PROTOCOL

CRYSTALLIZATION TEST: «6 DAYS - 4°C»

Tartaric acid is undeniably the most «noble» and characteristic acid found in grapes and wine. However, the natural state of supersaturation of musts with potassium hydrogen tartrate salts leads to tartrate precipitations that can occur throughout the wine's lifespan, depending on changes in environmental conditions (alcohol content, pH, temperature, and colloidal state).

Such precipitates have no organoleptic impact, but they are particularly detrimental to the visual appearance of the wine — a key factor in consumer purchasing decisions. Therefore, tartrate stabilization treatments must be implemented to prevent the appearance of crystals in the bottle.

While many tests exist to measure the level of tartrate instability in a wine, **the «crystallization test» remains the reference method**, as it is simple and representative of natural phenomena. For red wine, it also makes it possible to take into account the interactions between tartrate instability and color matter instability.

CRYSTALLIZATION TEST PROCEDURE: 6 DAYS - 4°C

After bottling and during wine storage, cold is the main factor responsible for tartrate precipitation: if the temperature drops below the crystallization threshold (which is specific to each wine) during storage, precipitation may occur.

The crystallization test is based on **cold stabilization of a wine sample exposed for 6 days at a temperature of -4°C**, simulating "critical" storage conditions that are conducive to tartrate precipitation (such as winter cold in a poorly insulated cellar or storage in the lower part of a refrigerator).

1. **Sample preparation:**

   Homogenize the sample and perform a **coarse filtration at approximately +/- 10µm** (ex : with the aim of removing any large particles that could interfere with the visual reading of the test, without affecting the colloidal structure of the sample.

2. **Procedure:**

   The sample is placed at **- 4°C for 6 days** (while using a regulated cold chamber guarantees reproducibility of results, the freezer compartment of some domestic refrigerators can also be suitable). The test result is interpreted after these 6 days.

INTERPRETATION OF RESULTS

The interpretation of the results is qualitative and is based on the observation of the presence or absence of tartar crystals in the samples (an experienced operator will obtain semi-quantitative information).

For white wines, the observation can be done after simply turning the sample upside down.

For red wines, it is necessary to **homogenize** and then **filter** the sample: careful observation of the membrane will allow detection of the presence of crystals (which are then colored) as well as deposits of colored mattere.

Interpretation of the crystallization test on white wine

Direct observation

No crystals (negative test)

Presence of crystals (positive test)

Interpretation of the crystallisation test on red wine

Observation of the pre-filter

Absence of crystals (negative test) + Deposit of colouring matter

Absence of crystals (negative test) + No colouring matter

Presence of crystals (positive test) + No colouring matter

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