RESOLUTION OIV-OENO 667-2022

UPDATE METHOD OIV-MA-AS-02-07B – CHROMATIC CHARACTERISTICS

WARNING: This draft resolution amends the following resolution:
AG 8/78-OEN

THE GENERAL ASSEMBLY,

IN VIEW OF Article 2, paragraph 2 iv of the Agreement of 3 April 2001 establishing the International Organisation of Vine and Wine,

AT THE PROPOSAL OF the "Methods of Analysis" Sub-Commission,

CONSIDERING that the proposed modifications are intended to improve the method performance,

CONSIDERING that the scope of application of the current method, OIV-MA-AS2-07B, does not include must and sulphited must,

CONSIDERING that the current method, OIV-MA-AS2-07B, is not applicable to red wines with high colour intensity, even using a cell with an optical path length of 0.1cm,

DECIDES to modify the resolution AG 8/78-OEN and consequently the method OIV-MA-AS2-07B in Annex A of the *Compendium of International Methods of Analysis of Wines and Musts* by adding the following annex:

Operative instructions for the determination of Chromatic Characteristics of wines and/or musts obtained by grape varieties characterized by high concentrations of colouring pigments and/or high sulfur dioxide levels

1. Principle of the method

1.1. Field of application

Applicable to red wine with high concentrations of colouring pigments, must, and must with high sulphur dioxide levels.

A spectrophotometric method whereby chromatic characteristics are expressed,

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conventionally, as given below:

- The intensity of colour is given by the sum of absorbencies (or O.D. = Optical Densities) using a 1 cm optical path and radiation of wavelengths 420, 520 and 620 nm.
- The shade is expressed as the ratio of absorbance at 420 nm to absorbance at 520 nm.

For grape varieties characterized by high concentrations of colouring pigments, given the nature of the chemical structure of these substances, the determination of the chromatic characteristics requires the dilution of the sample with a buffered solvent at pH 3.2. The use of a buffered solvent compared to dilution with water reduces the effect of the matrix and normalizes the O.D as the dilution increases.

2. Method

2.1. Apparatus

2.1.1. Spectrophotometer enabling measurements to be made between 300 and 700 nm.

2.1.2. Glass cuvettes or single use plastic cuvettes with optical path equal to 1 cm.

2.1.3. Volumetric glassware with variable volume according to needs

2.1.4. Syringe filter 0.45 □m

2.2. Reagents

2.2.1. Type II water for analytical use, ISO 3696 standard, or of equivalent purity

2.2.2. Tartaric acid ≥ 99.5% (CAS 87-69-4)

2.2.3. Sodium hydroxide NaOH 1 N (CAS 1310-73-2)

2.2.4. Hydrogen peroxide 30% w/w (CAS 7722-84-1)

2.3. Working solutions

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2.3.1. Buffer at pH 3.20

Daily preparation: weigh 7 ± 0.1 g of tartaric acid (2.2.2) in a 1000 mL volumetric flask, add 35 ml of NaOH 1 N (2.2.3) and make up to 1000 mL with water (2.2.1). Check the pH with a pH meter and verify that pH is 3.20□0.05. The solution should be checked and filtered (2.1.4) at the time of use.

2.3.2. Hydrogen peroxide 3% (v/v)

Dilute 1.0 mL of hydrogen peroxide (2.2.4) to 10 ml. The solution should be prepared at the time of use.

2.4. Preparation of the sample

If the sample is cloudy, clarify it by centrifugation (10 min, 1146 rcf); If there is carbon dioxide remove it by agitation under vacuum (or similar systems).

In the case of grape must whose alcoholic fermentation is inhibited by adding sulphur dioxide, add 0.1 mL of 3% hydrogen peroxide solution (2.3.2) per mL of sample used and make up to volume, depending on the dilution chosen, with the buffer solution at pH 3.2 (2.3.1). Wait 20 minutes, then proceed with spectrophotometric reading.

2.5. Spectrophotometric reading for wine and must with high colour intensity or high sulphur dioxide levels

Take the spectrophotometric measurements of the samples: the absorbance (*A*) will fall between 0.3 and 1.0 (the absorbance acceptability range can be extended if instrumental technology allows it) If the *A*-value is above the maximum limit, make an appropriate number of dilutions (*d*) of the sample using the buffer solution (2.3.1) to meet the acceptability criteria.

Take the spectrophotometric measurements using the buffer solution as the reference liquid to set the absorbance scale of the apparatus to zero at the wavelengths of 420, 520 and 620 nm.

2.6. Calculations

Calculate the optical densities (O.D.) for each of the three wavelengths by multiplying the detected absorbances (A_{420}, A_{520} and A_{620}) by the number of dilutions made (*d*):

$$\text{DO } 420\,\text{nm} = A_{420} \times d$$

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$$\text{DO } 520\,\text{nm} = A_{520} \times d$$

$$\text{DO } 620\,\text{nm} = A_{620} \times d$$

2.7. Expression of results

The colour intensity (*I*) is conventionally given by:

$$I = A_{420} + A_{520} + A_{620}$$

and is expressed to three decimal places.
The shade (*N*) is conventionally given by:

$$N = A_{420}/A_{520}$$

and is expressed to three decimal places.

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