PROTOCOL P

Protein stability of wines

METHOD

- Measure the turbidity of the wine: T1.
- If T1 2 NTU, filter the wine (0.65 µm, cellulose ester membrane).
- Heat the filtered wine for 30 minutes at 80°C (176°F) in a water bath.
- Allow it to cool down for 45 minutes at ambient temperature.
- Measure again the turbidity after cooling down: T2.

NOTE: Do not try to speed up the cooling time (with water from the tap, etc.) to less than 45 min as this lead to an under-estimation of the dosage due to a reduced turbidity. If the cooling time is greater than 45 min there is a risk of over-estimation due to the possible precipitation of protein fractions that are normally thermally stable.

If T2 - T1 < 2 = The wine is stable.
If T2 - T1 > 2 = Presence of unstable proteins.

DOSAGE DETERMINATION

Δ = T2 - T1

- Prepare 2 or 3 samples of the wine, and treat them with doses of bentonite within the values in g of 2 to 3 times Δ.
- Example: if Δ = 10 NTU, treat the samples with the equivalent of 20 - 25 and 30 g/hL.
- Wait 30 min after addition of bentonite and repeat the test on each sample, according to the operating mode. The correct dose will correspond to the lowest one giving Δ < 2, increased by 10 g.
- Example: if the test gives 25 g/hL where Δ < 2 NTU, the final treatment in the tank will be done with 35 g/hL.

PREPARING THE BENTONITE SOLUTION FOR TEST

- Weigh 5 g of bentonite.
- Place 100 mL of water in a 250 mL beaker.
- Stir the water in the beaker using a magnetic stirrer, and slowly pour the bentonite into the vortex.
- Wait one hour to allow the bentonite to swell.
- Add the necessary volume of solution to each sample.

IMPORTANT POINTS

- Some filtration membranes adsorb proteins, hence cellulose ester is required.
- Sodium bentonites take longer to hydrate than calcium bentonites.
- The bentonite used for the test must be the same as the one used for the treatment.
- High pH can influence the results as bentonite is less reactive at high pH.
- It is advisable to re-check the stability of the wine in the tank once the treatment is achieved.

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