

# **ESSENTIAL CHEMISTRY**



Precipitation of calcium tartrate is becoming more frequent all over the world and causing both economic and brand damage that companies should be aware of.

The cause of the problem is still unknown but may be found in climate change, viticultural and enological practices or the use of untreated concrete tanks. Whatever the origin, it is important to know how to identify wines that are potentially calcium unstable and how to treat them.

- Calcium content (0.04 0.15 g/L) of wine is 10-20 times lower than potassium.
- Calcium mainly precipitates as calcium tartrate (CaT).
- CaT solubility is only 3 times lower at -4°C than at 20°C. Cooling has little effect on the rate of CaT precipitation.
- Potassium bitartrate precipitation does not induce that of CaT.
- Low calcium content and the presence of inhibiting factors in wine makes the formation of CaT germs that start the crystallization process unpredictable.

WINE COMPOUNDS THAT HAVE AN INHIBITING EFFECT ON CALCIUM PRECIPITATION					
GLUCONIC ACID	MALIC ACID	CITRIC ACID	COLLOIDS	POTASSIUM	MAGNESIUM





The main factors promoting calcium precipitation are calcium, pH and tartaric acid. In particular, pH has a tremendous impact. The increase of only 0.1 points has a dramatic effect on the speed and intensity of precipitation.



### HOW TO RECOGNIZE CALCIUM TARTRATE PRECIPITATE

Both CaT and potassium bitartrate form white (or red in the case of red wine) crystals and a sandy precipitate. To distinguish one salt from the other, perform the following trial:

- Place some crystals in a flask or beaker
- Add some clean water
- Warm the solution to 80 100°C (175 210°F)
- Stir occasionally

If crystals do not dissolve, it is calcium tartrate.

# **ENARTIS SOLUTION FOR CALCIUM STABILITY**

## HOW TO CHECK IF WINE IS CALCIUM UNSTABLE

- Determine wine calcium content (Ca1). In the case of white and rosé wine, perform the analysis on protein stable wines.
- Take a 100 mL sample of wine and add 0.4 g of micronized calcium tartrate.
- Stir for 15 minutes and store the sample at -4°C (25°F) for 24 hours.
- At the end of the cooling treatment, filter the wine using 0.45-micron membrane and analyze calcium content (Ca2).
- Calculate ΔCa = (Ca1-Ca2)

ΔCa < 15 ppm	Stable	
15 ppm < ΔCa < 25 ppm	Slightly unstable	
∆Ca > 25 ppm	Very unstable	



## WHAT TO DO IF WINE IS CALCIUM UNSTABLE?

Promote rapid formation and precipitation of CaT crystals by seeding with **Enocristal Ca**. **Enocristal Ca** is a stabilizing agent derived from micronized calcium tartrate selected for its chemical purity. Due to the less than one micron size of its granules, **Enocristal Ca** acts as crystallization nuclei and accelerates the formation of crystals, thus making the crystallization process predictable and controlled.

## ADVANTAGES OF USING ENOCRISTAL Ca

- **Simple:** its use does not require any special equipment or specialized labor.
- Safe: it is insoluble, sensory neutral, not consumable by wine microorganisms.
- Respectful of wine quality: it only causes a minimal loss of total acidity (less than cold treatment or ED).
- Respectful of the environment: cooling is not necessary and it is complementary to the use of stabilizing colloids.

## HOW TO USE ENOCRISTAL Ca

- Dissolve Enocristal Ca in wine at a ratio of 1:20 and add to wine during pump-over.
- Keep the product in suspension until complete homogenization in the entire volume of wine.
- ▼ Wine temperature must be between 10 15°C (50 60°F) for the duration of the treatment.
- Leave Enocristal Ca in contact with wine for 15 days.
- Filter at the end of treatment.

LEVEL OF INSTABILITY	SUGGESTED DOSAGE		
15 < ∆Ca < 25	20 g/hL		
∆Ca > 25	50 g/hL		



Inspiring innovation

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