

Urine Preservatives—Collection and Transportation for 24-Hour Urine Specimens

The Department of Laboratory Medicine and Pathology at Mayo Clinic initiated a study to determine stability of analytes under different preservative conditions. This reference chart, built from that study, will enable you to select either temperature conditions or preservatives to maximize the number of tests that can be performed on a single 24-hour collection.

Note: See the Test Catalog for test-specific collection requirements.

							Preservat	tive Option	Transport Temperature						
		Tempe	rature Presei	vation	50%			•	6M				Ambient		
					50% Acetic	Boric	Diazolidinyl	6M Hydrochloric	Nitric	Sodium			(Plain) Internal		
Published Test Name	Test ID	Ambient	Refrigerate	Frozen	Acid	Acid	Urea	Acid	Acid	Carbonate	Thymol	Toluene	Only	External	Internal
Adrenal Mass Panel, 24 hour, Urine	ACC	No	OK	OK	No	No	No	No	No	No	No	No	No	Frozen preferred ≤ 90 days Refrig ≤ 14 days	Frozen OK
Albumin, 24 Hour, Urine	ALB24	OK	Preferred	OK	No	OK	No	No	No	No	OK	No	OK	Refrig preferred \leq 7 days Ambient $OK \leq$ 7 days Frozen $OK \leq$ 7 days	Ambient 0K
Aldosterone, 24 Hour, Urine	ALDU	OK	ОК	OK	Preferred	OK	No	No	No	No	No	No	OK	Refrig preferred ≤ 28 days Frozen OK ≤ 28 days Ambient with preservative OK ≤ 14 days	Ambient 0K
Aldosterone with Sodium, 24 Hour, Urine	ALDNA	OK	ОК	ОК	Preferred	OK	No	No	No	No	No	No	OK	Refrig preferred \leq 14 days Frozen OK \leq 14 days Ambient with preservative OK \leq 7 days	Ambient OK
Alpha-1-Microglobulin, 24 Hour, Urine	A1M24	OK	Preferred	ОК	OK	OK	No	No	No	No	OK	No	OK	Refrig preferred ≤ 7 days Frozen OK ≤ 7 days Ambient OK ≤ 7 days	Ambient 0K
Aluminum, 24 Hour, Urine	ALU	OK	Preferred	OK	OK	No	No	ОК	OK	No	No	No	OK	Refrig preferred ≤ 28 days Frozen OK ≤ 28 days Ambient OK ≤ 28 days	Ambient 0K
Ammonium, 24 Hour, Urine	AMMO	No	ОК	OK	OK	OK	Preferred	ОК	No	No	OK	No	No	Refrig preferred \leq 14 days Frozen OK \leq 14 days Ambient OK \leq 72 hours	Ambient 0K
Arsenic with Reflex, 24 Hour, Urine	ASU24	OK	Preferred	ОК	OK	No	No	ОК	OK	No	No	No	OK	Refrig preferred ≤ 28 days Frozen OK ≤ 28 days Ambient OK ≤ 72 hours	Ambient 0K
Arsenic Fractionation, 24 Hour, Urine	ASFR	OK	Preferred	ОК	OK	No	No	ОК	ОК	No	No	No	OK	Refrig preferred ≤ 28 days Frozen OK ≤ 28 days Ambient OK ≤72 hours	Ambient 0K
Arsenic Speciation, 24 Hour, Urine	SPASU	No	Preferred	OK	OK	No	No	ОК	No	No	No	No	No	Refrig preferred 28 days Frozen 28 days Ambient 72 hours	Ambient 0K
Arylsulfatase A, 24 Hour, Urine	ARSU	No	Required	No	No	No	No	No	No	No	No	No	No	Refrig preferred ≤ 14 days Frozen NO Ambient NO	Ambient 0K
Cadmium, 24 Hour, Urine	CDU	OK	Preferred	ОК	OK	No	No	ОК	OK	No	No	No	OK	Refrig preferred ≤ 28 days Frozen OK ≤ 28 days Ambient OK ≤ 28 days	Ambient 0K
Calcium, 24 Hour, Urine	CALU	OK	Preferred	ОК	OK	OK	ОК	ОК	OK	No	OK	No	OK	Refrig preferred ≤ 14 days Frozen OK ≤ 14 days Ambient OK ≤ 72 hours	Ambient 0K
Catecholamine Fractionation, Free, 24 Hour, Urine	CATU	No	OK	ОК	Preferred	ОК	No	ОК	OK	No	No	No	No	Refrig preferred \leq 7 days Frozen OK \leq 14 days Ambient with preservative OK \leq 7 days	Ambient 0K

${\it Urine\ Preservatives} \color{red} - {\it Collection\ and\ Transportation\ for\ 24-Hour\ Urine\ Specimens\ ({\it continued})}$

Preservative Options Transport Temperature															
		Temperature Preservation			E00/	P	reservati	Transport Temperature							
Published Test Name	Test ID	-	Refrigerate		50% Acetic Acid	Boric Acid	Diazolidinyl Urea	6M Hydrochloric Acid	6M Nitric Acid	Sodium Carbonate	Thymol	Toluene	Ambient (Plain) Internal Only	External	Internal
Chloride, 24 Hour, Urine	CLU	OK	Preferred	OK	OK	OK	ОК	No	No	No	OK	No	ОК	Refrig preferred ≤ 14 days Frozen 0K ≤ 14 days Ambient NO	Ambient 0K
Chromium, 24 Hour, Urine	CRU	OK	Preferred	OK	No	No	No	No	No	No	No	No	ок	Refrig preferred \leq 28 days Frozen 0K \leq 28 days Ambient 0K \leq 28 days	Ambient OK
Citrate Excretion, 24 Hour, Urine	CITR	No	ОК	OK	No	OK	Preferred	No	No	No	ОК	No	No	Refrig preferred ≤ 14 days Frozen 0K ≤ 14 days Ambient NO	Ambient 0K
Cobalt, 24 Hour, Urine	COU	OK	Preferred	OK	No	No	No	No	No	No	No	No	ОК	Refrig preferred \leq 28 days Frozen OK \leq 28 days Ambient OK \leq 28 days	Ambient 0K
Copper, 24 Hour, Urine	CUU	OK	Preferred	OK	OK	No	No	ОК	ОК	No	No	No	ОК	Refrig preferred \leq 28 days Frozen OK \leq 28 days Ambient OK \leq 28 days	Ambient OK
Cortisol/Cortisone, Free, 24 Hour, Urine	COCOU	No	ОК	OK	OK	Preferred	No	No	No	No	No	No	No	Refrig preferred \leq 14 days Frozen 0K \leq 28 days Ambient with preservative 0K \leq 72 hours	Ambient 0K
Cortisol, Free, 24 Hour, Urine	CORTU	No	ОК	OK	OK	Preferred	No	No	No	No	No	No	No	Refrig preferred \leq 14 days Frozen 0K \leq 28 days Ambient with preservative 0K \leq 7 days	Ambient OK
Creatinine, 24 Hour, Urine	СТИ	OK	Preferred	OK	OK	OK	ОК	ОК	OK	ОК	OK	No	ОК	Refrig preferred \leq 30 days Frozen 0K \leq 30 days Ambient 0K \leq 30 days	Ambient OK
Creatinine Clearance, Serum and 24 Hour Urine	CRCL	Preferred	ОК	OK	OK	OK	ОК	ОК	OK	ОК	OK	No	Preferred	Refrig preferred Frozen OK Ambient OK	Ambient OK
Cystinuria Profile, Quantitative, 24 Hour, Urine	CYSQN	No	ОК	OK	No	No	No	No	No	No	No	Preferred	No	Frozen preferred ≤ 70 days Refrig ≤ 14 days Ambient NO	Ambient OK
2, 3-Dinor-11 Beta-Prostaglandin F2 Alpha, Urine	23BPG	No	Preferred	OK	OK	OK	No	No	No	ОК	No	No	No	Refrig preferred \leq 14 days Frozen 0K \leq 30 days Ambient 0K \leq 8 hours	Ambient OK
Electrophoresis, Protein, 24 Hour, Urine	EPU PEU (internal)	OK	Preferred	OK	No	No	No	No	No	No	OK	No	ок	Refrig preferred \leq 14 days Frozen OK \leq 5 days Ambient OK \leq 72 hours	Ambient 0K
Gadolinium, 24 Hour, Urine	GDU	OK	Preferred	OK	No	No	No	ОК	ОК	No	No	No	ОК	Refrig preferred \leq 28 days Frozen OK \leq 28 days Ambient OK \leq 28 days	Ambient OK
Glucose, 24 Hour, Urine	GLUR	No	OK	OK	OK	Preferred	No	ОК	OK	No	OK	No	No	Refrig preferred ≤ 7 days Frozen 0K ≤ 7 days Ambient NO	Ambient 0K
Heavy Metals Screen, with Reflex, 24 Hour, Urine	HMU24	No	Preferred	OK	OK	No	No	ОК	No	No	No	ОК	No	Refrig preferred ≤ 7 days Frozen OK ≤ 7 days Ambient NO	Ambient OK
Homovanillic Acid, 24 Hour, Urine	HVA	No	No	No	Preferred	No	No	ОК	No	No	No	No	No	Refrig preferred ≤ 28 days Frozen 0K ≤ 180 days Ambient NO	Ambient OK

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${\it Urine\ Preservatives} \color{red} - {\it Collection\ and\ Transportation\ for\ 24-Hour\ Urine\ Specimens\ ({\it continued})}$

Preservative Options Transport Temperature									ratura						
	1	Tomnor	oturo Drocor	wation	50%		Transport Temperature								
		remper	ature Preser	valion	Acetic	Boric	Diazolidinyl	6M Hydrochloric	6M Nitric	Sodium			Ambient (Plain)		
Published Test Name	Test ID	Ambient	Refrigerate	Frozen	Acid	Acid	Urea	Acid	Acid	Carbonate	Thymol	Toluene	Internal Only	External	Internal
5-Hydroxyindoleacetic Acid, 24 Hour, Urine	HIAA	No	ОК	OK	Preferred	OK	No	ОК	OK	ОК	OK	ОК	No	Refrig preferred ≤ 56 days Frozen OK ≤ 365 days Ambient NO	Ambient 0K
Immunofixation, 24 Hour, Urine	IFXU	OK	Preferred	OK	No	No	No	No	No	No	OK	No	ОК	Refrig preferred \leq 14 days Frozen OK \leq 5 days Ambient OK \leq 72 hours	Ambient 0K
Immunoglobulin Total Light Chains, Urine	TLCU	OK < 72 hours	Preferred	OK	No	No	No	No	No	No	No	No	< 72 hours OK	Refrig preferred \leq 7 days Frozen OK \leq 20 days Ambient OK \leq 72 hours	Ambient 0K
lodine, 24 Hour, Urine	UIOD	OK	Preferred	ОК	OK	No	No	No	No	No	No	No	ОК	Refrig preferred \leq 146 days Frozen OK \leq 146 days Ambient OK \leq 146 days	Ambient 0K
Lead, 24 Hour, Urine	PBU	OK	Preferred	ОК	OK	No	No	OK	ОК	No	No	ОК	OK	Refrig preferred ≤ 28 days Frozen OK ≤ 28 days Ambient OK ≤ 28 days	Ambient OK
Leukotriene E4, Urine	LTE4	OK	Preferred	ОК	OK	OK	No	No	No	ОК	No	No	ОК	Refrig preferred ≤ 7 days Frozen OK ≤ 30 days Ambient OK ≤ 24 hours	Ambient OK
Magnesium, 24 Hour, Urine	MAGU	OK	Preferred	ОК	OK	OK	ОК	OK	ОК	No	OK	No	ОК	Refrig preferred \leq 14 days Frozen OK \leq 14 days Ambient OK \leq 72 hours	Ambient OK
Manganese, 24 Hour, Urine	MNU	OK	Preferred	ОК	No	No	No	No	No	No	No	No	ОК	Refrig preferred \leq 28 days Frozen OK \leq 28 days Ambient OK \leq 7 days	Ambient OK
Mercury, 24 Hour, Urine	HGU	No	Preferred	ОК	OK	No	No	OK	ОК	No	No	ОК	No	Refrig preferred ≤ 7 days Frozen OK ≤ 7 days Ambient NO	Ambient 0K
Metanephrines, Fractionated, 24 Hour, Urine	METAF	No	ОК	ОК	Preferred	Preferred	No	OK	ОК	ОК	No	ОК	No	Refrig preferred \leq 28 days Frozen OK \leq 28 days Ambient OK \leq 28 days	Ambient 0K
3-Methoxytyramine, 24 Hour, Urine	ЗМТ	OK	ОК	ОК	Preferred	Preferred	No	OK	ОК	ОК	No	ОК	ОК	Refrig preferred \leq 28 days Frozen OK \leq 90 days Ambient OK \leq 28 days	Ambient 0K
N-Methylhistamine, 24 Hour, Urine	NMH24	OK	Preferred	ОК	OK	OK	No	OK	ОК	ОК	No	No	ОК	Refrig preferred \leq 28 days Frozen OK \leq 28 days Ambient OK \leq 14 days	Ambient 0K
Monoclonal Protein Study, 24 Hour, Urine	MPSU	OK	Preferred	ОК	No	No	No	No	No	No	OK	No	ОК	Refrig preferred \leq 14 days Frozen OK \leq 5 days Ambient OK \leq 72 hours	Ambient 0K
Nickel, 24 Hour, Urine	NIU	OK	Preferred	ОК	OK	No	No	No	OK	No	No	No	ОК	Refrig preferred ≤ 28 days Frozen OK ≤ 28 days Ambient OK ≤ 28 days	Ambient 0K
Nitrogen, Total, 24 Hour, Urine	NITU	OK	Preferred	ОК	OK	No	No	OK	No	ОК	OK	No	ОК	Refrig preferred \leq 7 days Frozen OK Ambient OK \leq 7 days	Ambient 0K
Oxalate, 24 Hour, Urine	OXU	No	ОК	ОК	No	No	Preferred	No	No	No	OK	No	No	Refrig preferred ≤ 14 days Frozen 0K ≤ 14 days Ambient NO	Ambient 0K

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${\it Urine\ Preservatives} \color{red} - {\it Collection\ and\ Transportation\ for\ 24-Hour\ Urine\ Specimens\ ({\it continued})}$

					Preservative Options									Transport Temperature	
		Temperature Preservation										Ambient	-		
					50% Acetic	Boric	Diazolidinyl	6M Hydrochloric	6M Nitric	Sodium			(Plain) Internal		
Published Test Name	Test ID	Ambient	Refrigerate	Frozen	Acid	Acid	Urea	Acid	Acid	Carbonate	Thymol	Toluene	Only	External	Internal
Phosphorus, 24 Hour,														Refrig preferred ≤ 14 days	
Urine	POU	OK	Preferred	OK	OK	OK	OK	OK	OK	No	OK	No	OK	Frozen OK ≤ 14 days	Ambient 0K
														Ambient OK ≤ 7 days Refrig preferred ≤ 7 days	
pH, 24 Hour, Urine	UPH24	No	ОК	ОК	No	No	Preferred	No	No	No	ОК	No	No	Frozen OK ≤ 7 days	Ambient OK
, , , , , , , ,									_					Ambient NO	
Porphyrins, Quantitative,	DONILL	NI-	N.	N.	Na	N.	N.	N.	Na	Demined	N.	NI.	N.	Frozen ≤ 7 days	Refrig OK
24 Hour, Urine	PQNU	No	No	No	No	No	No	No	No	Required	No	No	No	Refrig NO Ambient NO	Ambient NO Protect from light
Data asirum 04 Harm														Refrig preferred ≤ 14 days	Trotcot from fight
Potassium, 24 Hour, Urine	KUR	OK	Preferred	OK	OK	OK	OK	OK	OK	OK	OK	No	OK	Frozen OK ≤ 14 days	Ambient OK
Office														Ambient OK ≤ 7 days	
Protein, Total, 12 Hour,	12PTU	OK	Preferred	ок	No	ОК	No	No	No	No	ОК	No	ОК	Refrig preferred ≤ 14 days Frozen OK ≤ 14 days	Ambient OK
Urine	121 10	O.K	110101104		110	O.K	110	140	140	110	OIX	110		Ambient OK ≤ 24 hours	7 HILDIOILE GIL
Protein, Total, 24 Hour,														Refrig preferred ≤ 14 days	
Urine	PTU	No	Preferred	OK	No	OK	No	No	No	No	OK	No	No	Frozen OK ≤ 14 days Ambient OK ≤ 24 hours	Ambient 0K
														Refrig preferred ≤ 7 days	
Retinol-Binding Protein,	RBP24	Preferred	OK	OK	No	OK	No	No	No	No	OK	No	Preferred	Frozen OK ≤ 7 days	Ambient 0K
24 Hour, Urine														Ambient NO	
Serotonin, 24 Hour,	CEDII	OV	Dueferued	OK	Dueferred	No	No	No	OV	No	No	OV	OV	Refrig preferred ≤ 28 days	Defrie OV
Urine	SERU	OK	Preferred	OK	Preferred	No	No	No	OK	No	No	OK	OK	Frozen OK ≤ 28 days Ambient OK ≤ 48 hours	Refrig OK
														Refrig preferred ≤ 14 days	
Sodium, 24 Hour, Urine	NAU	OK	Preferred	OK	OK	OK	OK	OK	OK	No	OK	No	OK	Frozen OK ≤ 14 days	Ambient OK
														Ambient OK ≤ 7 days	
Sulfate, 24 Hour, Urine	SULFU	No	Preferred	ОК	No	ОК	OK	No	No	OK	ОК	No	No	Refrig preferred ≤ 14 days Frozen OK ≤ 14 days	Ambient 0K
	002.0										J			Ambient NO	
Supersaturation Profile,	0.470.4		01/	01/										Refrig preferred ≤ 14 days	
24 Hour, Urine	SAT24	No	OK	OK	No	No	Preferred	No	No	No	No	No	No	Frozen OK ≤ 14 days Ambient NO	Ambient OK
														Refrig preferred ≤ 28 days	
Thallium, 24 Hour, Urine	TLU	OK	Preferred	OK	OK	No	No	OK	OK	No	No	No	OK	Frozen OK ≤ 28 days	Ambient OK
														Ambient OK ≤ 28 days	
Urea, 24 Hour, Urine	URAU	No	OK	ОК	ОК	Preferred	OK	ОК	OK	OK	ОК	No	No	Refrig preferred \leq 14 days Frozen OK \leq 14 days	Ambient OK
oroa, z rriour, orino	011110	140	O.K		OIC	i roioirou	O.K	O.K	OI.	OIX	OIX	110	110	Ambient NO	Ambione ore
														Refrig preferred ≤ 14 days	
Uric Acid, 24 Hour, Urine	URCU	No	OK	OK	No	Preferred	OK	No	No	OK	OK	No	No	Frozen OK ≤ 14 days Ambient NO	Ambient 0K
														Refrig preferred ≤ 28 days	
Vanillylmandelic Acid, 24 Hour, Urine	VMA	No	No	No	Preferred	OK	No	0K	OK	No	No	No	No	Frozen OK ≤ 180 days	Ambient 0K
27 Hour, OHIT														Ambient NO	
Zinc, 24 Hour, Urine	ZNU	OK	Preferred	OK	ОК	No	No	OK	OK	No	No	No	ОК	Refrig preferred ≤ 28 days Frozen OK ≤ 28 days	Ambient OK
Zino, Za riodi, Offic	ZINU	UK	1 TOTOTTOU	UK	- OK	140	INO	UK	UK	INU	140	INU	UK	Ambient OK ≤ 28 days	Ambient OK

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Urine Preservatives—Collection and Transportation for 24-Hour Urine Specimens (continued)

The conditions and concentrations of urine preservatives are defined for 24-hour collections as follows:

Ambient	Room temperature (21–25 degrees C)						
Refrigerated	4–8 degrees C						
Frozen	-20 degrees C						
50% Acetic Acid	25 mL per 24-hour collection						
Boric Acid (crystals)	10 g per 24-hour collection						
Diazolidinyl Urea (250 g/L)	5 mL per 24-hour collection						
6M Hydrochloric Acid	30 mL per 24-hour collection						
6M Nitric Acid	15 mL per 24-hour collection						
Sodium Carbonate (crystals)	5 g per 24-hour collection						
Thymol (10% in isopropanol)	10 mL per 24-hour collection						
Toluene	30 mL per 24-hour collection						

Preservative and condition guidelines have been evaluated specifically for Mayo Clinic Laboratories assays. If you have questions regarding the use of preservatives, contact Mayo Clinic Laboratories at 800-533-1710 or 507-266-5700.

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