Additives and Their Effects

BY MATT DIVISCONTE – SHW TALK – 7/19/17

Introduction – Lodi Wine Lab

- Been in business since 2002
- Locally owned and operated
- Full service analysis laboratory
- Carries enology products from: AEB, ATP Group, BSG, Enartis, Gusmer, Laffort, Oenofrance and Scott Lab.
- Carries a large variety of winery needs and small equipment (tanks, hoses)
- Rental Equipment
- ISO 17025 Accredited

Introduction – Matt DiVisconte

- Biochemistry background
- Used to do virus research
- Switched to wine in 2005
- Boston, NYC, Australia
- Started at Lodi Wine Lab in 2011
- Became an owner 2014

New Services

- Home Winemaker's Card
  - $100
    - 10 Complete Panels
    - 5 Panels and a 1 hour consult
    - Lasts 1 Year
- Wine: Alcohol, pH/TA, VA, F/T SO2, Malic, RS
- Juice: Brix, pH, TA, Malic, Glu, Fru, YAN and Potassium

New Prices

- Bottles
  - $6 case, no warehouse fee
  - Guaranteed lowest price on corks and closures too
- We will always meet or beat any competitor's price

Water Analysis

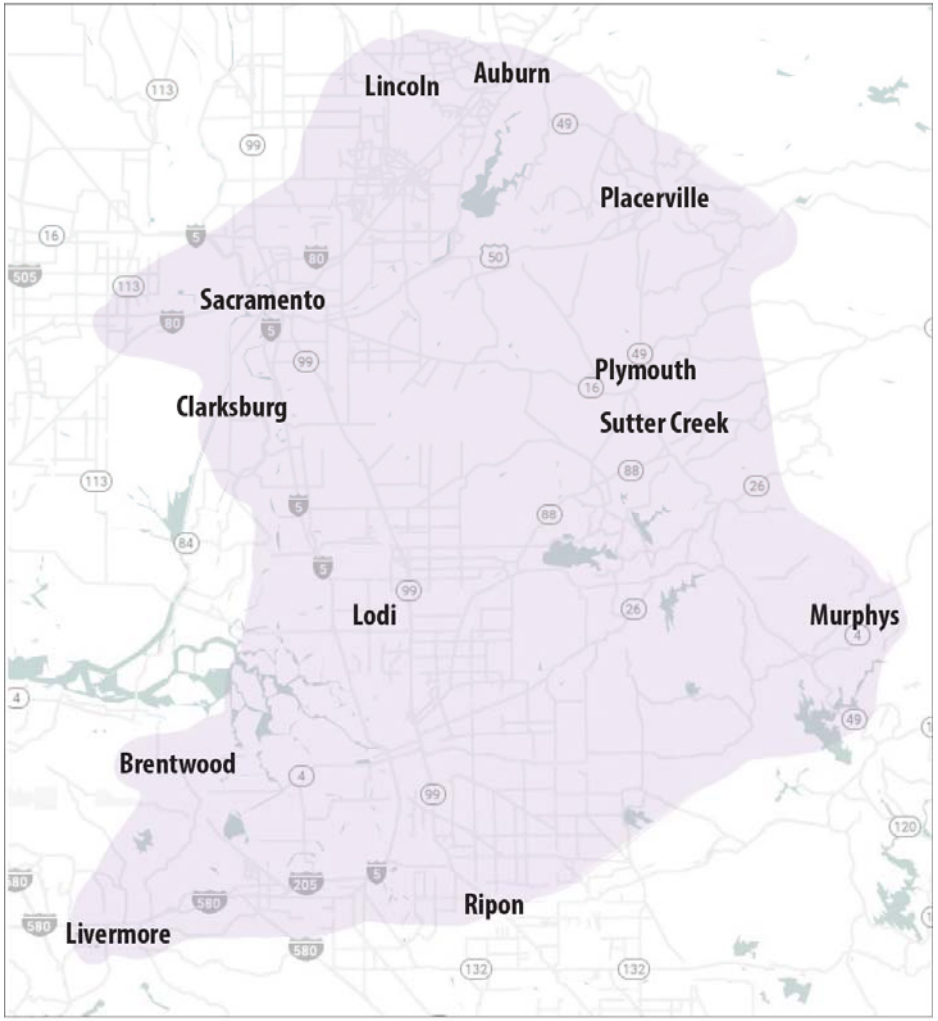
- Water Analysis is now online
- See our flyer for pricing details
- Additional tests will come online in the later half of 2017
- Metal Analysis for Water and Wine is online
  - Copper
  - Iron
  - Lead
  - Arsenic

Free Delivery

Daily Sample Pickup

Same Day Turnaround

Lodi Wine Labs offers Free Delivery and Daily Analysis Pickup



Purple Shaded Area = Free Delivery Zone
Labeled Cities = Sample Drop Off Locations

Additives

- Gum Arabic
- Mannoproteins
- Beta Glucosidase
- Tannins

Additives

- Gum Arabic
  - Laffort Stabivin SP
- Mannoproteins
  - Laffort Mannofeel
- Beta Glucosidase
  - Lallzyme Beta
- Tannins
  - BSG Liquid Tannin Vanilla Peach
  - Laffort Quertanin Sweet

Base Wines

- Franzia Chardonnay
  - Alcohol: 13.13%
  - F/T SO2: 31/143 ppm
  - VA: 0.33 g/L
  - pH: 3.25
  - TA: 7.0 g/L
  - RS: 6.5 g/L
  - ML: 1.6 g/L
- Gallo Muscato
  - Alcohol: 9.13%
  - F/T SO2: 25/139 ppm
  - VA: 0.34 g/L
  - pH: 3.17
  - TA: 7.5 g/L
  - RS: 63.3 g/L
  - ML: 1.5 g/L

Additives

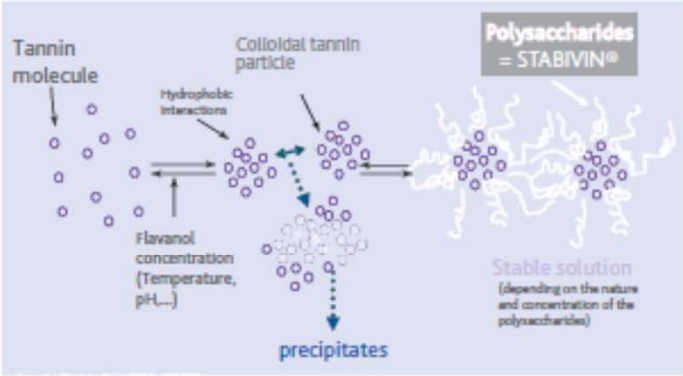
- **Gum Arabic**
- Mannoproteins
- Beta Glucosidase
- Tannins

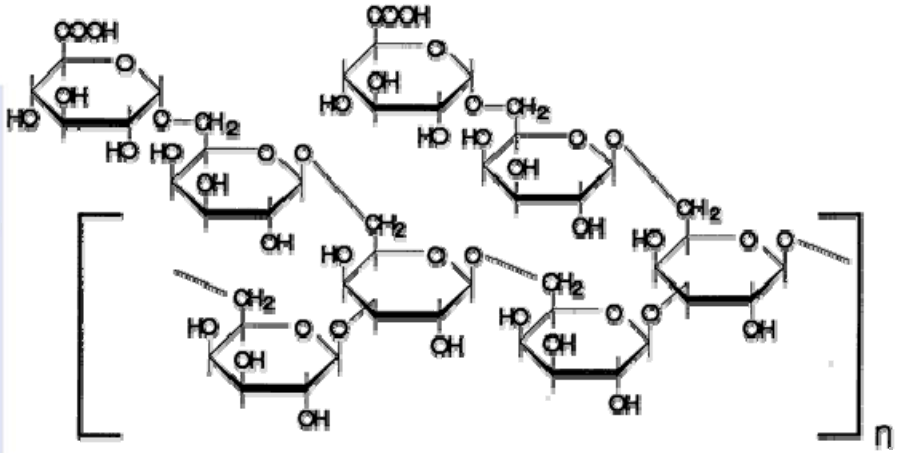
Gum Arabic

- Gum arabic, also known as acacia gum, is a natural gum consisting of the hardened sap of various species of the acacia tree
- Gum arabic is a complex mixture of glycoproteins and polysaccharides
- It is the original source of the sugars arabinose and ribose, both of which were first discovered and isolated from it, and are named after it.
- Different gums can have different properties, i.e. colloidal stability vs. mouthfeel.
- Colloids are insoluble particles that will not settle, i.e. can't be filtered or centrifuged out

Gum Arabic

Gum Arabic is sourced from the sap of acacia trees (*Acacia Verek sp*) from selected African forests.





Gum Arabic

Gum Arabic

STABIVIN® SP

Gum arabic solution manufactured from highly purified gums.

- Due to its specific manufacturing procedure and the strict selection of the arabic gum used, **STABIVIN® SP** contributes to the colloidal structure of the wines (softness and mouthfeel).
- Very low clogging index.
- **STABIVIN® SP** is an arabic gum solution with low SO_2 concentration (2 g/L).

Dosage: 100 - 300 mL/hL.

1,1 kg
5,5 kg
22 kg

Gum Arabic

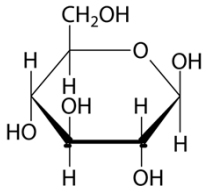
- Wine Dosage
  - 1-3 mL per Liter
- Today's Dosage: 3 mL per Liter
- Should detect increased mouthfeel (viscosity) and a little sweetness
- Use when wine is too hot, sharp or light bodied.

Additives

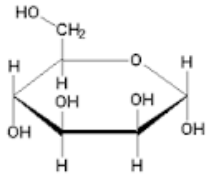
- Gum Arabic
- **Mannoproteins**
- Beta Glucosidase
- Tannins

Mannoproteins

- Mannoproteins are naturally occurring proteins that are found in yeast cell walls
- Wine naturally contains mannoproteins as they are released during yeast fermentation and then later during yeast autolysis
- Mannose, a naturally occurring sugar, is one of the basic building blocks of mannoproteins. Mannose is very similar in structure to glucose.
- The other main component of mannoproteins is a polypeptide (protein) backbone chain from which the highly branched mannose side chains are linked by glycosidic bonds.
- Mannoproteins can have diverse structures and therefore a diversity of properties. (Mouthfeel, Cold Stabilization)

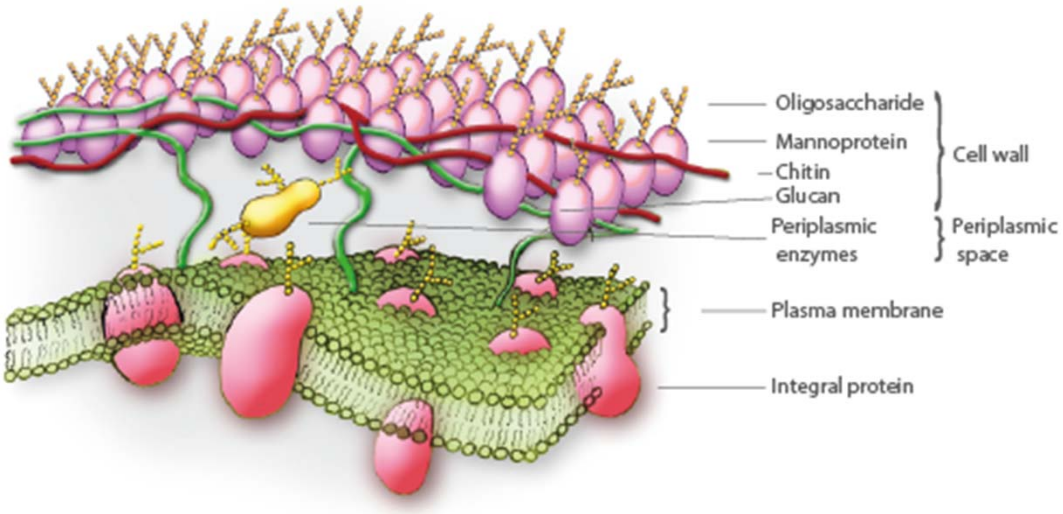


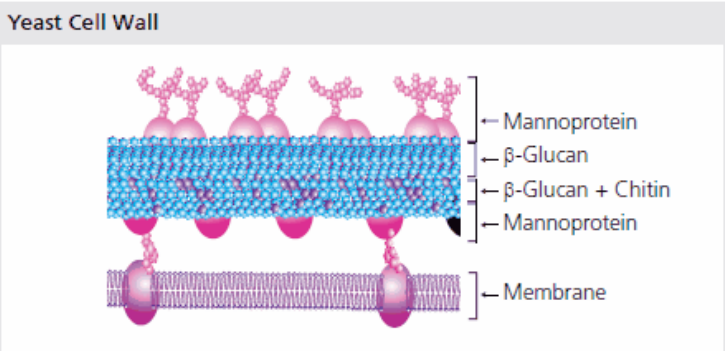
Glucose



Mannose

Mannoproteins





Mannofeel

Mann feel®
PURE MANNOPROTEINS

MANNOFEEL®

MANNOFEEL® is the result of global research by LAFFORT® on Mannoproteins to identify and understand the mechanism of action and production. The selected mannoproteins in MANNOFEEL® significantly increase the perception of volume, roundness and length on the palate.

1,08kg

- Pure product, 100 % mannoproteins.
- Natural compound present in wine.
- Respects the freshness and fruit in wine.
- 100% soluble with an immediate action.
- Participates in tartaric stabilisation of wine.
- Participates in stabilising the colouring matter.
- Excellent filterability; **MANNOFEEL®** does not change the filterability of wine.

Dosage: 25 a 150 mL/hL.

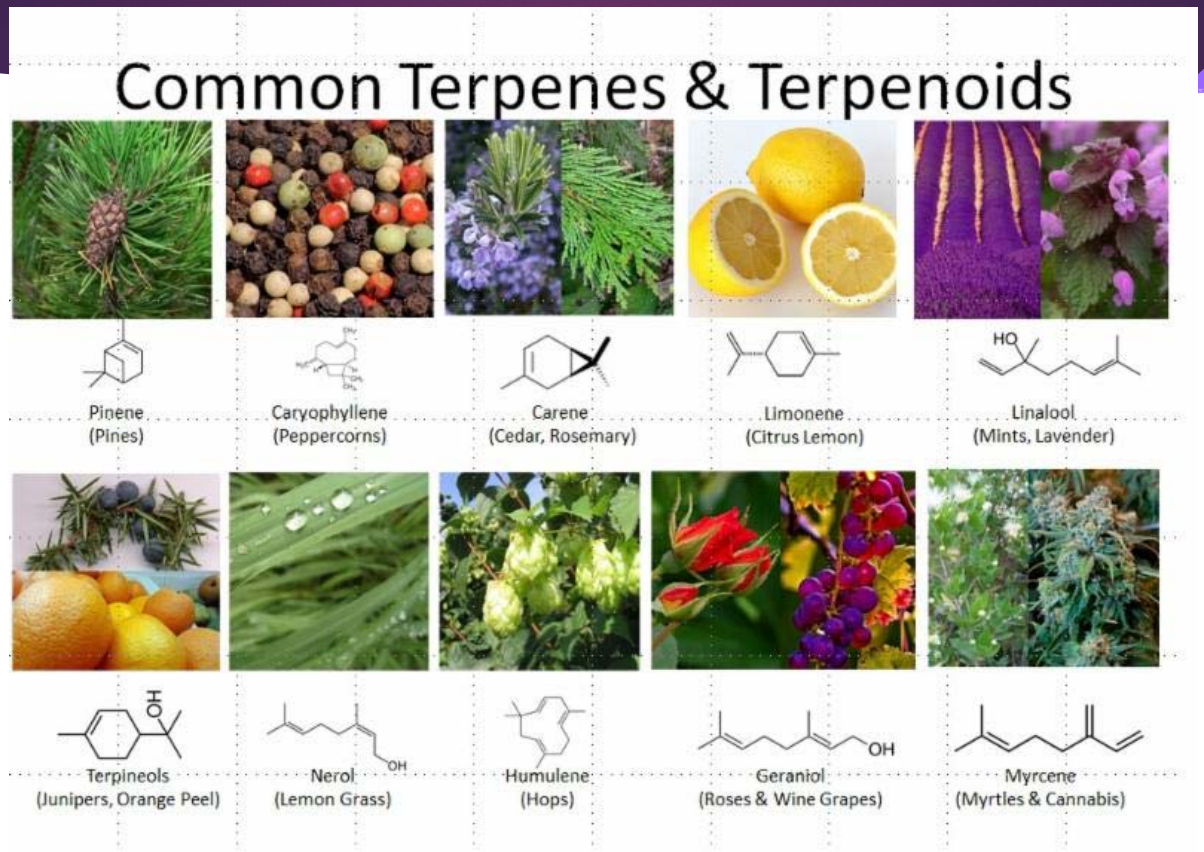
Mannofeel

- Wine Dosage
  - 0.25 – 1.5 mL per Liter
- Today's Dosage: 3 mL per Liter
- Should detect increased mouthfeel (viscosity), softness and some structure differences (longer finish).. Aromatic differences?
- Use when wine is too hot, sharp or light bodied.

Additives

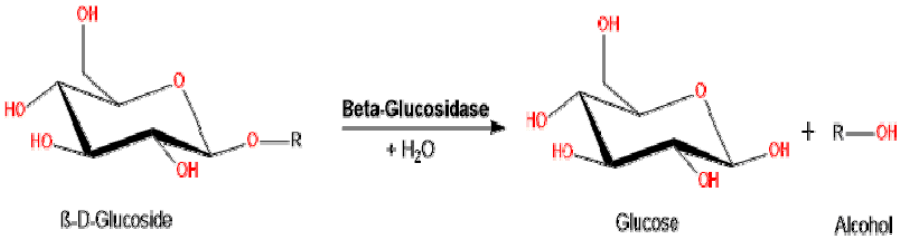
- Gum Arabic
- Mannoproteins
- **Beta Gulcosidase**
- Tannins

Beta Glucosidase - Terpenes



Beta Glucosidase

- Terepenes are described as floral, rose, citrus, coriander, and spicy
- Terpenes exist in grapes and wines as either:
  - glycosidically bound potentially volatile terpenes (PVT)
  - unbound free volatile terpenes (FVT).
- PVTs are two to eight times more common than free form volatiles. These bound molecules don't make a contribution to the aroma until they are hydrolyzed which occurs in the presence of acids or enzymes (natural or supplemented).
- Beta Glucosidase is the cleaving enzyme



Beta Glucosidase

- Lallzyme Beta is a blend of pectinase and betaglucosidase for use in white wines with high levels of bound terpenes such as Gewürztraminer, Viognier and Muscat.
- The sequential actions of side activities cleave aroma precursors and enhance the varietal character of aromatic wines. The larger the reserve of aromatic precursors in the wine the greater the effect of the enzyme treatment.
- Lallzyme Beta has been formulated so that it will not lead to an over-expression of aromas. The glucosidase activity is inhibited by sugars. The wine should have less than 0.5% residual sugar for proper enzyme activity.

Beta Glucosidase

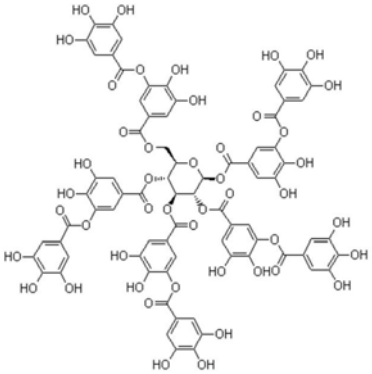
- Wine Dosage
  - 50 – 100 mg per Liter
- Today's Dosage: 100 mg per Liter
- Should detect increased aromatic compounds.
- Use when you want more aromatics from your wine – potential problem for longevity

Additives

- Gum Arabic
- Mannoproteins
- Beta Glucosidase
- **Tannins**

Plant Polyphenols - Tannins

- Found in legumes, berries, grapes, grains, nuts, tea, fruit juices and wine
- Plant defense mechanism again microbial attack and herbivore predation
- Thousands are known to exist



Tannic acid, one of the most common plant phenols

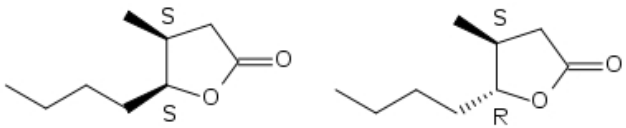
Plant Polyphenols - Tannins

- Tannins are complex class of polyphenols
  - Hydrolysable Tannins – oak derived
  - Condensed Tannins – important for grapes
- Tannins bind to and precipitate proteins
- Tannins are used in the tanning of hide to make leather
- Deleterious Effects
  - Inhibit digestive enzymes
  - Decrease body weight gain/growth

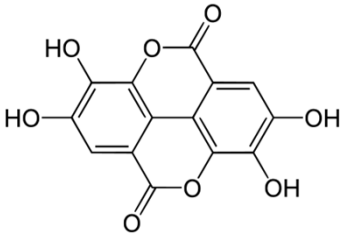
What does oak add?

- Oak includes ellagitanins, phenolic aldehydes such as vanillin, volatile phenols such as eugenol, and lactones
- Fundamentally, oak *lactones* have coconut aromas.
  - Some oak is “toasted” by either burning with fire or by using heat radiation to increase different aroma compounds.

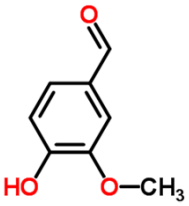
- Vanillan
  - The aroma of vanilla
- Eugenol and Isoeugenol
  - Spice and clove notes
- Furfural and 5-Methylfurfural
  - Caramel and sweet aromas
- Guaiacol and 4-Methulguaiacol
  - Charred and smoky aromas



Cis and Trans Lactone



Ellagic Acid



Vanillan

Liquid Oak Tannin – Vanilla Peach

- The tannins in " VANILLA PEACH " are already polymerized. They add more softness rather than harshness from a typical tannin addition. This tannin contains an addition of pro-anthocyan from **Grape skin and seeds** with an extended maceration. It will increase the fruit flavor of the wine . Reduces sulfur component by oxydation of ethanethiol and the combination with Thiols-polyphenols.
- Tannin content (expressed as gallic acid equivalent) ≈100 g/liter when added at the 1 L per 1000 L rate.
- **Suggested use levels:**
- 1 Liter of Tannin for 1000 L of wine with Red wines (1 gal / 1000 Gal) and 1 liter for 3000 L in white wine (1 gal. for 3000 Gal)
- Bench trial are recommended for white wines. Over dosage could cause turbidity.

Liquid Oak Tannin – Vanilla Peach

- Wine Dosage
  - 1 mL per 3 Liters (in White Wine) 1 mL per Liter (in Red)
- Today's Dosage: 1 mL per Liter
- Should detect distinct vanilla notes, along with other toasty oak aromas and an increase in fruit aromas
- Add American oak and fruit characteristics instantly

What does oak add?

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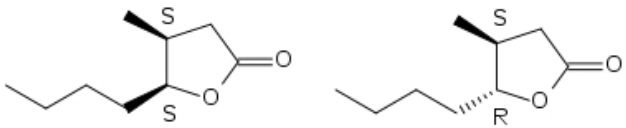

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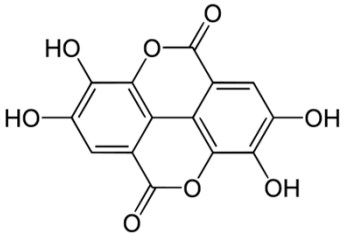

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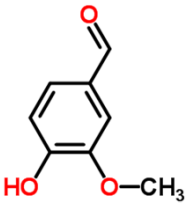

Vanillan

Quertanin – Sweet

Stave wood quality ellagic tannins extracted from oak heartwood (QUERTANIN®, QUERTANIN® SWEET & QUERTANIN® INTENSE NF) or ellagic and gallic tannins (QUERTANIN® CHOC'). Utilises LAFFORT®'s Instant Dissolving Process (IDP). For post-vinification use in red, rose and white wines.

QUERTANIN®

QUERTANIN® SWEET

QUERTANIN® CHOC'

QUERTANIN® INTENSE NF

- Regulates oxidation-reduction phenomena during maturation in barrels or during micro-oxygenation.
- With used barrels, the **QUERTANNIN® RANGE** allows the recreation of a medium rich in ellagic tannins similar to a new barrel.
- After the addition, it is recommended to carry out normal rackings until fining or bottling preparation.

DOSAGE:
It is specified in the Oenological Codex that tannins "must not change the olfactory properties and the colour of wine". The dosage rates will therefore vary in function of the wine matrix, and shall be determined after trials.

Quertanin Sweet

- Wine Dosage
  - 20 – 50 mg per Liter (in White Wine) 50 – 200 mg per Liter (in Red)
- Dosage – ~100 mg per Liter
- Look for increased mid-palate volume and perhaps an enhancement of fruit components
- Improve wines that are lacking in finish, palate weight and complexity

Thank You