Fining for Wine Stability and Sensory Improvement

Presented by Jasha Karasek
Winemaking Specialist, Enartis USA



WEBINAR INFO

- Q&A at end of presentation
- Save questions until the end
- Please use main chat box for Q&A only!
- For technical difficulties please use tech. Supp. Tab in chat box
- Recording in progress!
- Attached documents
- Poll questions

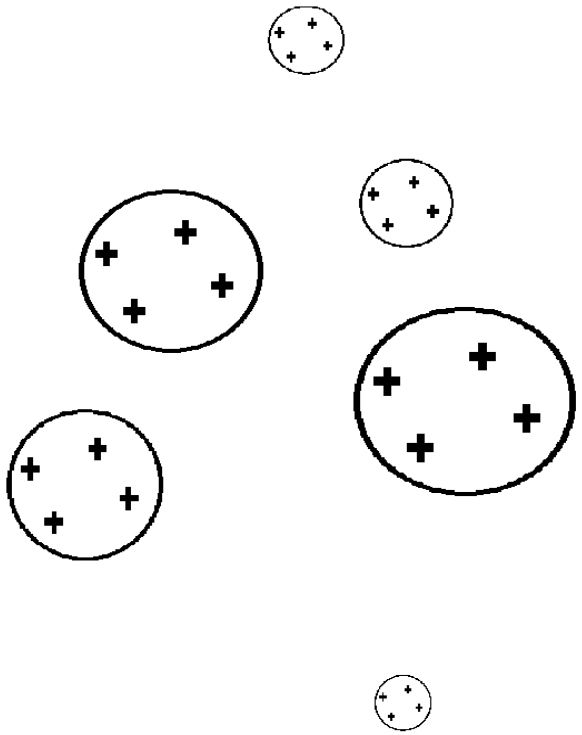
Overview

- DeFined
- Managing excessive tannin
- Oxidation/ bitter phenolic fining
- Metal removal
- Off aroma / flavor removal
- Protein fining
- Color modification

Poll

FINING

Operation of adding one or more compounds (fining agents) into a wine/must to bind and/or remove another undesirable wine component

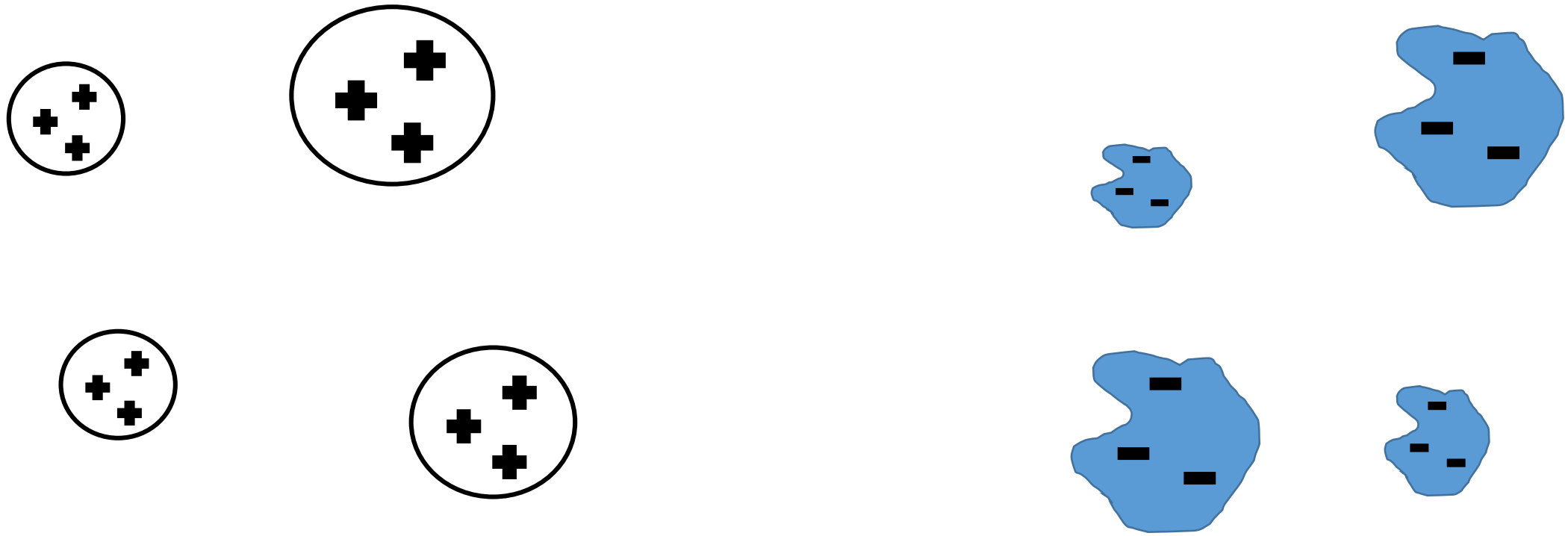


Purpose:

Removal of excessive levels of certain wine components which contribute to sensory and stability issues

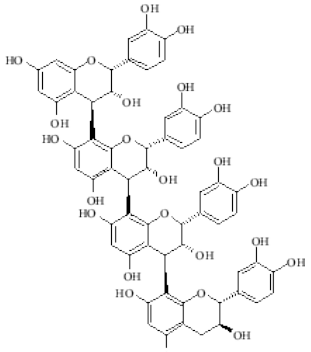
Premise of action

Charged and hydrophilic /Soluble… → Less charged, more hydrophobic/ Insoluble



Objectives of fining

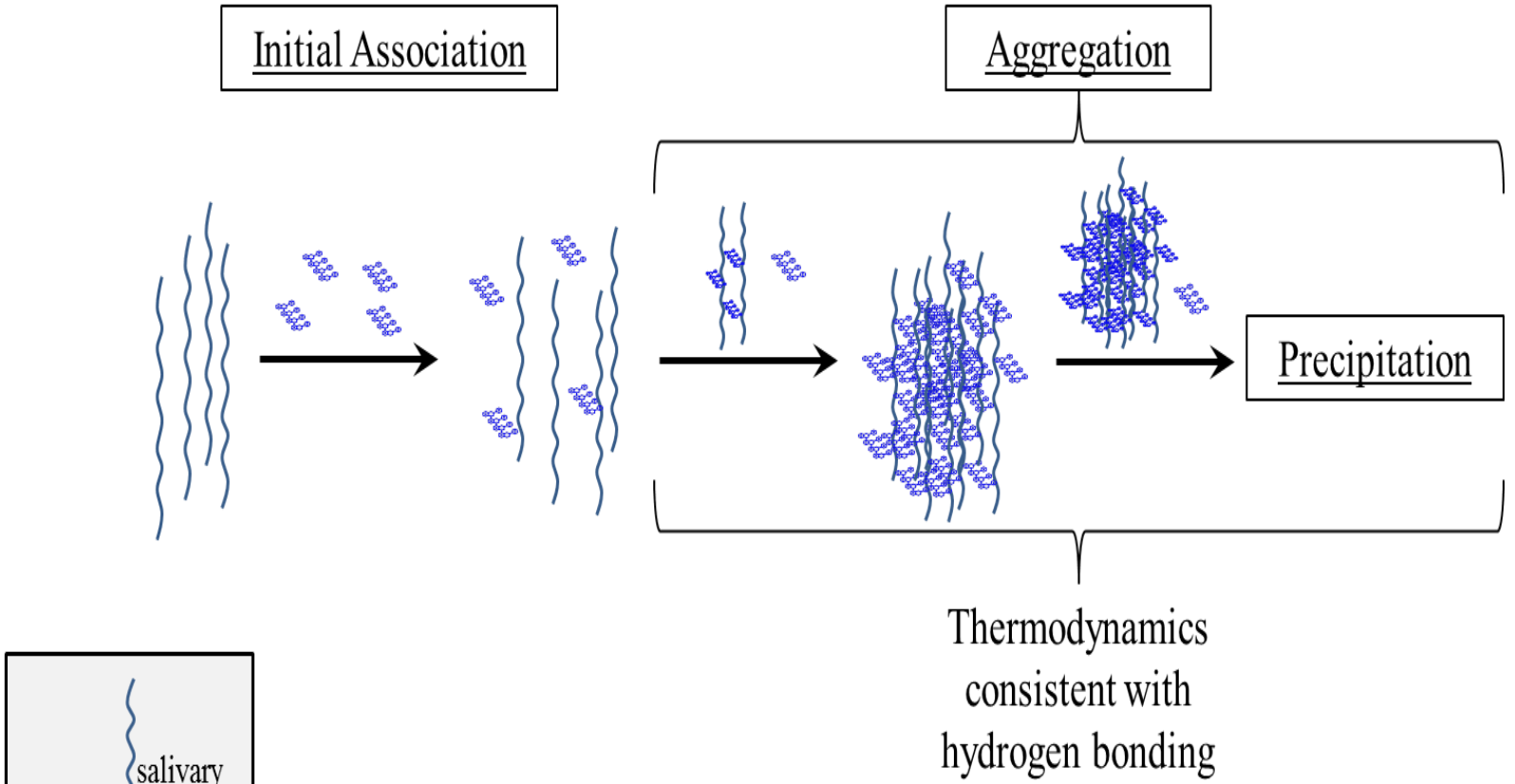
- Tannin management
- Protein stability
- Color adjustment (brown or red)
- Bitter phenol reduction
- Unpleasant odors or flavors
- Metal removal
- Clarification
- Filterability improvement



MANAGING EXCESSIVE TANNIN

- Press wines
- Tannic varieties
- Too much maceration time
- Unripe seed tannin

TANNIN + PROTEIN MECHANISM



Barak and Kennedy, *J. Agric. Food Chem.* **2013**, 61: 4270-4277.

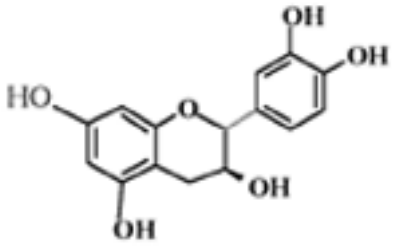
TANNIC FINING –PROTEIN FINING AGENTS

Tannin Removal efficiency

GOLDENCLAR INSTANT	CLARGEL	FINEGEL	HYDROCLAR 30	HYDROCLAR 45
- Gentle on structure - Aged reds	-For clarification primarily -Highly effective in juice	- Fish gelatin -Reduce dry tannin - Whites/rose/ orange wines	-For moderate tannin removal	-For aggressively tannic wines Eg. Press wines

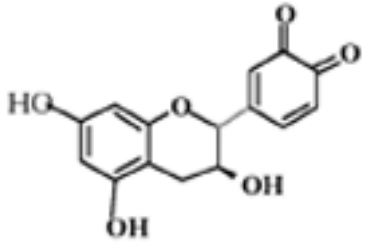
Clarification efficiency

OXIDATIVE FINING



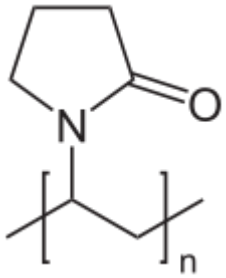
O_2

PPO



OXIDATIVE FINING

STABYL



PVPP – Polyvinylpolypyrrolidone
-Preventative for oxidation
-Removes browned pigments
-Removes oxidizable catechins
-Removes bitterness

PROTOCLAR

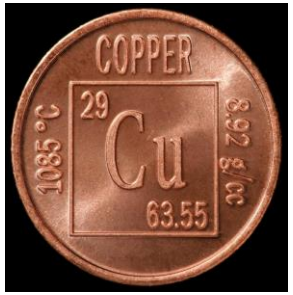
Potassium Caseinate
-Milk protein
-Eliminates oxidation and off odors
-Removes browning

CLARIL SP

Potassium Caseinate, PVPP Bentonite, Silica

Best of both worlds!

METALS INFLUENCE



- Oxidative reactions
- Haze formation
- Legality (>.5 mg/L Cu)
- Volatile sulfur compounds

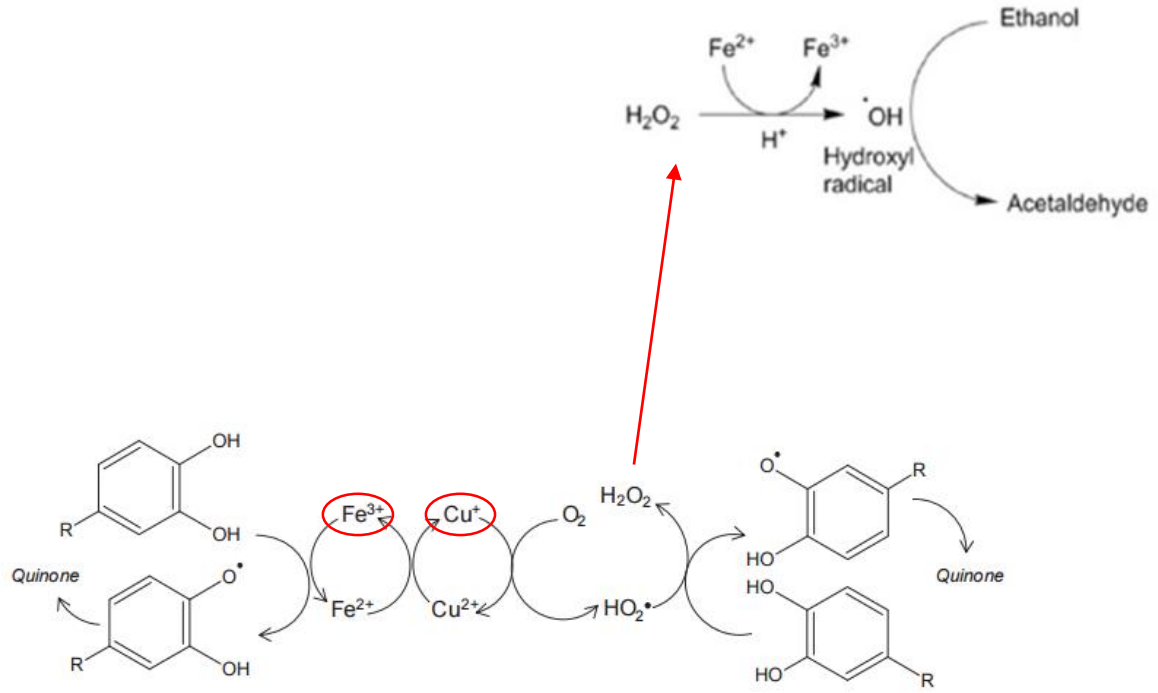
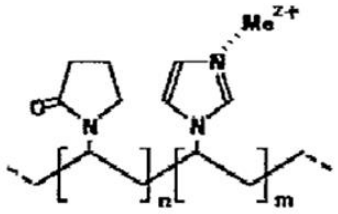


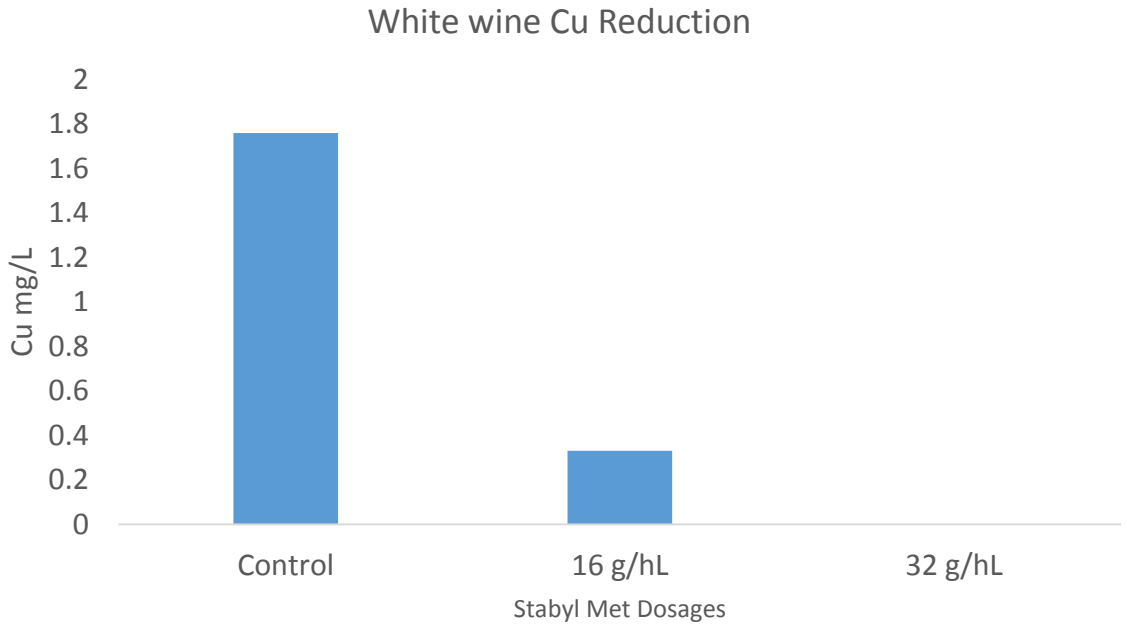
Fig. 4. Proposed catalytic action of iron and copper ions in the oxidation of catechols to produce quinones and hydrogen peroxide (Danilewicz et al., 2008).

METAL REMOVAL



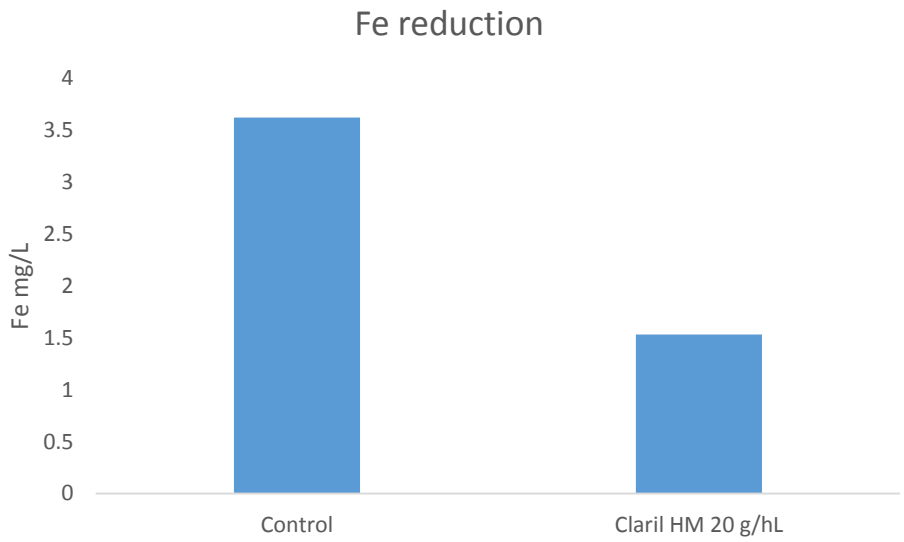
PVI/PVP
Vinylimidizole vinylpyrollidone

- Binds Cu, Fe, Al
- Settles easily
- Trials recommended



METAL REMOVAL

- Pre-Activated Chitosan & PVI/PVP
- Binds Fe, Cu, Al
- Settles easily
- Trials recommended



OFF AROMA FINING: VOLATILE SULFUR

H_2S

Mercaptans

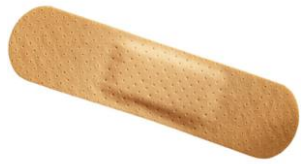
Disulfides

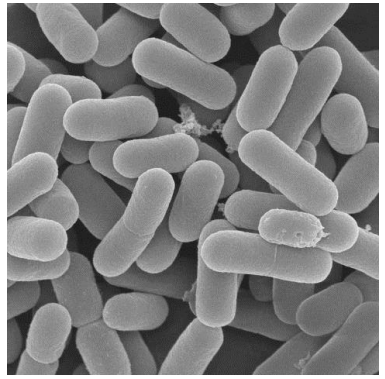
$CuSO_4$

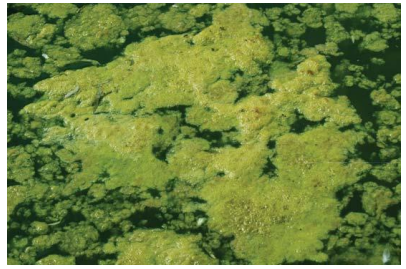
- Bench Trials
- Added as 1% liquid solution
- Mix tank under inert gas while adding, and add it slowly!

Start at 5 g/hL dosage for trials

OFF AROMA FINING: MICROBIAL





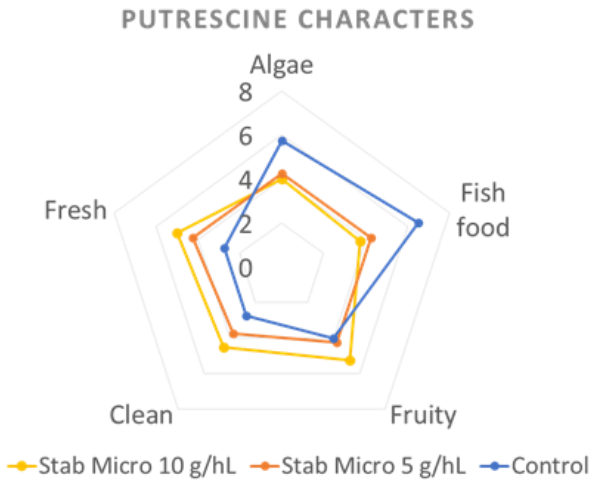


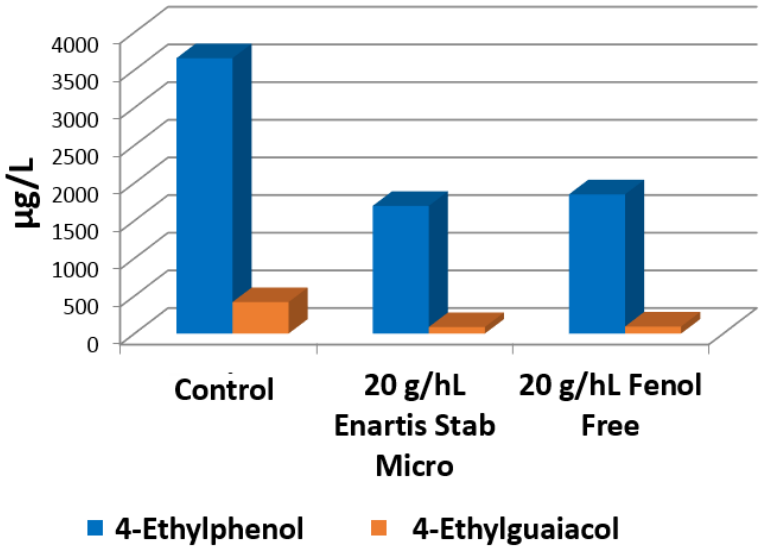
OFF AROMA FINING: MICROBIAL

Pre-Activated Chitosan

Activated carbon

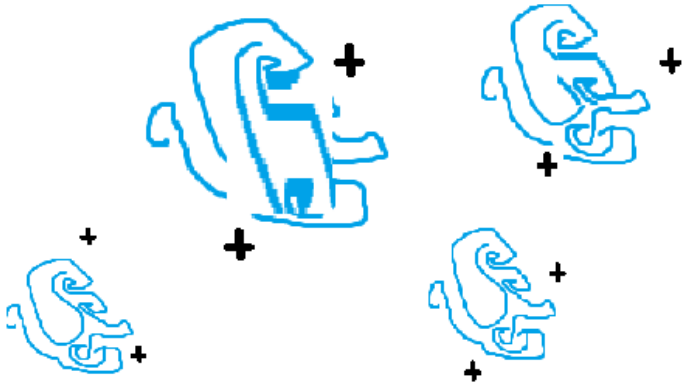
- Low effect on color
- Removes volatile phenols





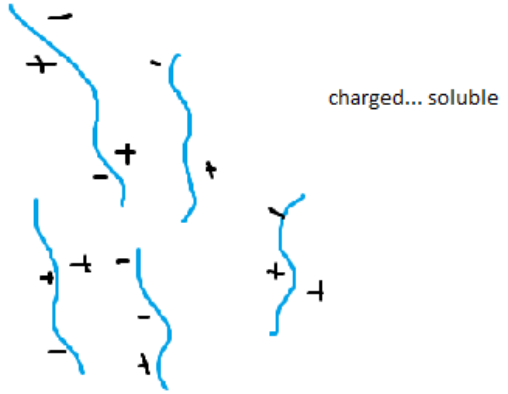
PROTEIN STABILITY

20° C 40 ° C 80° C

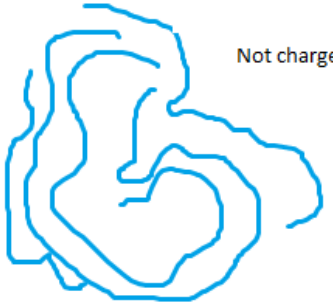


Charged and soluble

HEAT > 50 C



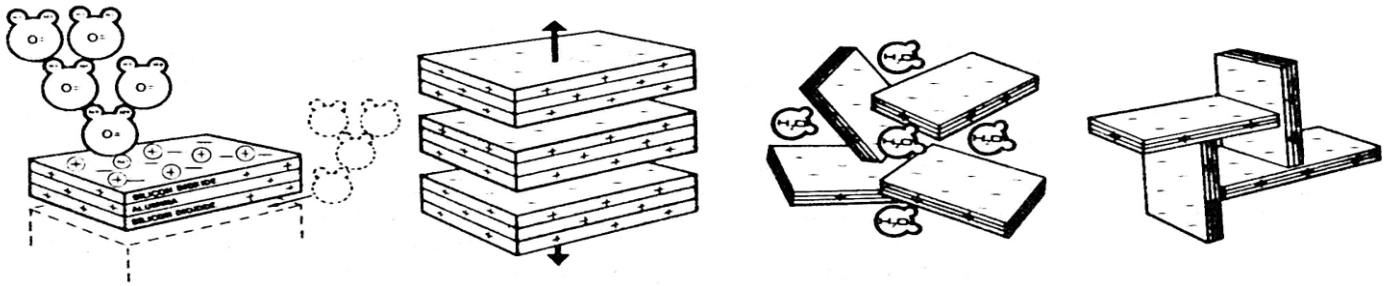
charged... soluble



Not charged insoluble

poll

BENTONITE TYPES



	NATURAL SODIUM BENTONITE	NATURAL CALCIUM BENTONITE	CALCIUM BENTONITE SODIUM ACTIVATED
Expansion	++++	+	++
Reactivity with proteins	++++	++	+++
Clarification	++	+++	+++

ENARTIS BENTONITE TOOLBOX

- SODIUM BASED
- Highest protein absorption / lb
- Most stripping
- Moderate settling

- CALCIUM BASED/ SODIUM ACTIVATED
- Good protein absorption
- Good settling

- CALCIUM BASED/ SODIUM ACTIVATED
- Excellent protein absorption
- Excellent settling
- Low Dosage required
- Less stripping

- CALCIUM BASED
- Low protein absorption
- Excellent settling

DECOLORIZATION WITH ACTIVATED CARBON

Consider:

- Type of Carbon
- Contact time
- Dosage
- BENCH TRIALS!

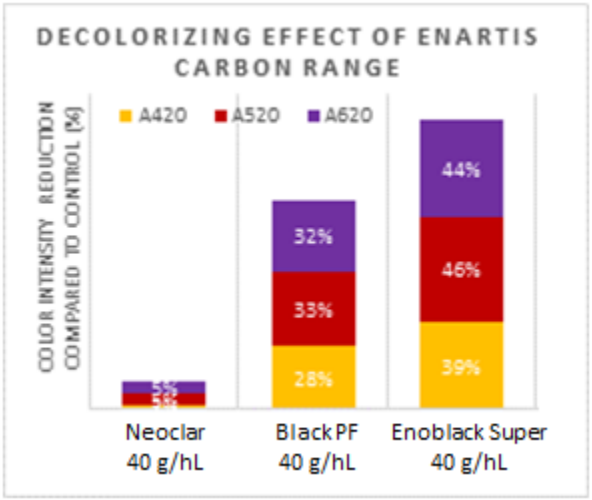
CARBON COLOR REMOVAL EFFICIENCY

ENOBLACK SUPER

Best color removal capacity

BLACK PF

Hydrated form less messy



enartis Perlage RANGE

ENOBLACK

Thank you for your Participation!

Q&A

Don’t forget to fill out our survey!

Your opinion matters to us!