SD6019: COLOR INDEX

COLORIMETRIC

PURPOSE OF THE TEST

The color of the wine is the result of the mixture of different colored compounds, mainly of reddish tones (anthocyanins), blue (iron complexes) and yellow (catechins). As those compounds can suffer from different modifications along the wine maturation, the resulting color also evolves. The color index is an indicator that takes into account the absorption at 420, 520 and 620 nm.

METHOD

The sample is stabilized in buffered medium and the absorbances 420, 520 and 620 nm are read. The result at each wave length is added to give the color index. It reflects the intensity of color. Also, it is possible to stablish a hue index as a ratio between absorbance at 420 and 520 nm.

CONTENT

R1	4 x 30 mL 	Buffer pH 3.2, ethanol 10% *WARNING: H226: Flammable liquid and vapour.*

REAGENT PREPARATION

Reagents are ready to use and are stable up to expiry date as supplied when stored at 2-8 ºC. Do not freeze.

SAMPLES

For use with wine samples.

The samples must be free of turbidity and particles. Centrifuge or filter if necessary. The presence of CO_2 introduces instability in the measure. Samples containing CO_2 must be degassed beforehand. In samples with very high colour intensity, the pigment may interfere with the measurement. Samples with concentration higher than the measurement range at expected predilution can be further diluted with distilled water. Multiply the final result by the additional dilution factor.

PROCEDURE OVERVIEW

Treat standard, controls and samples as sample. Use distilled water as Blank.

Volumes stated below can be adjusted to other analytical procedures. Expected performance can vary if those ratios S:R1 are not used exactly as stated.

Pipette into a cuvette:

Reagent 1	800 µL
Sample	200 µL

Mix, incubate at 37ºC for 1 minutes and read absorbance at 420 nm (A_{420}), 520 nm (A_{520}) and 620 nm (A_{620}).

Color index is calculated as:

$$Color\ Index = Abs_{420} + Abs_{520} + Abs_{620}$$

Color hue is calculated as:

$$Color\ hue = \frac{Abs_{420}}{Abs_{520}}$$

ASSAY PARAMETERS FOR ANALYZERS DIONYSOS®

Dionysos model	150	240	150	240	150	240
Name	ABS420		ABS520		ABS620	
Method	End Point A		End Point A		End Point A	
Direction	Increasing		Increasing		Increasing	
Main Wavelength	420		520		620	
Sec. Wavelength	--		--		--	
Sample	50		50		50	
Reagent 1	200		200		200	
Reagent 2	--		--		--	
Calibration	K Factor = 5		K Factor = 5		K Factor = 5	
Blank cycle [150 | 240]	2 - 2	2 - 2	2 - 2	2 -2	2 - 2	2 - 2
Reading cycle [150 | 240]	7 - 9	13-15	7 - 9	13-15	7 - 9	13-15
Units	OD		OD		OD	
Decimals	0.000		0.000		0.000	
Measure range	0.11 ~ 3.50		0.14 ~ 3.50		0.12 ~ 3.50	
R1 Lim. Abs	5000		5000		5000	
Ratio Dil. Auto.	--		--		--	
Vol. Sample Dil. Auto	--		--		--	

Use calculated methods as:

[COLOR INDEX]
[RED420]+[RED520]+[RED620]

[RED IC]
[RED 420]+[RED 520]

[RED TINT]
[RED 420]/[RED 520]

[RED SHADE]
[RED 520]-[RED 420]

PERFORMANCE

Limit of quantification: 0.11 (Abs_{420}), 0.14 (Abs_{520}), 0.12 (Abs_{620})
Limit of linearity: 16.50

NOTES

It is recommended to use wine controls to verify quality of calibration. Each laboratory should establish its own quality criteria for acceptance, as well as proper corrective action procedures in case of rejection.

REFERENCES

1. Compendium of International methods of analysis – OIV, Vol 1&2 (2008).
2. Bermeyer, HU. Methods of Enzymatic Analysis, 2nd Ed. Vol. 1, p. 112-117. Academic Press, Inc. NY. (1974)