

POTASSIUM *Wine Application*

11-2015 Revision

POT 30 (30-Tests)

UV-Method Procedure improvements: New Linearity Claim, Faster Reaction

POT CW 100 (5 X 20 CW Tests/Set)

INTENDED USE

For the quantitative determination of Potassium. This wine application is suitable for Manual and Automated analyses.

	POT F30	POT CW-100
Buffer R1	20mL	20mL
Enzyme/Substrate R1b (Powder)	20mL	5 X 4mL
Diluent R2	9mL	9mL
Enzyme R2 (Powder)	9mL	5 X 1.8mL
150 mg/L Potassium Standard	1mL	1mL

Also available from Unitech, 300 mg/L Potassium Standard for Point to Point calculations.

STABILITY AND PREPARATION OF REAGENTS

Working Reagent & Working Enzyme are stable for 3 hours at +2 to +8°C. Prepare only as much as needed.

R1 – Working Reagent (i.e. Buffer/Enzyme/Substrate)

- o Dissolve one vial 'Enzyme/Substrate R1b' in a portion of Buffer R1; then transfer the entire contents to Buffer R1 vial, rinsing the Enzyme/Substrate R1b vial several times.
- o Dilute R1 Solution (prepared above) **10%** with D.I. Water (e.g. 20mL R1 + 2mL D.I.) & mix.

R2 Working Enzyme Solution

- o Dissolve one vial 'Enzyme R2b' in a portion of Diluent R2; transfer the entire contents to Diluent R2, rinsing Enzyme R2b vial several times. **R-2.**

PROCEDURE

Wavelength: 340/620 nm Temperature: 25 to 37C
Measurement against reagent blank

Dilute Samples ten-fold (e.g. 10uL + 90uL D.I. Water) Use Standard undiluted.

Calibrate this assay daily with standard provided.

Mix and incubate 2 min.

1. **Pipet DI Water** into the Blank cuvette; **Standard and diluted Samples** into their respective cuvettes as shown below:
2. **Dispense R1 Working Reagent** into each cuvette, as shown. Mix cuvettes and wait 2 minutes.

Pipet into Cuvettes:	Blank	Standard	Sample
DI Water	20uL		
Standard		20uL	
10-fold diluted Samples			20uL
Pipet R1 Working-Reagent	700uL Mix; incubate 2 minutes		
Pipet R1 Working-Enz.	300uL		
Mix; incubate 2 minutes Read Initial ABS_{340nm}			
Incubate 5 minutes Read Final ABS			

3. **Dispense R2 Working Enzyme** into each cuvette, as shown. Mix cuvettes.
4. Incubate for 2 mins; **Zero Spectrophotometer** (340nm) with **Blank Cuvette** and **Read Initial ABS** of each standard and sample cuvette. Read at a steady pace; assure accurate timing.
5. Incubate for 20 mins and **Read Final ABS** at steady pace.

Note: This 'rate' reaction does not reach endpoint in 20-minutes; equal timing for all tubes is important.

CALCULATIONS

1. Calculate **delta A** = A_{INITIAL} - A_{FINAL} for each cuvette.
2. Samples with delta A values less than 0.05 should be reassayed with a larger sample volume.
3. Subtract the delta A of the Reagent Blank (A_{INITIAL} - A_{FINAL}) from the delta A of each sample and standard.
Net A_{SAMPLE} = delta A_{SAMPLE} - delta A_{BLANK}
4. Calculate Potassium concentration in samples using the Standard provided:

$$\text{Potassium, mg/L} = 150 \times \frac{\text{Net A}_{\text{SAMPLE}}}{\text{Net A}_{\text{STANDARD}}} \times 10$$

Where '150' is the Standard Concentration and '10' is the sample dilution factor

Results may also be calculated from a 2-point standard curve (The 300 mg/L Potassium Standard is available from Unitech.)

LINEARITY/SPECIFICITY This method is linear for potassium concentrations between is **200 - 2200mg/L** in (undiluted) samples. Dilute and retest samples with higher results.

Ammonia was tested at concentrations up to 300 mg/L in wine samples and found not to interfere.

QUALITY CONTROL

A stable check wine should be assayed daily. Values obtained should fall within a range you have predetermined for this check wine. If these values fall outside the range and repetition excludes error, the following steps should be taken:

1. Check instrument settings and light source.
2. Check cleanliness of all equipment in use.
3. Check water, contaminants ie. bacterial growth may contribute to inaccurate results.
4. Check expiry date of kit and contents.

Standards & Application & Distributed Reagents from:
UNITECH SCIENTIFIC LLC
Hawaiian Gardens, CA 90716, Tel: 562-924-5150

POTASSIUM *Wine Application*

11-2015 Revision

POT 30 (30-Tests)

UV-Method

POT CW 100 (5 X 20 CW Tests/Set)

APPENDIX

AUTOMATED TESTING

For **ChemWell and ChemWell-T for Wine** automated methods, prepare Potassium R-1 (Working Reagent) & R-2 (Working Starter) as shown for the Manual Procedure. Place reagents and standards in Reagent Rack; contact Unitech Scientific for assay details.

Manufactured by: Randox Laboratories Limited, UK

Standards & Application & **Distributed Reagents by:**

UNITECH SCIENTIFIC LLC

Hawaiian Gardens, CA 90716, Tel: 562-924-5150