



The wise choice

Volumetric Solutions

according to Pharmacopoeia



Titration is a widely-used analytical technique in determining the concentration of a sample from titrant solutions. It is essential to precisely know the titrant concentration to obtain results as much accurate as possible.

Scharlab has a full range of volumetric solutions manufactured to the highest precision, ensuring a factor of 1.000. These solutions are used as a reference in quantitative analyses, so the confidence interval should be as low as possible. In Scharlau's Certificate of Analysis for volumetric solutions, the factor, the uncertainty and the method used to guarantee their precision and quality are detailed. All Scharlau volumetric solutions are tested with an ISO 17034 accredited certified reference material, measured according to ISO/IEC 17025 and traceable to the International System of Units using a NIST Certified Reference Material (SRM®).

The pharmaceutical industry requires that the titrated solutions which are used in the quality control of its raw materials and its finished products, follow the requirements set out by the corresponding pharmacopoeias. The volumetric solutions used in the analyses of the pharmacopoeia monographs must comply with the specifications indicated in the "Reagents" section of the European Pharmacopoeia (Ph. Eur), or in the "Reagents, Indicators and Solutions" chapter of the United States Pharmacopoeia (USP).

The European and United States pharmacopoeias (Ph. Eur and USP, respectively) are the most recognised and followed worldwide. They contain the minimum quality standards required for products to be used in the pharmaceutical industry. Scharlau's volumetric solutions according to pharmacopoeia contain the mention "Reag. Ph. Eur" or "Reag. USP" in their description, depending on which pharmacopoeia they follow.



Volumetric Solutions according to Pharmacopoeia

Traceability

All Scharlab pharmacopoeia volumetric solutions are tested with an ISO 17034 accredited certified reference material, measured according to ISO/IEC 17025 and traceable to the International System of Units using a NIST Certified Reference Material (SRM®).

Qualification

The title or factor of a volumetric solution is the relation between the obtained molar concentration ($M(x)$) and the theoretical molar concentration ($Mt(x)$).

$$t = (M(x)) / (Mt(x))$$

Despite not being a requirement of the pharmacopoeia itself, Scharlab's volumetric solutions according to pharmacopoeia are adjusted to a factor of 0.999-1.001.

Full Certificate of Analysis

Volumetric solutions according to pharmacopoeia are used as a reference material in the pharmaceutical industry to calculate concentrations, so it is important that the Certificate of Analysis reflects all the data that characterises the solution.

Our CoA includes all the necessary data and is available for each product. Additionally, it is possible to download the Certificate easily by scanning the QR code on the product label with the Scharlab Reader App.

Uncertainty

The uncertainty value of our pharmacopoeia-assessed solutions is calculated to never exceed the value of ± 0.002 in all cases, with a confidence level of 95% ($k=2$), thus ensuring maximum precision in concentration values reported in the Certificate of Analysis.

Expiry

Scharlab ensures an expiry of 3 years for all its volumetric solutions according to pharmacopoeia. This is specified in the CoA and on the product label itself.

Packaging

Our pharmacopoeia volumetric solutions are available in 1 litre HDPE bottles. These bottles can be directly connected to an automatic titrator, as they fit perfectly on the equipment support and do not move, even when empty. Additionally, it has raised markings enabling the user to accurately estimate the amount of liquid remaining in the bottle.



Volumetric Solutions according to Pharmacopoeia

Reference	Description	Application	Packaging
AM04221000	Ammonium thiocyanate, solution 0,1 mol/l (0,1 N), Reag. Ph Eur, Reag. USP	Precipitation	1 l
CE01041000	Cerium(IV) sulfate, solution 0,1 mol/l (0,1 N), Reag. Ph Eur	Redox	1 l
AC07311000	Hydrochloric acid, solution 0,1 mol/l (0,1 N), Reag. Ph Eur, Reag. USP	Acid/Base	1 l
AC07321000	Hydrochloric acid, solution 1 mol/l (1 N), Reag. Ph Eur, Reag. USP	Acid/Base	1 l
YO00261000	Iodine, solution 0,05 mol/l (0,1 N), Reag. Ph Eur	Redox	1 l
AC17641000	Perchloric acid, solution in acetic acid 0,1 mol/l (0,1 N), Reag. Ph Eur, Reag. USP	Non-aqueous matrix	1 l
PO02951000	Potassium hydroxide, solution 0,1 mol/l (0,1 N), Reag. Ph Eur	Acid/Base	1 l
PO02961000	Potassium hydroxide, solution 1 mol/l (1 N), Reag. USP	Acid/Base	1 l
PO03411000	Potassium permanganate, solution 0,02 mol/l (0,1 N), Reag. Ph Eur	Redox	1 l
PL00541000	Silver nitrate, solution 0,1 mol/l (0,1 N), Reag. Ph Eur	Precipitation	1 l
SO04591000	Sodium hydroxide, solution 0,1 mol/l (0,1 N), Reag. Ph Eur, Reag. USP	Acid/Base	1 l
SO04541000	Sodium hydroxide, solution 1 mol/l (1 N), Reag. Ph Eur, Reag. USP	Acid/Base	1 l
SO07351000	Sodium thiosulfate, solution 0,1 mol/l (0,1 N), Reag. Ph Eur	Redox	1 l
AC20981000	Sulfuric acid, solution 0,5 mol/l (1 N), Reag. Ph Eur, Reag. USP	Acid/Base	1 l
CI02321000	Zinc sulfate, solution 0,1 mol/l, Reag. Ph Eur	Complexometry	1 l

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