SY2425: POTASSIUM

TURBIMETRIC – TETRAPHENYLBORATE

FOR USE IN WINE SAMPLES

PURPOSE OF THE TEST

Potassium is the most abundant cation in wine. Its concentration depends on both the variety of the grape, the soil conditions and growing procedures, and the methods used in the winemaking process. High values of potassium in the grape are associated with more basic musts, something that may adversely affect the quality of the wine. Although most potassium salts are soluble, potassium bitartrate decreases its solubility as the alcohol concentration increases, giving rise to precipitates that can be perceived as a loss of quality, even if do not affect the organoleptic properties of the wine.

METHOD

Potassium ion forms a stable precipitate with the tetraphenylborate able to remain in suspension, thus causing turbidity in the sample. The degree of turbidity, measured as the variation of absorbance at 560 nm, is proportional to the concentration of potassium.

CONTENT

R1	2 x 40 mL	Buffer, Tetraphenylborate, preservatives
STD	1 x 5 mL	Potassium chloride 1500 mg/L

REAGENT PREPARATION

Reagents are ready to use and are stable up to expiry date as supplied when stored at 15-25 ºC. Do not freeze.

Discard if absorbance of blank is higher than 0.300 OD at 560 nm.

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. Treat with polyvinylpolypyrrolidone (PVPP 0.1g for each 10 mL) or active carbon to reduce the level of colour. Samples with concentration higher than the measurement range must be diluted accordingly with distilled water. Multiply the final result by the 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:

	Blank reaction	Test Reaction
Reagent 1	750 µL	750 µL
Distilled water	9 µL	--
Sample/Standard	--	9 µL

Mix, incubate at 37ºC for 5 minutes and read absorbance at 560 nm (A_1).

Concentration of potassium is calculated as:

$$Potassium = \frac{(A_1)_{sample} - (A_1)_{blank}}{(A_1)_{standard} - (A_1)_{blank}} \; x \; C \; mg/L$$

ASSAY PARAMETERS FOR ANALYZER Y15/Y25®

GENERAL	Name	POTASSIUM
	Analysis mode	Diff. monoreagent
	Sample type	ST1
	Units	mg/L
	Reaction type	Increasing
	Decimals	2
	Replicates	1
PROC.	Reading	Monochromatic
	Sample	3
	Reagent 1	250
	Reagent 2	
	Wash	1,2
	Predilution factor	--
	Postdilution factor	2
	Main wavelenght	560
	Ref. wavelenght	--
	Reading 1 at	300 s
	Reading 2 at	
	Add Reagent 2 at	
CAL.	Calibration type	Multiple
	Standard replicates	3
	Blank replicates	3
	Calibration curve	Linear regression
OP.	Limit abs. Blank	0.300
	Limit Blank kinetic	--
	Limit linearity	1500

Procedure is linear up to 1500 mg/L. Calibrate with a single point using the highest concentration standard or with several points as per your quality procedures.

PERFORMANCE

Limit of quantification: 20 mg/L
Limit of linearity: 1500 mg/L

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.

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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.

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