

Tartrate stabilisation by retardation or blocking of crystal formation **Siegmar Goerges, Erbslöh Geisenheim beverage technology, Germany**

Introduction

In general wine, especially young wine, is a tartar (potassium hydrogen tartrate) and/or calcium tartrate oversaturated solution. The more a wine is oversaturated with tartar or Ca-tartrate, the more likely crystal precipitations occur. Crystal formation can be accelerated or delayed by the different wine components.

High-molecular substances retard or block crystallisation of dissolved matter. If solutions are oversaturated with sugars or salts, high-molecular substances prevent a bonding of the respective molecules, so that they do not form clusters which grow into crystals. When performing crystal stabilisation of wine, this characteristic can be utilized by applying metatartric acid, gum arabic, mannoprotein and carboxymethylcellulose (CMC).

The treatment agents

The treatment agents available are of different origin and can be characterised as follows:

Metatartric acid is a polymer of natural tartaric acid. It is manufactured by dry heating of tartaric acid to temperatures of approx. 170 °C. This process leads to dehydration resulting in an esterification and thus to a polymerisation of the tartaric acid. Dependent on the production process, the degree of polymerisation can be raised and the stability of the produced metatartric acid can be varied accordingly.
The recommended dosage is 10 g per 100 litres.

Gum arabic is a natural plant polymer which is extracted from the dried sap of different acacia species, predominantly *Acacia senegal*. The polymer consists of arabinose, rhamnose, galactose and glucuronic acid; molar ratios depend very much on the species of acacia trees and the local growing conditions of the trees.
Recommended dosage: 20 g per 100 litres.

Mannoprotein is, mostly together with yeast glucan, isolated from yeast cell walls by means of a thermal and/or enzymatic process. The degree of purification is decisive for product reactivity and neutrality of flavour. By yeast autolysis small mannoprotein quantities are released into the wine during and after the fermentation process. This means, mannoprotein is a natural wine component.
The recommended dosage amounts to 25 g per 100 litres.

Carboxymethylcellulose is a cellulose derivative, which is formed by a chemical conversion reaction from native cellulose. Wood or cotton dissolved in sodium hydroxide solution and subsequently undergoing ether synthesis, constitute the raw material. The Na-CMC obtained by drying is clear and completely soluble in water and wine. CMC is used in many foodstuffs as thickening agent and is highly resistant even in the weakly acidic medium wine.
Recommended dosage: 10 g per 100 litres.



RESOLUTION OENO 2/2008

WINE – TREATMENT WITH CELLULOSE GUMS (CARBOXYMETHYLCELLULOSE)
THE GENERAL ASSEMBLY,

In view of article 2, paragraph 2 of the Agreement of 3 April 2001, establishing the International Organisation of Vine and Wine,

Taking note of the works of the « Technology » expert group,

Considering the opinion of the "Food Safety" expert group during its 14th session and 15th session,

RECOMMENDS that care be taken as to potential allergenic risks due to this substance;

DECIDES: On the proposal of Commission II « Oenology » to introduce in part III of the said "*International Code of Oenological practices*" the following oenological practices:

PART III

Chapter 3: Wine

3.3. Physico-chemical stabilisation of wine

TREATEMENT BY CELLULOSE GUMS (CARBOXYMETHYLCELLULOSE)

Definition:

Addition of cellulose gums to white and sparkling wines

Objective:

Contribute to the tartaric stabilisation of white wine and sparkling wine

Prescriptions:

- a) The dose of cellulose gums used must be under 100 mg/L
- b) For questions of incorporation, it is preferable to use products in granulated form or less viscous products.
- c) Cellulose gums used must be in accordance with the provisions of the International Oenological Codex.

Recommendation of the O.I.V.:

Admitted.

Certified in conformity
Verona, 20th June 2008
The General Director of the OIV
Secretary of the General Assembly

Federico CASTELLUCCI