

The Use of Bentonite for Promoting “Heat Stability” in Your White Wines

Bentonite is a powerful tool. If you use too much of it your wine will indeed be stable, but you will strip out flavours and aromas at the same time!

Determining the least amount needed to achieve stability is critical when planning to make your wine heat stable. The amount of bentonite needed to stabilize a white wine depends on the type of grape, vineyard location, growing practices, *and vintage*.

In addition, the way the fruit is handled during pressing and crushing also has an effect on the final protein content of the wine (more movement/exposure time on skins = more protein).

In short, *each wine* will have to be tested individually, *every year*, because there is no other way to know.

**From a UC Davis Heat Stability investigation of current techniques
by Author: Bibiana Guerra, Editor: Kay Bogart.
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A few take home messages based on these results:

- most of the wines fined with bentonite at dosages determined by the three predictive methods remained bright after storage with the harshest conditions.
- **Therefore, the least severe stability test, 80C for 2 hours, is adequate to accurately predict short to medium term stability.**
- **Even 80C for 2 hours may lead to overfining (70C for 30 min, even 80C for 5 min, would have adequately predicted the right dosage).**
- **Effect of temperature and time on estimated bentonite dosage: As expected, heating at 80C, predicted higher dosage rates of bentonite required for stability, than heating at 60C or 70C. Similarly, heating for a longer period predicted higher bentonite dosage rates required for stability.**

In the authors’ opinion, **the wine industry is biased towards overfining.** Still, they believe that continuing to **use 80C for a 2 hour period is the prudent thing to do.**

We need to be aware that the temperature of heat tests given in the literature is usually referring to **the temperature of the sample itself, not the temperature to set the apparatus to maintain the prescribed sample temperature.** Laboratory staff should always determine the “set point” for their particular water bath that results in the wine, not the water bath reaching the stipulated temperature. For instance, in order to bring the samples to 80C for 2 hours, as prescribed in the literature, the authors needed to set their heating block to 94C and have the tubes in the block for 2.5 hours.

This is very important!

Finally, non-proteinaceous factors are also involved in haze formation, and these are not fully understood. So, different wines with the same protein content may require different amounts of bentonite to reach stability.

$$C^{\circ} \times 9 \div 5 + 32 = F^{\circ}$$

or <https://www.google.com/search?q=c+to+f&ie=utf-8&oe=utf-8>

$$(70^{\circ} C = 158^{\circ} F) \quad (80^{\circ} C = 176^{\circ} F)$$

p.s- “Heat Stability” tests can be quickly preformed by labs such as Vinqury Labs by Enartis for about \$20/sample (for after bentoniting) or about \$75/sample (for determining how much bentonite plus doing the heat stability test)

<http://www.enartis.com/us/home>

They, and most labs, measure the turbidity in a water sample by passing light through the sample being measured.

This “*nephelometry*” measurement is made by measuring the light passed through a sample at an angle.

Expressed in NTUs (Nephelometer Testing Units)

Samples that are 2NTUs or less, are considered “Heat stable”.

This is done by doing a “heat stability test” (use link below).

<http://www.homebeerwinecheese.com/HEATCOLD.html>

NOTE: this link was written when heating at 140F for 24 hours was the norm. Probably massive overkill, but effective. The newer recommendation (see above), of 176 F for 2 hours plus, should be more than adequate.

In a recent (2017) processing of twelve whites/roses, based on what the sales catalog stated, we used a new European bentonite product called “Pluxcompact”. It was promoted as being as effective as the traditional American “Vitaben”, with very low lees/wine loss. We then did our usual additions of 5 lbs Bentonite/1000 gallons of wine, ***without doing Heat Stability Trials*** to determine just how much to use to achieve visual stability. Just to be sure, we sent them into the lab for “heat stability” testing. They all came back as **“NOT STABLE”, with NTU levels of up to 23.**

Turns out, after talking to their winemaker/tech, they revealed that it was the very wrong bentonite to add, requiring 3-4 times the bentonite to do the job.

Lesson learned: This should have been obvious to us but, **Always Do Bench/Lab Trials, Before Treating Your Wine, every year.**

Especially when using a new product. And, when processing a new season’s wine.

Never trust the salesman/catalog or anyone with “a dog in the fight”(K.B.).

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