

Winemaker's ACADEMY

APRIL 24, 2013 BY ADMIN

How to Use Bentonite to Clarify Wine

Bentonite is a common additive used to clarify and fine wines. It's great for removing protein haze and can be used to remove off aromas. But what is it?

What is Bentonite?

A bentonite slurry being prepared for clarifying wine. Bentonite is an impure clay formed by the weathering of volcanic ash. It is an absorbent material that is able to bond with the floating particles that cause cloudiness in wine.

The main types used to fine wine are sodium and calcium bentonite. While each will contain small amounts of other minerals they are described by the mineral that is in greatest concentration.

Calcium Vs Sodium Bentonite

Either form may be used to clarify a wine, however, the difference between the two are the minerals that get left behind.

Sodium bentonite, as the name implies, has sodium (salt) in it. After adding it to a wine it will clear what it can clear and settle out. What's left over may be removed through racking, however, the sodium does get left behind.

For commercial wineries the addition of sodium metabisulfite and sodium bicarbonate is legally prohibited by the US Tax and Trade Bureau. So while sodium bentonite is allowed it does seem that avoiding anything that adds sodium to wine is a good practice.

Calcium bentonite will leave behind, you guessed it, calcium. From a wine making perspective this is much preferred over salt. However, you can go too far with this and wind up with tartrate instabilities if you add too much.

Tartrate instabilities can lead to the formation of tartrate crystals. I'm sure you've seen these in a commercial wine before. They're small crystals that look like a very coarse table salt. While they are harmless most consumers don't like finding things in their wine bottle or glass.

For more information on calcium vs sodium bentonite please refer to [Fining with Bentonite by Christian Butzke](#) of Purdue University (scroll down to page 3).

How to Use Bentonite

Bentonite is a fairly dense material and if it is not prepared correctly it will just collect at the bottom of your carboy and do nothing to clarify your wine. Here is the proper procedure for rehydrating and adding bentonite to your wine.

1. **Rehydrate the bentonite** powder by vigorously mixing 2 teaspoons with 1/2 cup water at 140 degrees F / 60 degrees C. The powder will have a tendency to clump together as it absorbs the warm water. Break up as many clumps as you can. This mixture is now referred to as a slurry.
2. **Store the bentonite slurry in a sanitized and airtight container** for at least four hours. This allows the bentonite to become fully hydrated. The maximum amount of time you let bentonite hydrate is debated. Some sources say hydrate for at least 24 hours some say 48 hours. Other resources say don't let it sit for more than 24 hours. I found 24 hours worked just fine.
3. **Add the slurry to your wine** at a rate of 1 – 2 tablespoons per gallon of wine. Use one tablespoon per gallon for mild cloudiness and two per gallon for wines with a thicker haze.
4. **Stir the bentonite slurry in your wine vigorously** though not so vigorous that you introduce oxygen into your wine. Degassing tools are perfect for this job.
5. **Re-attach your airlock** and let stand for four to seven days or until clear. Most wines take about a week, however, heavy hazing can take longer to clear. The cooler your wine is kept the quicker it will clear. My W15 riesling took nearly two weeks to clear using this method.

Use As Little As You Can

Besides the tartrate instability that can come from using too much bentonite there is another reason you'll want to use this stuff sparingly. Bentonite is a "fining" agent which means that it removes various compounds from your wine. It can reduce or remove aromas, flavors, as well as

color.

Sometimes it is necessary to remove off flavors and aromas, however, you don't want to sacrifice varietal character. While your wine will be clear, it will be missing what made it special to begin with.

How Does Bentonite Work

This will get a little nerdy but it's worth understanding. When hydrated in water the minerals in bentonite become negatively charged (i.e. ions).

The negative ions in the clay bond with positively charged particles floating around in your wine causing haziness. Generally wines are cloudy because the floating particles are all similarly charged (all positive or all negative).

Similarly charged particles don't settle out because they resist each other like magnets of the same polarity. They need something with an opposite charge to bond with them so they'll be neutral.

Because bentonite is negatively charged and dense when it does bond with a positively charged particle they both sink to the bottom of your carboy. Once on the bottom you can rack your clear wine off of the sediment.

Some kit manufacturers (such as Winexpert) have you add bentonite in the very beginning of the wine making process, right before the yeast. That is so the bentonite will start clarifying the wine as it's fermented. This is one of the only fining/clearing agents that can be added pre-fermentation.

It sits on the bottom of the fermenter and as carbon dioxide bubbles form during fermentation the bentonite is carried up to the free surface. Along the way it collects positively charged particles. When the bubble reaches the surface and pops the bentonite falls back down to the bottom collecting more particles along the way.

Thus your wine is clarifying during the entire fermentation process. This makes your wine will clear that much more quickly when you add the final fining agent just before bottling.

In Conclusion

Bentonite is an effective fining agent widely used among wine makers. As a clay it is not very reactive when it is dry or when hydrated so you don't have to worry about skin contact.

Remember that it's possible to use too much of it and strip your wine of its varietal characteristics. Also, store your bentonite in airtight dry containers between uses to prevent micro-organisms from taking up residence.

Photo of bentonite slurry by: Robert Pitkin

WINE ADDITIVES

ADDITIVES, BENTONITE, CLARIFY, CLARIFYING

7 Replies to “How to Use Bentonite to Clarify Wine”



huh

DECEMBER 9, 2014 AT 7:49 PM

You contradict yourself – you claim that bentonite works by becoming positively charged when hydrated (to attach to the negative particles), but further into the paragraph you state that bentonite is negatively charged.



Matt Williams

DECEMBER 9, 2014 AT 8:44 PM

Thank you very much for pointing out my mistake! I strive to be as accurate as possible and I appreciate you taking the time to let me know.

I went back and revised the article so that it correctly states that bentonite is negatively charged upon hydrating it.

Cheers! -Matt