

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.

					Pr	eserv	ative Opt	ions	Transport Temperature					
		Temperature Preservative (Plain)			50%			6M	6M					
Published Test Name	Test ID	Ambient	Refrigerate	Frozen	Acetic Acid	Boric Acid	Diazolidinyl Urea	Hydrochloric Acid	Nitric Acid	Sodium Carbonate	Thymol	Toluene	External	Internal
Adrenal Mass Panel, 24 hour, Urine	ACC	No	OK	OK	No	No	No	No	No	No	No	No	Frozen preferred ≤ 90 days Refrig ≤ 14 days	Frozen OK
Albumin, 24 Hour, Urine	ALB24	OK	Preferred	ОК	No	OK	No	No	No	No	OK	No	Refrig preferred ≤ 7 days Frozen OK ≤ 7 days Ambient OK ≤ 7 days	Ambient OK
Aldosterone, 24 Hour, Urine	ALDU	OK	ОК	ОК	Preferred	OK	No	No	No	No	No	No	Refrig preferred ≤ 28 days Frozen 0K ≤ 28 days Ambient with preservative 0K ≤ 14 days	Ambient OK
Aldosterone with Sodium, 24 Hour, Urine	ALDNA	OK	ОК	ОК	Preferred	OK	No	No	No	No	No	No	Refrig preferred \leq 14 days Frozen 0K \leq 14 days Ambient with preservative 0K \leq 7 days	Ambient OK
Alpha-1-Microglobulin, 24 Hour, Urine	A124	OK	Preferred	ОК	ОК	OK	No	No	No	No	No	No	Refrig preferred ≤ 7 days Frozen OK ≤ 7 days Ambient OK ≤ 7 days	Ambient OK
Aluminum, 24 Hour, Urine	ALU	OK	Preferred	ОК	OK	No	No	ОК	OK	No	No	No	Refrig preferred ≤ 28 days Frozen 0K ≤ 28 days Ambient 0K ≤ 28 days	Ambient OK
Ammonium, 24 Hour, Urine	AMMO	No	ОК	ОК	OK	OK	Preferred	OK	No	No	OK	No	Refrig preferred \leq 14 days Frozen 0K \leq 14 days Ambient 0K \leq 72 hours	Ambient OK
Arsenic with Reflex, 24 Hour, Urine	ASU24	OK	Preferred	ОК	ОК	No	No	ОК	OK	No	No	No	Refrig preferred ≤ 28 days Frozen 0K ≤ 28 days Ambient 0K ≤ 72 hours	Ambient OK
Arsenic Speciation, 24 Hour, Urine	SPASU	No	Preferred	ОК	ОК	No	No	ОК	No	No	No	No	Refrig preferred 28 days Frozen 28 days Ambient 72 hours	Ambient OK
Arylsulfatase A, 24 Hour, Urine	ARSU	No	Required	No	No	No	No	No	No	No	No	No	Refrig preferred ≤ 14 days Frozen NO Ambient NO	Ambient OK
Cadmium, 24 Hour, Urine	CDU	OK	Preferred	ОК	OK	No	No	ОК	OK	No	No	No	Refrig preferred ≤ 28 days Frozen 0K ≤ 28 days Ambient 0K ≤ 28 days	Ambient OK
Calcium, 24 Hour, Urine	CALU	OK	Preferred	ОК	OK	OK	ОК	ОК	OK	No	OK	No	Refrig preferred ≤ 14 days Frozen OK ≤ 30 days Ambient OK ≤ 72 hours	Ambient OK
Catecholamine Fractionation, Free, 24 Hour, Urine	CATU	No	ОК	ОК	Preferred	OK	No	ОК	OK	No	No	No	Refrig preferred ≤ 7 days Frozen 0K ≤14 days Ambient with preservative 0K ≤ 7 days	Ambient OK

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

Preservative Options Transport Temperature										Iro.					
		Temperature Preservation			· · · · · · · · · · · · · · · · · · ·									iransport temperatu	li C
Published Test Name	Test ID	-	Refrigerate		Acetic Acid	Boric Acid	Diazolidinyl Urea	Hydrochloric Acid	Nitric	Sodium Carbonate	Thymol	Toluene	(Plain) Internal Only	External	Internal
Chloride, 24 Hour, Urine	CLU	OK	Preferred	OK	OK	OK	ОК	No	No	OK	ОК	No	ОК	Refrig preferred \leq 14 days Frozen 0K \leq 30 days Ambient 0K \leq 7 days	Ambient 0K
Chromium, 24 Hour, Urine	CRU	OK	Preferred	OK	No	No	No	No	No	No	No	No	ОК	Refrig preferred ≤ 28 days Frozen 0K ≤ 28 days Ambient 0K ≤ 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 OK
Cobalt, 24 Hour, Urine	COU	OK	Preferred	OK	No	No	No	No	No	No	No	No	ОК	Refrig preferred ≤ 28 days Frozen 0K ≤ 28 days Ambient 0K ≤ 28 days	Ambient OK
Copper, 24 Hour, Urine	CUU	OK	Preferred	OK	OK	No	No	ОК	ОК	No	No	No	ОК	Refrig preferred ≤ 28 days Frozen OK ≤ 28 days Ambient OK ≤ 28 days	Ambient OK
Cortisol/Cortisone, Free, 24 Hour, Urine	COCOU	No	OK	OK	OK	Preferred	No	No	No	No	No	No	No	Refrig preferred ≤ 14 days Frozen 0K ≤ 28 days Ambient with preservative 0K ≤ 72 hours	Ambient OK
Cortisol, Free, 24 Hour, Urine	CORTU	No	OK	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	No	ОК	ОК	No	ОК	Refrig preferred ≤ 30 days Frozen 0K ≤ 30 days Ambient 0K ≤ 14 days	Ambient OK
Creatinine Clearance, Serum and 24 Hour Urine	CRCL	Preferred	ОК	OK	OK	OK	ОК	ОК	ОК	ОК	ОК	No	Preferred	Refrig preferred Frozen OK Ambient OK	Ambient OK
Cystinuria Profile, Quantitative, 24 Hour, Urine	CYSQN	No	OK	OK	No	No	No	No	No	No	No	Preferred	No	Frozen preferred ≤ 70 days Refrig ≤ 14 days Ambient NO	Ambient 0K
2, 3-Dinor-11 Beta-Prostaglandin F2 Alpha, Urine	23BPT	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	ОК	No	No	OK	No	No	No	OK	No	ОК	Refrig preferred \leq 14 days Frozen OK \leq 5 days Ambient OK \leq 72 hours	Ambient OK
Gadolinium, 24 Hour, Urine	GDU	OK	Preferred	OK	No	No	No	ОК	ОК	No	No	No	ОК	Refrig preferred ≤ 28 days Frozen 0K ≤ 28 days Ambient 0K ≤ 28 days	Ambient OK
Heavy Metals Screen, with Reflex, 24 Hour, Urine	HMU24	No	Preferred	OK	OK	No	No	ОК	No	No	No	No	No	Refrig preferred ≤ 7 days Frozen OK ≤ 7 days Ambient NO	Ambient 0K
Homovanillic Acid, 24 Hour, Urine	HVA	No	No	No	Preferred	No	No	ОК	ОК	No	No	No	No	Refrig preferred ≤ 28 days Frozen OK ≤ 180 days Ambient NO	Ambient OK

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

	I	Preservative Options											Transport Temperature		
		Temper	ature Preser	vation	50%		1000114	6M	6M				Ambient	Transport Tomp	Jidiaio
Published Test Name	Test ID		Refrigerate		Acetic Acid	Boric Acid	Diazolidinyl Urea	Hydrochloric Acid	Nitric Acid	Sodium Carbonate	Thymol	Toluene	(Plain) Internal Only	External	Internal
	TOST ID	Ambient	Herrigorate	1102011	Aoiu	Aoiu	Orca	Aoiu	Aoiu	Carbonate	inginoi	TOTACTIC	internal only	Refrig preferred ≤ 56 days	Internal
5-Hydroxyindoleacetic Acid, 24 Hour, Urine	HIAA	No	OK	OK	Preferred	OK	No	OK	OK	OK	OK	OK	No	Frozen OK ≤ 365 days Ambient NO	Ambient OK
Immunoglobulin Total Light Chains, Urine	TLCU	OK < 72 hours	Preferred	ОК	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	OK	OK	No	No	No	No	No	No	No	ОК	Refrig preferred ≤ 146 days Frozen OK ≤ 146 days Ambient OK ≤ 146 days	Ambient 0K
Lead, 24 Hour, Urine	PBU	ОК	Preferred	ОК	OK	No	No	OK	ОК	No	No	No	ОК	Refrig preferred \leq 28 days Frozen OK \leq 28 days Ambient OK \leq 28 days	Ambient 0K
Leukotriene E4, 24 Hour, Urine	TLTE4	No	Preferred	OK	OK	OK	No	No	No	ОК	No	No	ОК	Frozen $OK \le 30$ days Refrig preferred ≤ 7 days Ambient $OK \le 24$ hours	Ambient OK
Magnesium, 24 Hour, Urine	MAGU	OK	Preferred	OK	OK	OK	ОК	OK	No	No	OK	No	ОК	Refrig preferred \leq 14 days Frozen OK \leq 30 days Ambient OK \leq 72 hours	Ambient OK
Manganese, 24 Hour, Urine	MNU	ОК	Preferred	OK	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	OK	OK	No	No	OK	OK	No	No	No	No	Refrig preferred ≤ 7 days Frozen OK ≤ 7 days Ambient NO	Ambient OK
Metanephrines, Fractionated, 24 Hour, Urine	METAF	No	ОК	OK	Preferred	Preferred	No	OK	OK	ОК	No	OK	No	Refrig preferred ≤ 28 days Frozen OK ≤ 28 days Ambient OK ≤ 28 days	Ambient OK
Metanephrines with 3-Methoxytyramine, 24 Hour, Urine	МЕТАЗ	OK	ОК	OK	Preferred	Preferred	No	OK	ОК	ОК	No	ОК	No	Refrig preferred ≤ 28 days Frozen OK ≤ 28 days Ambient OK ≤ 28 days	Ambient 0K
3-Methoxytyramine, 24 Hour, Urine	ЗМТ	OK	ОК	OK	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	ОК	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 OK
Monoclonal Protein Study, 24 Hour, Urine	MPSU	OK	Preferred	OK	No	No	ОК	No	No	No	ОК	No	ОК	Refrig preferred \leq 14 days Frozen OK \leq 5 days Ambient OK \leq 24 hours	Ambient 0K
Nickel, 24 Hour, Urine	NIU	ОК	Preferred	ОК	OK	No	No	No	ОК	No	No	No	ОК	Refrig preferred \leq 28 days Frozen OK \leq 28 days Ambient OK \leq 28 days	Ambient OK
Nitrogen, Total, 24 Hour, Urine	NITU	ОК	Preferred	OK	OK	No	No	ОК	No	ОК	OK	No	ОК	Refrig preferred \leq 7 days Frozen OK Ambient OK \leq 7 days	Ambient OK
Oxalate, 24 Hour, Urine	OXU	No	ОК	No	No	No	Preferred	No	No	No	No	No	No	Refrig preferred ≤ 14 days Frozen NO Ambient NO	Ambient OK

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

	ı					Р	reservativ	Transport Temperature							
		Temperature Preservation										Ambient	-	Ī	
					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	No	No	OK	No	OK	Frozen OK ≤ 30 days	Ambient OK
														Ambient OK ≤ 7 days Refrig preferred ≤ 7 days	
pH, 24 Hour, Urine	UPH24	No	OK	OK	No	No	Preferred	No	No	No	No	No	No	Frozen OK ≤ 7 days	Ambient 0K
														Ambient NO	
Porphyrins, Quantitative,	PQNU	No	No	No	No	No	No	No	No	Required	No	No	No	Frozen ≤ 7 days Refrig NO	Refrig OK Ambient NO
24 Hour, Urine	FUNU	INO	INO	INU	INO	INU	INO	INU	INO	nequireu	INO	INO	INO	Ambient NO	Protect from light
Potassium, 24 Hour,														Refrig preferred ≤ 14 days	
Urine	KUR	OK	Preferred	OK	OK	OK	OK	OK	No	OK	OK	No	OK	Frozen OK ≤ 30 days	Ambient OK
														Ambient OK ≤ 7 days Refrig preferred ≤ 14 days	
Protein, Total, 12 Hour, Urine	12PU1	OK	Preferred	OK	No	OK	OK	No	No	No	OK	No	OK	Frozen OK ≤ 30 days	Ambient 0K
Offile														Ambient 0K ≤ 24 hours	
Protein, Total, 24 Hour,	PTU	No	Preferred	OK	No	ОК	ОК	No	No	No	OK	No	No	Refrig preferred ≤ 14 days Frozen OK ≤ 30 days	Ambient OK
Urine	110	INO	Ticiciica	OK	INO	OK.	OK .	INO	INO	140	OK	110	INO	Ambient OK ≤ 24 hours	Ambient ok
Retinol-Binding Protein,														Refrig preferred ≤ 7 days	
24 Hour, Urine	RB24	No	Preferred	OK	No	OK	No	No	No	No	No	No	No	Frozen OK ≤ 7 days Ambient NO	Ambient OK
0														Refrig preferred ≤ 28 days	
Serotonin, 24 Hour, Urine	SERU	OK	Preferred	OK	Preferred	No	No	No	OK	No	No	OK	OK	Frozen OK ≤ 28 days	Refrig OK
O'IIIO														Ambient OK ≤ 48 hours Refrig preferred ≤ 14 days	
Sodium, 24 Hour, Urine	NAU	ОК	Preferred	ОК	OK	ОК	ОК	OK	No	No	ОК	No	ОК	Frozen OK \leq 30 days	Ambient 0K
														Ambient OK ≤ 7 days	
Culfata 04 Haur Hrina	CIII FII	No	Dueferued	OV	No	OV	OV	No	No	OV	OV	No	No	Refrig preferred ≤ 14 days	Ambient OV
Sulfate, 24 Hour, Urine	SULFU	No	Preferred	OK	No	OK	OK	No	No	OK	OK	No	No	Frozen OK ≤ 14 days Ambient NO	Ambient OK
Supersaturation Profile,														Refrig preferred ≤ 14 days	
24 Hour, Urine	SAT24	No	OK	No	No	No	Preferred	No	No	No	No	No	No	Frozen NO	Ambient 0K
,														Ambient N0 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 0K ≤ 28 days	
Urea, 24 Hour, Urine	URAU	No	OK	OK	ОК	Preferred	OK	OK	No	OK	OK	No	No	Refrig preferred ≤ 14 days Frozen OK ≤ 30 days	Ambient OK
oroa, 2 i riour, orino	011/10	110	O.C		OK .	litololiou	OIL	O.K	140	OIC	OIX	110	140	Ambient OK ≤ 7 days	Ambione on
	LIBOLI		01/	01/			01/			01/	01/			Refrig preferred ≤ 14 days	
Uric Acid, 24 Hour, Urine	URCU	No	OK	OK	No	Preferred	OK	No	No	OK	OK	No	No	Frozen OK ≤ 30 days Ambient OK ≤ 7 days	Ambient OK
Vanillylmandalia Asid														Refrig preferred ≤ 28 days	
Vanillylmandelic Acid, 24 Hour. Urine	VMA	No	No	No	Preferred	OK	No	OK	OK	No	No	No	No	Frozen OK ≤ 180 days	Ambient 0K
														Ambient N0 Refrig preferred ≤ 28 days	1
Zinc, 24 Hour, Urine	ZNU	ОК	Preferred	ОК	OK	No	No	OK	OK	No	No	No	ОК	Frozen OK \leq 28 days	Ambient OK
, , , , , , ,							-							Ambient OK ≤ 28 days	_

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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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