Reagents, Indicators, *and* Solutions

This section deals with the solutions required in conducting the Pharmacopeial and the National Formulary tests and assays.

Reagents are substances used either as such or as constituents of solutions.

Indicators are reagents used to determine the specified end-point in a chemical reaction, to measure hydrogen-ion concentration (pH), or to indicate that a desired change in pH has been effected. They are listed together with indicator test papers.

Buffer Solutions are referred to separately.

Colorimetric Solutions, abbreviated „CS," are solutions used in the preparation of colorimetric standards for comparison purposes.

Test Solutions, abbreviated „TS," are solutions of reagents in such solvents and of such definite concentrations as to be suitable for the specified purposes.

Volumetric Solutions, abbreviated „VS" and known also as Standard Solutions, are solutions of reagents of known concentration intended primarily for use in quantitative determinations. Concentrations are usually expressed in terms of normality.

Water - Purified Water (USP monograph) is always used. „Carbon dioxide-free water" is purified water that has been boiled vigorously for 5 minutes or more and allowed to cool while protected from absorption of carbon dioxide from the atmosphere, or Purified Water that has a resistivity of not less than 18 Mohm-cm. „Deaerated water," for purposes other than dissolution and drug release testing, is Purified Water that has been treated to reduce the content of dissolved air by suitable means, such as by boiling vigorously for 5 minutes and cooling or by the application of ultrasonic vibration.

Solutions acc. to Reagent Specifications

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Acetic Acid, Diluted	24	USP350	1000	ml
Alcohol, 70 Percent	12	USP351	100	ml
Alcohol, 80 Percent	12	USP352	100	ml
Alcohol, 90 Percent	12	USP353	100	ml
Kit of alcoholic solution (70, 80, 90%)	12	USP354	3 x100	ml
Alcohol, Aldehyde-free	12	USP355	1000	ml
Ammonium Hydroxide, 6 N	12	USP356	1000	ml
Diluted Acetic Acid ≡ Acetic Acid, Diluted	12	USP350		
Diluted Hydrochloric Acid ≡ Hydrochloric Acid, Diluted	12	USP362		
Diluted Nitric Acid ≡ Nitric Acid, Diluted.	12	USP364		
Diluted Sulfuric Acid ≡ Sulfuric Acid, Diluted	12	USP367		
Hydrochloric Acid, Diluted (10 percent)	12	USP362	1000	ml
Methanol, Aldehyde-Free	12	USP363	1000	ml
Nitric Acid, Diluted (10 percent HNO3)	12	USP364	1000	ml
STANDARD NITROGEN SOLUTION (0.1 mg/ml N)	12	USP365	100	ml
POTASSIUM IODATE SOLUTION (0.25 N)	12	USP366	500	ml
Sulfuric Acid, Diluted (10 percent)	12	USP367	1000	ml

Buffer Solutions

The successful completion of many Pharmacopeial tests and assays requires adjustment to or maintenance solutions. In pH measurements, standard buffer solutions are required for reference purposes

A solution is said to be buffered if it resists changes in the activity of an ion on the addition of substances that ion. Buffers are substances or combinations of substances that impart this resistance to a solution. Buffered equilibrium with substances capable of removing or releasing the ion.

Buffer capacity refers to the amount of material that may be added to a solution without causing a significant ratio of acid or base added (in gram-equivalents per liter) to the change in pH (in pH units). The capacity of a conditions of use, usually by adjustment of the concentrations of buffer substances.

Buffers are used to establish and maintain an ion activity within narrow limits. The most common systems are for the calibration of pH meters, (b) in the preparation of dosage forms that approach isotonicity, (c) in analytical stability of various dosage forms.

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Hydrochloric Acid Buffer pH 1.2	6	USP001	200	ml
Hydrochloric Acid Buffer pH 1.3	6	USP002	200	ml
Hydrochloric Acid Buffer pH 1.4	6	USP003	200	ml
Hydrochloric Acid Buffer pH 1.5	6	USP004	200	ml
Hydrochloric Acid Buffer pH 1.6	6	USP005	200	ml
Hydrochloric Acid Buffer pH 1.7	6	USP006	200	ml
Hydrochloric Acid Buffer pH 1.8	6	USP007	200	ml
Hydrochloric Acid Buffer pH 1.9	6	USP008	200	ml
Hydrochloric Acid Buffer pH 2.0	6	USP009	200	ml
Hydrochloric Acid Buffer pH 2.1	6	USP010	200	ml
Hydrochloric Acid Buffer pH 2.2	6	USP011	200	ml
Acid Phthalate Buffer pH 2.2	6	USP012	200	ml
Acid Phthalate Buffer pH 2.4	6	USP013	200	ml
Acid Phthalate Buffer pH 2.6	6	USP014	200	ml
Acid Phthalate Buffer pH 2.8	6	USP015	200	ml
Acid Phthalate Buffer pH 3.0	6	USP016	200	ml
Acid Phthalate Buffer pH 3.2	6	USP017	200	ml
Acid Phthalate Buffer pH 3.4	6	USP018	200	ml
Acid Phthalate Buffer pH 3.6	6	USP019	200	ml
Acid Phthalate Buffer pH 3.8	6	USP020	200	ml
Acid Phthalate Buffer pH 4.0	6	USP021	200	ml
Neutralized Phthalate Buffer pH 4.2	6	USP022	200	ml
Neutralized Phthalate Buffer pH 4.4	6	USP023	200	ml
Neutralized Phthalate Buffer pH 4.6	6	USP024	200	ml
Neutralized Phthalate Buffer pH 4.8	6	USP025	200	ml
Neutralized Phthalate Buffer pH 5.0	6	USP026	200	ml

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Neutralized Phthalate Buffer pH 5.2	6	USP027	200	ml
Neutralized Phthalate Buffer pH 5.4	6	USP028	200	ml
Neutralized Phthalate Buffer pH 5.6	6	USP029	200	ml
Neutralized Phthalate Buffer pH 5.8	6	USP030	200	ml
Phosphate Buffer pH 5.8	6	USP031	200	ml
Phosphate Buffer pH 6.0	6	USP032	200	ml
Phosphate Buffer pH 6.2	6	USP033	200	ml
Phosphate Buffer pH 6.4	6	USP034	200	ml
Phosphate Buffer pH 6.6	6	USP035	200	ml
Phosphate Buffer pH 6.8	6	USP036	200	ml
Phosphate Buffer pH 7.0	6	USP037	200	ml
Phosphate Buffer pH 7.2	6	USP038	200	ml
Phosphate Buffer pH 7.4	6	USP039	200	ml
Phosphate Buffer pH 7.6	6	USP040	200	ml
Phosphate Buffer pH 7.8	6	USP041	200	ml
Phosphate Buffer pH 8.0	6	USP042	200	ml
Alkaline Borate Buffer pH 8.0	6	USP043	200	ml
Alkaline Borate Buffer pH 8.2	6	USP044	200	ml
Alkaline Borate Buffer pH 8.4	6	USP045	200	ml
Alkaline Borate Buffer pH 8.6	6	USP046	200	ml
Alkaline Borate Buffer pH 8.8	6	USP047	200	ml
Alkaline Borate Buffer pH 9.0	6	USP048	200	ml
Alkaline Borate Buffer pH 9.2	6	USP049	200	ml
Alkaline Borate Buffer pH 9.4	6	USP050	200	ml
Alkaline Borate Buffer pH 9.6	6	USP051	200	ml
Alkaline Borate Buffer pH 9.8	6	USP052	200	ml
Alkaline Borate Buffer pH 10.0	6	USP053	200	ml
Acetate Buffer pH 4.1	6	USP054	200	ml
Acetate Buffer pH 4.3	6	USP055	200	ml
Acetate Buffer pH 4.5	6	USP056	200	ml
Acetate Buffer pH 4.7	6	USP057	200	ml
Acetate Buffer pH 4.9	6	USP058	200	ml
Acetate Buffer pH 5.1	6	USP059	200	ml
Acetate Buffer pH 5.2	6	USP060	200	ml
Acetate Buffer pH 5.3	6	USP061	200	ml
Acetate Buffer pH 5.4	6	USP062	200	ml
Acetate Buffer pH 5.5	6	USP063	200	ml
Acetate Buffer pH 3.5 for Heavy metals	12	USP064	1000	ml

Colorimetric Solutions (CS)

These solutions are used in the preparation of the colorimetric standards for certain drugs, and for the carbonization tests with sulfuric acid that are specified in several monographs.

Comparison of colors as directed in the Pharmacopeial tests preferably is made in matched color-comparison tubes or in a suitable colorimeter under conditions that ensure that the colorimetric reference solution and that of the specimen under test are treated alike in all respects. The comparison of colors is best made in layers of equal depth, and viewed transversely against a white background (see also *Visual Comparison* under *Spectrophotometry and Light-Scattering* 851). It is particularly important that the solutions be compared at the same temperature, preferably 25°C.

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Cobaltous Chloride CS	12	USP065	100	ml
Cupric Sulfate CS	12	USP066	100	ml
Ferric Chloride CS	12	USP067	100	ml

Indicator Solutions

See Test Solutions (TS)

Volumetric Solutions

Normal Solutions - Normal solutions are solutions that contain 1 gram equivalent weight of the active substance in each 1000 mL of solution; that is, an amount equivalent to 1.0079 g of hydrogen or 7.9997 g of oxygen. Normal solutions and solutions bearing a specific relationship to normal solutions, and used in volumetric determinations, are designated as follows: normal, 1 N; double-normal, 2 N; half-normal, 0.5 N; tenth-normal, 0.1 N; fiftieth-normal, 0.02 N; hundredth-normal, 0.01 N; thousandth-normal, 0.001 N.

Molar Solutions - Molar solutions are solutions that contain, in 1000 mL, 1 gram-molecule of the reagent. Solutions containing, in 1000 mL, one-tenth of a gram-molecule of the reagent are designated „tenth-molar," 0.1 M; and other molarities are similarly indicated.

Empirical Solutions - It is frequently difficult to prepare standard solutions of a desired theoretical normality, and this is not essential. A solution of approximately the desired normality is prepared and standardized by titration against a primary standard solution. The normality factor so obtained is used in all calculations where such empirical solutions are employed.

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Acetic Acid, Double-Normal (2 N)	12	USP088	1000	ml
Ammonium Thiocyanate, Tenth-Normal (0.1 N)	12	USP089	1000	ml
Bromine, Tenth-Normal (0.1 N)	12	USP090	1000	ml
Ceric Ammonium Nitrate, Twentieth-Normal (0.05 N)	12	USP091	1000	ml
Ceric Sulfate, Tenth-Normal (0.1 N)	24	USP092	1000	ml
Cupric Nitrate, Tenth Normal (0.1 N)	12	USP093	1000	ml
Edetate Disodium, Twentieth-Molar (0.05 M)	24	USP094	1000	ml
Ferric Ammonium Sulfate, Tenth-Normal (0.1 N)	12	USP095	1000	ml
Ferrous Ammonium Sulfate, Tenth-Normal (0.1 N)	12	USP096	1000	ml
Hydrochloric Acid, Normal (1 N)	24	USP097	1000	ml
Hydrochloric Acid, Half-Normal (0.5 N)	24	USP098	1000	ml
Hydrochloric Acid, Half-Normal (0.5 N) in Methanol	24	USP099	1000	ml
Hydrochloric Acid, Alcoholic, Tenth-Molar (0.1 M)	24	USP100	1000	ml
Iodine, Tenth-Normal (0.1 N)	12	USP101	1000	ml
Iodine, Hundredth-Normal (0.01 N)	12	USP102	1000	ml
Lead Nitrate, Hundredth-Molar (0.01 M)	24	USP103	1000	ml
0.1 M Lead Nitrate	24	USP104	1000	ml
Lead Perchlorate, Tenth-Molar (0.1 M)	12	USP105	1000	ml
Lead Perchlorate, Hundredth Molar (0.01 M)	12	USP106	1000	ml
Lithium Methoxide, Fiftieth-Normal (0.02 N) in Methanol	12	USP107	1000	ml
Lithium Methoxide, Tenth-Normal (0.1 N) in Chlorobenzene	12	USP108	1000	ml
Lithium Methoxide, Tenth-Normal (0.1 N) in Methanol	12	USP109	1000	ml
Lithium Methoxide, Tenth-Normal (0.1 N) in Toluene	12	USP110	1000	ml
Mercuric Nitrate, Tenth-Molar (0.1 M)	12	USP111	1000	ml
Oxalic Acid, Tenth-Normal (0.1 N)	12	USP112	1000	ml
Perchloric Acid, Tenth-Normal (0.1 N) (in Glacial Acetic Acid)	12	USP113	1000	ml
Perchloric Acid, Tenth-Normal (0.1 N) in Dioxane	12	USP114	1000	ml
Potassium Bromate, Tenth-Normal (0.1 N)	12	USP115	1000	ml
Potassium Bromide–Bromate, Tenth-Normal (0.1 N)	12	USP116	1000	ml
Potassium Dichromate, Tenth-Normal (0.1 N)	24	USP117	1000	ml
Potassium Ferricyanide, Twentieth-Molar (0.05 M)	12	USP118	1000	ml
Potassium Hydroxide, Normal (1 N)	24	USP119	1000	ml
Potassium Hydroxide, Alcoholic, Half-Normal (0.5 N)	12	USP120	1000	ml
Potassium Hydroxide, Alcoholic, Tenth-Molar (0.1 M)	12	USP121	1000	ml
Potassium Hydroxide, Methanolic, Tenth-Normal (0.1 N)	12	USP122	1000	ml
Potassium Iodate, Twentieth-Molar (0.05 M)	12	USP123	1000	ml
Potassium Permanganate, Tenth-Normal (0.1 N)	12	USP124	1000	ml
Silver Nitrate, Tenth-Normal (0.1 N)	24	USP125	1000	ml
Sodium Arsenite, Twentieth-Molar (0.05 M)	12	USP126	1000	ml
Sodium Hydroxide, Normal (1 N)	12	USP127	1000	ml
Sodium Hydroxide, Alcoholic, Tenth-Normal (0.1 N)	12	USP128	1000	ml
Sodium Methoxide, Tenth-Normal (0.1 N) (in Toluene)	12	USP129	1000	ml
Sodium Methoxide, Half-Normal (0.5 N) in Methanol	12	USP130	1000	ml
Sodium Nitrite, Tenth-Molar (0.1 M)	12	USP131	1000	ml
Sodium Thiosulfate, Tenth-Normal (0.1 N)	24	USP132	1000	ml
Sulfuric Acid, Half-Normal (0.5 N) in Alcohol	24	USP133	1000	ml
Sulfuric Acid, Normal (1 N)	24	USP134	1000	ml

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Tetrabutylammonium Hydroxide, Tenth-Normal (0.1 N)	3	USP135	100	ml
Tetrabutylammonium Hydroxide in Methanol/Isopropyl Alcohol, 0.1 N	12	USP136	1000	ml
Tetramethylammonium Bromide, Tenth-Molar (0.1 M)	12	USP137	1000	ml
Tetramethylammonium Chloride, Tenth-Molar (0.1 M)	12	USP138	1000	ml
Zinc Sulfate, Twentieth-Molar (0.05 M), Tenth-Normal (0.1 N)	24	USP139	1000	ml

Test Solutions (TS)

Certain of the following test solutions are intended for use as acid-base indicators in volumetric analyses. Similar solutions are intended for use in pH measurement. Where it is directed that a volumetric solution be used as the test solution, standardization of the solution used as TS is not required.

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Acetate Buffer TS	12	USP140	1000	ml
Acetic Acid – Ammonium Acetate Buffer TS	24	USP141	1000	ml
Acetone, Buffered, TS	24	USP142	1000	ml
Acid Ferric Chloride TS	12	USP143	100	ml
Acid Stannous Chloride TS ≡ Stannous Chloride, Acid, TS		USP328		
Acid Stannous Chloride TS, Stronger ≡ Stannous Chloride, Acid, Stronger, TS		USP329		
Alcohol – Phenol TS	12	USP146	100	ml
Alcoholic Mercuric Bromide TS ≡ Mercuric Bromide TS, Alcoholic		USP247		
Alcoholic Potassium Hydroxide TS ≡ Potassium Hydroxide TS, Alcoholic		USP292		
Alkaline Cupric Citrate TS ≡ Cupric Citrate TS, Alkaline		USP199		
Alkaline Cupric Iodide TS ≡ Cupric Iodide TS, Alkaline		USP201		
Alkaline Cupric Tartrate TS (Fehling's Solution) ≡ Cupric Tartrate TS, Alkaline		USP204		
Alkaline Mercuric - Potassium Iodide TS ≡ Mercuric - Potassium Iodide TS, Alkaline		USP252		
Amaranth TS	12	USP156	100	ml
Ammonia - Ammonium Chloride Buffer TS	12	USP157	1000	ml
Ammonia - Cyanide TS	6	USP158	100	ml
Ammonia TS	12	USP159	1000	ml
Ammonia TS	12	USP159a	500	ml
Ammoniacal Potassium Ferricyanide TS	12	USP160a	100	ml
Ammoniated Cupric Oxide TS ≡ Cupric Oxide, Ammoniated, TS		USP202		
Ammonium Acetate TS	12	USP162	100	ml
Ammonium Acetate TS	12	USP162a	1000	ml
Ammonium Carbonate TS	12	USP163	100	ml
Ammonium Carbonate TS	12	USP163a	500	ml
Ammonium Chloride TS	24	USP164	100	ml
Ammonium Chloride TS	24	USP164a	1000	ml

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Ammonium Chloride - Ammonium Hydroxide TS	12	USP165	100	ml
Ammonium Chloride - Ammonium Hydroxide TS	12	USP165a	500	ml
Ammonium Molybdate TS	12	USP166	100	ml
Ammonium Molybdate TS	12	USP166a	500	ml
Ammonium Oxalate TS	24	USP167	100	ml
Ammonium Oxalate TS	24	USP167a	1000	ml
Ammonium Phosphate, Dibasic, TS (Ammonium Phosphate TS)	24	USP168	100	ml
Ammonium Phosphate, Dibasic, TS (Ammonium Phosphate TS)	24	USP168a	500	ml
Ammonium Thiocyanate TS	18	USP169	100	ml
Ammonium Thiocyanate TS	18	USP169a	1000	ml
Ammonium Vanadate TS	12	USP170	500	ml
Ammonium Vanadate TS	12	USP170a	1000	ml
Antimony Trichloride TS	12	USP171	100	ml
Barium Chloride TS	24	USP172a	1000	ml
Barium Nitrate TS	24	USP173	100	ml
Barium Nitrate TS	24	USP173a	500	ml
Biuret Reagent TS	24	USP174	1000	ml
Blue Tetrazolium TS	12	USP175	100	ml
Brilliant Blue G TS	12	USP176	100	ml
Bromine TS	3	USP177	100	ml
Bromine–Sodium Acetate TS	3	USP178	100	ml
Bromine–Sodium Acetate TS	3	USP178a	500	ml
Bromocresol Blue TS - Use Bromocresol Green TS		USP180		
Bromocresol Green TS	24	USP180	100	ml
Bromocresol Green - Methyl Red TS	12	USP181	100	ml
Bromocresol Purple TS	24	USP182	100	ml
Bromophenol Blue TS	24	USP183	100	ml
Bromothymol Blue TS	24	USP184	100	ml
Buffered Acetone TS ≡ Acetone, Buffered, TS		USP142		
Calcium Chloride TS	12	USP186	100	ml
Calcium Chloride TS	12	USP186a	500	ml
Calcium Sulfate TS	12	USP187	100	ml
Calcium Sulfate TS	12	USP187a	500	ml
Chloral Hydrate TS	12	USP188	100	ml
Chromotropic Acid TS	12	USP189	100	ml
Cobalt - Uranyl Acetate TS	12	USP190	100	ml
Cobaltous Chloride TS	12	USP191	100	ml
Congo Red TS	24	USP192	100	ml
m-Cresol Purple TS	24	USP193	100	ml
Cresol Red TS	12	USP194	100	ml
Cresol Red TS	12	USP194a	250	ml
Cresol Red - Thymol Blue TS	12	USP195	100	ml
Crystal Violet TS	12	USP196	100	ml
Cupric Acetate TS	12	USP197	100	ml
Cupric Acetate TS	12	USP197a	500	ml
Cupric Acetate TS, Stronger (Barfoed's Reagent)	12	USP198	100	ml
Cupric Acetate TS, Stronger (Barfoed's Reagent)	12	USP198a	500	ml

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Cupric Citrate TS	12	USP199	100	ml
Cupric Citrate TS	12	USP199a	1000	ml
Cupric Citrate TS, Alkaline	12	USP200	100	ml
Cupric Citrate TS, Alkaline	12	USP200a	1000	ml
Cupric Iodide TS, Alkaline	6	USP201	100	ml
Cupric Iodide TS, Alkaline	6	USP201a	1000	ml
Cupric Oxide, Ammoniated, TS (Schweitzer's Reagent)	12	USP202	100	ml
Cupric Sulfate TS	12	USP203	100	ml
Cupric Tartrate TS, Alkaline (Fehling's Solution) (A+B)	12	USP204	500+500	ml
The Copper Solution (A)	12	USP205	500	ml
The Alkaline Tartrate Solution (B)	12	USP206	500	ml
Delafield's Hematoxylin TS	6	USP207	100	ml
Denigus' Reagent ≡ Mercuric Sulfate TS		USP253		
Diazobenzenesulfonic Acid TS	12	USP209	100	ml
Dichlorofluorescein TS	12	USP210	100	ml
Dichlorofluorescein TS	12	USP210a	500	ml
Diluted Lead Subacetate TS ≡ Lead Subacetate TS, Diluted		USP239		
Dinitrophenylhydrazine TS	6	USP212	50	ml
Diphenylamine TS	12	USP213	100	ml
Diphenylamine TS	12	USP213a	500	ml
Diphenylcarbazone TS	12	USP214	100	ml
Dragendorff's TS (A+B)	6	USP215	100	ml
Edetate Disodium TS	12	USP216	500	ml
Edetate Disodium TS	12	USP216a	1000	ml
Eosin Y TS	12	USP217	50	ml
Eriochrome Black TS	12	USP218	100	ml
Eriochrome Cyanine TS	12	USP219	100	ml
Fehling's Solution ≡ Cupric Tartrate TS, Alkaline		USP204		
Ferric Ammonium Sulfate TS	12	USP221	100	ml
Ferric Ammonium Sulfate TS	12	USP221a	1000	ml
Ferric Chloride TS	18	USP222	100	ml
Ferric Chloride TS	18	USP222a	1000	ml
Ferroin TS	12	USP223	100	ml
Folin-Ciocalteu Phenol TS	12	USP224	100	ml
Folin-Ciocalteu Phenol TS	12	USP224a	1000	ml
Formaldehyde TS	12	USP225	100	ml
Glycerin Base TS	24	USP226	100	ml
Hydroxylamine Hydrochloride TS	12	USP227	100	ml
8-Hydroxyquinoline TS	12	USP228	100	ml
Indigo Carmine TS	3	USP229	100	ml
Intestinal Fluid, Simulated, TS (without pancreatin)	12	USP230	500	ml
Intestinal Fluid, Simulated, TS (without pancreatin)	12	USP230a	100	ml
Iodine, Diluted TS	12	USP231	1000	ml
Iodine and Potassium Iodide TS	12	USP232	100	ml
Iodobromide TS	12	USP233	100	ml
Iodobromide TS	12	USP233a	500	ml
Iodochloride TS	12	USP234	1000	ml

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Iodochloride TS	12	USP234a	100	ml
Iron Salicylate TS	2	USP235	100	ml
Lead Acetate TS	6	USP236	100	ml
Lead Acetate TS, Alcoholic	12	USP237	100	ml
Lead Acetate TS, Alcoholic	12	USP237a	500	ml
Lead Subacetate TS	6	USP238	100	ml
Lead Subacetate TS, Diluted	6	USP239	125	ml
Litmus TS	12	USP240	100	ml
Magnesia Mixture TS	6	USP241	100	ml
Magnesium Sulfate TS	12	USP242	100	ml
Malachite Green TS	12	USP243	100	ml
Mayer's Reagent ≡ Mercuric - Potassium Iodide TS		USP251		
Mercuric Acetate TS	12	USP245	100	ml
Mercuric - Ammonium Thiocyanate TS	18	USP246	500	ml
Mercuric - Ammonium Thiocyanate TS	18	USP246a	1000	ml
Mercuric Bromide TS, Alcoholic	12	USP247	100	ml
Mercuric Chloride TS	12	USP248	100	ml
Mercuric Iodide TS (Valser's Reagent)	6	USP249	100	ml
Mercuric Nitrate TS	12	USP250	100	ml
Mercuric - Potassium Iodide TS (Mayer's Reagent)	12	USP251	100	ml
Mercuric - Potassium Iodide TS, Alkaline (Nessler's Reagent)	12	USP252	500	ml
Mercuric Sulfate TS (Denigus' Reagent)	18	USP253	100	ml
Mercuric Sulfate TS (Denigus' Reagent)	18	USP253a	500	ml
Mercurous Nitrate TS	12	USP254	100	ml
3-Methyl-2-benzothiazolinone Hydrazone Hydrochloride TS	6	USP255	100	ml
Methyl Orange TS	24	USP256	100	ml
Methyl Red TS	18	USP257	100	ml
Methyl Violet TS ≡ Crystal Violet TS		USP196		
Methyl Yellow TS	18	USP259	100	ml
Methyl Yellow - Methylene Blue TS	12	USP260	125	ml
Methylene Blue TS	12	USP261	100	ml
Methylthionine Perchlorate TS	6	USP262	100	ml
Methylthionine Perchlorate TS	6	USP262a	500	ml
Molybdo-phosphotungstate TS	12	USP263	100	ml
2-Naphthol TS (Betanaphthol TS)	12	USP264	100	ml
p-Naphtholbenzein TS	12	USP265	100	ml
p-Naphtholbenzein TS	12	USP265a	500	ml
N-(1-Naphthyl)ethylenediamine Dihydrochloride TS	6	USP266	100	ml
Nessler's Reagent ≡ Mercuric–Potassium Iodide TS, Alkaline		USP252		
Neutral Red TS	12	USP268	100	ml
Nickel Standard Solution TS (100 times concentrated)	12	USP269	100	ml
p-Nitroaniline TS	12	USP270	100	ml
Orthophenanthroline TS	12	USP271	100	ml
Oxalic Acid TS	24	USP272	500	ml
Oxalic Acid TS	24	USP272a	1000	ml
Palladium Chloride TS, Buffered	12	USP273	100	ml
Palladium Chloride TS, Buffered	12	USP273a	50	ml

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Perchloric Acid TS	12	USP274	100	ml
Perchloric Acid TS	12	USP274a	500	ml
Phenol Red TS	18	USP275	100	ml
Phenol Red TS	18	USP275a	500	ml
pH 4.7 Phenol Red TS	18	USP276	100	ml
pH 4.7 Phenol Red TS	18	USP276a	500	ml
Phenoldisulfonic Acid TS	12	USP277	100	ml
Phenolphthalein TS	24	USP278	100	ml
Phenylhydrazine Acetate TS	12	USP279	100	ml
Phenylhydrazine Acetate TS	12	USP279a	500	ml
Phenylhydrazine–Sulfuric Acid TS	12	USP280	100	ml
Phenylhydrazine–Sulfuric Acid TS	12	USP280a	500	ml
Phloroglucinol TS	12	USP281	100	ml
Phloroglucinol TS	12	USP281a	500	ml
Phosphomolybdic Acid TS	12	USP282	100	ml
Phosphomolybdic Acid TS	12	USP282a	500	ml
Phosphotungstic Acid TS	12	USP283	100	ml
Platinic Chloride TS	12	USP284	10	ml
Platinum–Cobalt TS	24	USP285	100	ml
Platinum–Cobalt TS	24	USP285a	1000	ml
Potassium Acetate TS	12	USP286	100	ml
Potassium Acetate TS	12	USP286a	500	ml
Potassium–Bismuth Iodide TS	12	USP287	500	ml
Potassium–Bismuth Iodide TS	12	USP287a	100	ml
Potassium Carbonate TS	18	USP288	100	ml
Potassium Carbonate TS	18	USP288a	500	ml
Potassium Chromate TS	24	USP289	100	ml
Potassium Chromate TS	24	USP289a	500	ml
Potassium Dichromate TS	24	USP290	100	ml
Potassium Dichromate TS	24	USP290a	500	ml
Potassium Hydroxide TS	24	USP291	100	ml
Potassium Hydroxide TS	24	USP291a	500	ml
Potassium Hydroxide TS, Alcoholic - Use 0.5 N Potassium Hydroxide, Alcoholic (see in the section Volumetric Solutions)		USP120		
Potassium Iodide TS	12	USP294	100	ml
Potassium Iodide TS	12	USP294a	500	ml
Potassium Iodide and Starch TS	12	USP295	100	ml
Potassium Iodoplatinate TS	12	USP296	50	ml
Potassium Permanganate TS - Use 0.1 N Potassium Permanganate (see in the section Volumetric Solutions)		USP124		
Potassium Pyroantimonate TS	12	USP299	100	ml
Potassium Pyroantimonate TS	12	USP299a	500	ml
Potassium Sulfate TS	24	USP300	100	ml
Potassium Sulfate TS	24	USP300a	500	ml
Potassium Thiocyanate TS	24	USP301	100	ml
Potassium Thiocyanate TS	24	USP301a	500	ml
Quinaldine Red TS	24	USP302	100	ml

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Resorcinol TS	12	USP303	100	ml
Ruthenium Red TS	12	USP304	100	ml
Schweitzer's Reagent ≡ Cupric Oxide, Ammoniated, TS		USP202		
Silver - Ammonia–Nitrate TS	6	USP306	100	ml
Silver - Ammonium Nitrate TS ≡ Silver–Ammonia - Nitrate TS		USP306		
Silver Nitrate TS —Use 0.1 N Silver Nitrate (see in the section Volumetric Solutions)		USP125		
Simulated Intestinal Fluid TS ≡ Intestinal Fluid, Simulated, TS		USP230		
Sodium Acetate TS	24	USP310	100	ml
Sodium Alizarinsulfonate TS	6	USP311	100	ml
Sodium Aminoacetate TS (Sodium Glycinate TS)	12	USP312	500	ml
Sodium Aminoacetate TS (Sodium Glycinate TS)	12	USP312a	1000	ml
Sodium Carbonate TS	24	USP313	100	ml
Sodium Carbonate TS	24	USP313a	1000	ml
Sodium Chloride TS, Alkaline	24	USP314	100	ml
Sodium Citrate TS	24	USP315	250	ml
Sodium Citrate TS, Alkaline	24	USP316	250	ml
Sodium Citrate TS, Alkaline	24	USP316a	100	ml
Sodium Cobaltinitrite TS	12	USP317	50	ml
Sodium Fluoride TS	12	USP318	100	ml
Sodium Hydroxide TS	24	USP319	100	ml
Sodium Hydroxide TS	24	USP319a	1000	ml
Sodium Iodohydroxyquinolinesulfonate TS	12	USP320	250	ml
Sodium Iodohydroxyquinolinesulfonate TS	12	USP320a	100	ml
Dibasic Sodium Phosphate TS	12	USP321	100	ml
Sodium Phosphotungstate TS	12	USP322	100	ml
Sodium Tartrate TS	24	USP323	100	ml
Sodium Tartrate TS	24	USP323a	500	ml
Sodium Tetraphenylboron TS	24	USP324	100	ml
Sodium Thiosulfate TS - Use 0.1 N Sodium Thiosulfate		USP132		
Stannous Chloride, Acid, TS	3	USP328	100	ml
Stannous Chloride, Acid, Stronger, TS	3	USP329	100	ml
Starch Iodide Paste TS	6	USP330	100	ml
Starch TS	6	USP331	100	ml
Stronger Cupric Acetate TS ≡ Cupric Acetate TS, Stronger		USP198		
Sudan III TS	12	USP333	50	ml
Sudan IV TS	12	USP334	100	ml
Sudan IV TS	12	USP334a	50	ml
Sulfanilic Acid TS	12	USP335	100	ml
Sulfanilic Acid TS	12	USP335a	500	ml
Sulfanilic - Naphthylamine TS ≡ Sulfanilic-1-Naphthylamine TS		USP337		
Sulfanilic-1-Naphthylamine TS	12	USP337	100	ml
Sulfomolybdic Acid TS	18	USP338	100	ml
Sulfomolybdic Acid TS	18	USP338a	500	ml
Sulfuric Acid TS	6	USP339	100	ml
Tetramethylammonium Hydroxide TS	12	USP340	100	ml
Thioacetamide TS	6	USP341	100	ml

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Thorium Nitrate TS	12	USP342	100	ml
Thymol Blue TS	24	USP343	100	ml
Thymolphthalein TS	24	USP344	100	ml
Titanium Trichloride TS	12	USP345	100	ml
Titanium Trichloride - Sulfuric Acid TS	12	USP346	100	ml
p-Toluenesulfonic Acid TS	12	USP347	100	ml
Trinitrophenol TS (Picric Acid TS)	24	USP348	100	ml
Triphenyltetrazolium Chloride TS	12	USP349	100	ml
Triphenyltetrazolium Chloride TS	12	USP349a	500	ml
Zinc Uranyl Acetate TS	12	USP357	100	ml

Indicators and Test Papers

Indicator and test papers are strips of paper of suitable dimension and grade impregnated with an indicator or a reagent that is sufficiently stable to provide a convenient form of the impregnated substance.

DESCRIPTION	VALIDITY *months*	REF	VOLUME
Cupric Sulfate Test Paper	12	USP068	pack of 50
Lead Acetate Test Paper	12	USP069	pack of 50
Mercuric Bromide Test Paper	12	USP070	pack of 50
Methyl Yellow Paper	12	USP071	pack of 50
Phenolphthalein Paper	12	USP072	pack of 50
Starch Iodate Paper	12	USP073	pack of 50
Starch Iodide Paper	12	USP074	pack of 50
Thiazole Yellow Paper	12	USP075	pack of 50

General Tests for Reagents

The following solutions are provided to help for the examination of reagents to determine their compliance with the specifications of the individual reagents.

DESCRIPTION	VALIDITY *months*	REF	VOLUME	UNIT
Standard Arsenic Solution	12	USP076	100	ml
Standard Chloride Solution	12	USP077	100	ml
Standard Calcium Solution	12	USP078	100	ml
Standard Potassium Solution	6	USP079	100	ml
Standard Sodium Solution	6	USP080	100	ml
Standard Strontium Solution	6	USP081	100	ml
Lead Nitrate Stock Solution	12	USP082	100	ml
Standard Nitrate Solution	6	USP083	100	ml
Brucine Sulfate Solution	12	USP084	100	ml
Standard Phosphate Solution	6	USP085	100	ml
Phosphate Reagent A	12	USP086	100	ml
Standard Sulfate Solution	12	USP087	100	ml