POTASSIUM TEST KIT

Optimized Tetraphenylboron Turbidimetric Method

SAWIN BIOMEDICALS PVT LTD.

Product Code: 10041 / 11041 / 12041	**Reaction Type:** End Point with Standard
Pack Size: 25x1 ml / 45 ml / 50x1 ml	**Matrix Target:** Human Serum & Plasma
Storage Temp: 2–8°C (Reagent & Standard)	**Wavelength:** 620 nm (Zero: Water)

INTENDED USE & CLINICAL SIGNIFICANCE

Intended Use: This liquid diagnostic reagent insert is configured for the rapid quantitative in vitro turbidimetric determination of Potassium (K+) levels in human serum or plasma.

Clinical Significance: Potassium is the major intracellular cation required to maintain the electrical membrane potential of cells. Intracellular potassium concentration is approximately 30-fold greater than extracellular fluid tracks. Hyperkalemia (elevated potassium) is a critical marker in renal failure, severe dehydration, shock, and advanced diabetes. Hypokalemia occurs in malnutrition, aldosteronism, and critical gastrointestinal fluid loss pipelines.

METHOD PRINCIPLE

Potassium ions react directly with sodium tetraphenylboron in a specifically balanced alkaline medium to generate a homogeneous, stable colloidal suspension:

> Potassium Ions (K^+) + Sodium Tetraphenylboron → Potassium Tetraphenylboron Colloidal Suspension

The resulting structural turbidity blocks light transmission proportionally to the potassium ion concentration across a validated dynamic interval of 2 to 7 mmol/L when processed photometers-side at 620 nm.

STEP 1: REAGENT CONFIGURATION & PIPETTING BASELINE

Pre-Analytical Rule (Zero Leakage): Serum must be separated from clotted erythrocytes without delay. Falsely elevated readings develop rapidly due to passive leakage since RBCs contain 23-fold higher potassium concentrations than clean serum. Avoid lipemic or turbid sample vectors.

Glassware Rule: Thoroughly clean containers with 1 N Nitric Acid and rinse with high-purity deionized water to prevent detergent trace contamination.

Reagent / Component Line	Standard (S) Track	Patient Test (T) Track
R1 - Potassium Turbidimetric Reagent	1000 µl	1000 µl

Reagent / Component Line	Standard (S) Track	Patient Test (T) Track
Potassium Standard (5 mmol/L)	50 µl	—
Clean Processed Patient Sample (Serum / Plasma)	—	50 µl

Operational Directive: Slowly transfer standard/serum by dipping the micropipette tips directly into the solutions. Mix gently and incubate for exactly 5 minutes at Room Temperature. Read the optical densities against distilled water at 620 nm within 10 minutes.

STEP 2: CALCULATIONS & DATA TRACKING

> Potassium Concentration (mmol/L) = ***[Abs. of Test / Abs. of Std.] × 5 (Standard Concentration)***

TECHNICAL PARAMETERS & CLINICAL SUPPORT MATRIX

Universal Safeguards	Professional in vitro use only. Falsely elevated values develop if serum urea values exceed 150 mg%. High clinical samples must be diluted with standard saline, re-assayed, and multiplied by the dilution factor. Avoid mouth pipetting paths.
Expected Range	Potassium Interval: 3.5 to 5.5 mmol/L. Normal reference balances are subject to localized lab validation controls.
Analytical Linearity	Linear between 2.0 and 7.0 mmol/L. Limits are managed through proportional scaling protocols.

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