

*Reference Material Institute for Clinical Chemistry Standards (ReCCS)***Certified Reference Material for Measurement of Electrolytes  
in Urine****JCCRM U1j****Certificate of Analysis****■ Intended use**

This certified reference material (CRM) is intended primarily for use in evaluating the accuracy of routine methods measuring sodium (Na), potassium (K) and chloride (Cl) in urine, and validating working reference materials and evaluating the internal and external quality of measurements.

**■ Certified values and expanded uncertainties**

unit: mmol/L (25 °C)

	L		M		H	
	Certified value	Expanded uncertainty	Certified value	Expanded uncertainty	Certified value	Expanded uncertainty
Na	49.7	0.2	98.8	0.4	179.2	0.7
K	10.0	0.1	29.9	0.1	59.9	0.3
Cl	49.9	0.3	99.4	0.4	179.7	0.7

The expanded uncertainty  $U$  (95 % level of confidence) shown for each certified value in the above table is obtained from the equation  $U=ku$ , where  $u$  is the combined standard uncertainty calculated according to the ISO Guide 36, and  $k$  is a coverage factor <sup>1)</sup>. The coverage factor  $k$ , determined from the Student's  $t$  distribution, is  $k=2.0$ .

**■ Measurement methods for certified values**

Flame photometry (Na,K) <sup>2)</sup> and coulometric titration (Cl) <sup>3)</sup> calibrated with NIST SRM 919b and NIST SRM 918c.

**■ Instructions for use**

A vial is taken out from its case and is thawed at room temperature while placing it cap-side up. Next, the vial is left standing for about 30 minutes to bring the temperature of the serum to room temperature. Once this procedure is completed, hold the cap of the vial; gently rotate the vial in complete circles; several times and tighten the cap; and then mix the content of the vial by turning the vial upside down at least 40 times. (the material in this manner must be used within the day). Once thawed, the material cannot be frozen for reuse.

**■ Storage and expiration**

This CRM shipped in frozen condition on dry ice. Confirm that dry ice remains upon receipt; otherwise the materials could not be used thereafter.

Store this product in a freezer immediately after receiving it.

The expiration date is as follows from the shipping (see the label of the outer case).

**Six months when stored below  $-20\text{ °C}$  from the shipping date**

**■ Product specifications**

Configuration: Frozen liquid

A single set of this CRM consists of 3 vials and each vial contains 1 mL.

**■ Preparations**

NaCl, KCl, Na<sub>2</sub>HPO<sub>4</sub> and NaH<sub>2</sub>PO<sub>4</sub> were added in the solution including 83 mg/dL of creatinine and 1000 mg/dL of urea respectively.

**■ Traceability**

The flame photometry for Na and the coulometric titration for Cl were calibrated with NIST SRM 919b. The flame photometry for K was calibrated with NIST SRM 918c.

**■ Date of Certification**

**July 30, 2021**

**■ References**

- 1) Evaluation of measurement data - Guide to the expression of uncertainty in measurement. ISO/IEC Guide 98-3 (JCGM 100:2008).
- 2) US. Department of commerce, NBS Special Publication: Standard Reference Materials: A reference method for the determination of sodium in serum, 260-60 , 1978.
- 3) US. Department of commerce, NBS Special Publication: Standard Reference Materials: A reference method for the determination of chloride in serum, 260-67, 1979.

**■ Provider of JCCRM U1j**

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