 2 free heat stability rechecks.	375 mL	1 day	\$80
Celstab Trial	Includes heat stability check, cold stability, and cold stability with Laffort Celstab addition. *Rose has an additional Color Stability test.	375 mL	1 day White 3 days Rose*	\$95 White \$122 Rose*
Heat Stability	Confirm heat (protein) stability in White and Rose wine.	50 mL	1 day	\$25
Cold Stability	Potassium tartrate stabilization in White, Rose, and Red wine.	150 mL	1 day	\$36
Color Stability	Confirm color stability of Rose wine with a CMC addition.	50 mL	3 days	\$27
Zenith Trial	Includes heat stability check, cold stability, and cold stability with Enartis Zenith Uno addition.	750 mL	1 day	\$110





The Wonder Chemist



Laffort Spotlight

LAFFORT USA
Seasonal
Winemaking
Strategy

Non-Subtractive Potassium Tartrate Stabilization

CELSTAB®
STABILITY FOR WINES

Laffort offers revolutionary solutions for stabilizing potassium tartrate in white and rosé wines. Celstab works to inhibit the crystallization of KHT by binding to the surface of tartrate molecules at multiple sites, blocking the sites needed for crystallization

Send a 750 mL sample to Baker lab for Celstab trial and to confirm heat stability to 80°C



Cellar
Filtration



Celstab
addition
1 mL/L



Wait a minimum of 24 hours before going through a sterile membrane on the bottling line.

For Technical Questions Contact:
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Laffort Winemaker & Technical Representative
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Marcy.Mallette@Laffort.com

Laffort is pleased to announce that Bryanna Grebe has joined our team as a Technical Representative. Bry will be managing our store at Baker Lab Monday – Friday 830-1230. Bry has been making wine around the Central Coast for several years and brings a wealth of knowledge. Please stop in and introduce yourself to Bry and try out our new Nespresso machine.

Word Search - Olive Varieties

G	W	C	E	Z	C	H	I	L	K
F	Y	P	I	Y	O	O	A	E	O
R	C	I	I	M	B	J	R	C	R
A	O	C	T	I	R	I	B	C	O
N	R	U	Q	S	A	B	E	I	N
T	A	A	U	S	N	L	Q	N	E
O	T	L	P	I	C	A	U	O	I
I	I	Y	F	O	O	N	I	C	K
O	N	T	T	N	S	C	N	H	I
B	A	A	R	V	A	A	A	R	C

Cobrancosa
Coratina
Mission

Hojiblanca
Leccino
Arbequina

Picual
Koroneiki
Frantoio



www.bwga.net



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Running Early or Late?

Leave your samples in the **BWGA drop box** anytime outside of our normal business hours!
To access the drop box just open the utility closet at the left of the main doors.

Olive Oil and Wine Tasting: Who Knew They Were So Similar?

Tasting olive oil is a bit like wine tasting, especially when you get to experience tasting different olive varieties. Like different grape varieties, olive oil varieties have different levels of smoothness, bitterness, herbaceous notes, peppery-spice and acid levels.

Arbequina tends to be softer and smoother, whereas Coratina is more pungent and bold. Fresh Extra Virgin Olive Oil (EVOO) may smell like freshly cut grass, hay, herbs, nuts, tropical fruit, or flowers. The three 'good' flavor components of EVOO are fruitiness, bitterness and pungency.



We test quality and stability parameters in olive oil at Baker Wine & Grape Analysis! Our available analyses include Free Fatty Acids, Peroxides, UV, Polyphenols, Moisture and Volatiles, and Best Before Date. Required minimum sample size is 100mL.

Olive Variety	Country of Origin	Flavor Profiles
Picual	Spain	Fruity flavor with hints of almond and an aroma of apple. Resistant to oxidation and prized for its stability. Buttery texture.
Arbequina	Spain	Milder, buttery, delicate and fruity flavor. Hides peppery flavors and bitterness.
Hojiblanca	Spain	Sweet start and bitter aftertaste with full body. Freshly cut grass aromas with peppery finish.
Leccino	Italy	Grassy aroma, buttery consistency with peppery finish.
Frantoio	Italy	Green grass and fruity aromas with a pleasant bitterness.
Coratina	Italy	Buttery, smooth, robust, bold and bitter. Pungent aromas with a bite at the finish.
Koroneiki	Greece	Green in color with bitter, bold and intense flavors, peppery finish.
Cobrancosa	Portugal	Intense and spicy flavor with smooth and creamy consistency.
Mission	United States	Mild, fruity aroma with buttery, slightly bitter finish.

