Coldstab Color Protocol

Important:
While **Coldstab Color** can be used alone, stability analysis should only be done AFTER clarification. Prior to clarification the untreated wine could have low conductibility or create lees due to insoluble compounds (not related to instability).

COLOR STABILITY

How to identify the most suitable dosing rate to obtain color stability:
Divide 500 mL of clarified and filtered wine into 5 (or more) samples of 100 mL each.

STEP 1: Preparation of the concentrated sample (CS)
For this step use distilled or demineralized water or wine.

Using wine:
1.) Add 10 g of **Coldstab Color** to a test tube filled with 100 mL of wine
2.) Stir until completely dissolved. The solution may become hazy because of the high product concentration.
3.) Wait 15 minutes to stabilize the solution.

Using water:
1.) Add 10 g of **Coldstab Color** to a test tube filled with 100 mL of water
2.) Stir until completely dissolved.
3.) Some solids might remain insoluble; this will not affect the final result of the trial.

Additional comments:
- 0.1 mL of CS solution added to 100 mL of wine is equal to a dosage of 1.7 lbs/1000 gal (0.1 g/L).
- The minimum dosing rate for color stabilization is 3.5 lbs/1000 gal (0.4 g/L).

STEP 2: Bench trial to identify the correct dose of Coldstab Color for color stability
1.) Prepare the 4 remaining test tubes (5 if water was used instead of wine) as follows:
- Control sample
- 100 mL of wine with 0.3 mL of CS added
- 100 mL of wine with 0.5 mL of CS added
- 100 mL of wine with 0.7 mL of CS added
- 100 mL of wine with 0.9 mL of CS added

2.) Filter each 100 mL of wine with a 0.45 μm membrane and collect the filtered product in a separate test tube.
3.) Place test tubes in freezer (-0.4°F/-18°C) and store them for 48 hours.
4.) After 48 hours store the tubes at room temperature until completely thawed and wine temp is 68°F (20°C).

STEP 3: Interpretation of results
The tube with no sediment has the lowest dose needed to stabilize the color. If the control sample also has no sediment, the wine color is stable.

Additional comments: Coldstab Color has a synergistic activity with micro-filtration; if added before final filtrations, it increases stabilizing effect.

TARTARIC STABILITY

Coldstab Color can effectively reduce conductivity test results by up to 80–90% (e.g.: from 200 to 20–40 ΔµS). On average, wines have a conductivity below 250 ΔµS. If values are higher than 300 ΔµS, it means that either the wines have an excess of certain compounds, or that clarifying has unbalanced the colloidal component (excess fining). **Coldstab Color** can be used along with other treatments to test and understand why ΔµS is high.

The wine to be stabilized should be clarified and clear before addition. Protein stability is not negatively impacted by **Coldstab Color**. It is strongly recommended that you NOT do another fining after tartaric analysis, because the tartaric stability can be changed by further treatment. Do not add products such as lysozyme or any type of proteins, as this could result in haze/turbidity.

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The wine to be stabilized should be clarified and clear before addition. Protein stability is not negatively impacted by **Coldstab Color**. It is strongly recommended that you NOT do another fining after tartaric analysis, because the tartaric stability can be changed by further treatment. Do not add products such as lysozyme or any type of proteins, as this could result in haze/turbidity.

Although **Coldstab Color** helps protein stability, heat stability tests should not be used after **Coldstab Color** is added to wine because it increases haziness when warmed, increasing chances for a false positive test result. For this reason, protein stability should be analyzed BEFORE the addition of **Coldstab Color**, comparing the heat test with a bentotest or other chemical test. After addition, check protein stability again, comparing both methods. Huge differences are possible.

Allow 5 to 24 hours before microfiltering or bottling. Microfiltration increases the activity of **Coldstab Color**, increasing wine stability.

It is important to completely solubilize **Coldstab Color** and well-homogenize the mass before microfiltration.

Do not use cross-flow filtration after the addition of **Coldstab Color**; it can remove the product and reduce activity. It is okay to use any other kind of filtration.

To ensure the most accurate results both a conductivity test and a cold test should be conducted, as some types of instability are not detected by conductivity instruments (i.e. calcium instability) while other types of instability are not detected by cold tests. By comparing and evaluating the analyzes and dosages of both tests, it is possible to have a better understanding of the true tartaric instability/stability of the wine.

How to identify the most suitable dosing rate to obtain tartaric stability:
Divide 1000 mL of clarified and filtered wine into 10 samples of 100 mL each.

STEP 1: Preparation of the concentrated sample (CS)
For this step use distilled or demineralized water or wine.

Using wine:
1.) Add 10 g of **Coldstab Color** to a test tube filled with 100 mL of wine
2.) Stir until completely dissolved. The solution may become hazy because of the high product concentration.
3.) Wait 15 minutes to stabilize the solution.

Using water:
1.) Add 10 g of **Coldstab Color** to a test tube filled with 100 mL of water
2.) Stir until completely dissolved. The solution may become hazy because of high product concentration.
3.) Wait 15 minutes to stabilize the solution.

Additional comments:
• 0.1 mL of this solution added to 100 mL of wine provides 756 g/1000 gal (0.2 g/L).
• The minimum dose for tartrate stability is 756 g/1000 gal (0.2 g/L).

STEP 2: Bench trial to identify the correct dose of Coldstab Color for tartaric stability
Either a conductivity test (minicontact) or a cold test can be used. Please refer to the instructions for steps 2 and 3 below that are specific to the test you are using.

Conductivity test (minicontact):
Please refer to the instructions and directions of use provided by the manufacturer of the conductivity equipment used for the test. The test can be carried out immediately after **Coldstab Color** is added and homogenized.

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1.) Divide wine into 5 samples of 100 mL each. For each wine sample add a dose of CS as follows:
- Control sample
- 100 mL of wine with 0.2 mL of CS added
- 100 mL of wine with 0.3 mL of CS added
- 100 mL of wine with 0.4 mL of CS added
- 100 mL of wine with 0.5 mL of CS added

2.) Filter each 100 mL of wine with a 0.45 μm membrane and collect the filtered product in a separate test tube.
3.) Proceed with the conductivity test.

STEP 3 (conductivity test): Interpretation of results
The sample with the lowest conductivity delta has the best dosage for tartrate stabilization.

Additional comments: For red wines, compare these results with the instability and dosage rates for color stability. Color stability typically requires a higher dosing rate.

Cold test:
1.) Divide wine into 5 samples of 100 mL each with a dose of CS in each as follows:
- Control sample
- 100 mL of wine with 0.2 mL of CS added
- 100 mL of wine with 0.3 mL of CS added
- 100 mL of wine with 0.4 mL of CS added
- 100 mL of wine with 0.5 mL of CS added

2.) Filter each 100 mL of wine with a 0.45 μm membrane and collect the filtered product in a separate test tube.
3.) Proceed with the cold test.
4.) Place test tubes in freezer (24.8°F/-4°C) and store them for 72 hours.
   a.) Check for sediments daily.
   b.) If sediment is showing up in the control sample during the first three days, it indicates high instability. In this case the tests with low dosages should develop sediment between the third and fifth days.
   c.) If sediment does not appear in the control sample until the fifth or sixth day, instability is considered low, and no sediment will be seen in the low dosage samples.

STEP 3 (cold test): Interpretation of results
The tube with no sediment has the lowest dose needed to stabilize tartrates. If the control sample also has no sediment, the wine is stable.

Additional comments: By comparing a conductivity test with a cold test, it is possible to identify a wider range of instabilities. For example, if the conductivity test is low, instruments will declare the wine stable. On the other hand, if a cold test produces sediment, that indicates that the sediment is related to a different matrix (i.e. cold protein instability (chill haze) or phenol instability).

For red wine, as noted above, the dosage to stabilize color is higher than tartrate.

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