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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 601-2016

Replacing GB/T 601-2002

**Chemical Reagent - Preparations of Standard Volumetric
Solutions**

化学试剂 标准滴定溶液的制备

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Foreword

This document was issued on 13 October 2016 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 May 2017.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies.

The document runs to 37 pages in translation. The identification, the dates, the table of contents and the clauses reproduced on this page are taken from the standard itself.

This standard is developed according to the rules given in GB/T 1.1-2009.

This standard replaces GB/T 601-2002 Chemical Reagent - Preparations of Standard Volumetric Solutions and has the following main technical changes with respect to GB/T 601-2002:

--Relevant contents of 3.2, 3.6, 3.8, 3.9 and 3.10 in General Requirements are modified (see 3.2, 3.6, 3.8, 3.9 and 3.10; 3.2, 3.6, 3.8, 3.9 and 3.10 in edition 2002);

--In sodium carbonate reference titration solution, "Meanwhile, carry out blank test" is added in Method I and Method II (directly prepared with working standard reagent) is added (see 4.4.1.2 and 4.4.2; 4.4.2 in edition 2002);

--Preparation method and calibration method II of iodine reference titration solution are modified (see 4.9.1 and 4.9.2.2; 4.9.1 and 4.9.2.2 in edition 2002);

--Preparation method of sodium thiosulfate reference titration solution is modified (see 4.6.1; 4.6.1 in edition 2002);

- Sodium oxalate reference titration solution is added parallel with oxalic acid reference titration solution and Method II is added (sodium oxalate reference titration solution directly prepared with working standard reagent) (see 4.11.1.1 and 4.11.2; 4.11 in edition 2002);
- For ammonium iron (II) sulfate reference titration solution, Method I is added and "Meanwhile, carry out blank test" is added in Method II (see 4.13.3.1 and 4.13.3.2; 4.13 in edition 2002);
- Method II is added for EDTA reference titration solution (directly prepared with working standard reagent) and significant digits for mole mass of zinc oxide (working standard reagent) is modified (see 4.15.1.2.1, 4.15.1.2.2 and 4.15.2; 4.15.2.1 and 4.15.2.2 in edition 2002);
- In zinc chloride reference titration solution, 0.05 mol/L and 0.02 mol/L are added and Method II (directly prepared with working standard reagent) for three concentrations are added (see 4.16 and 4.16.2; 4.16 in edition 2002);
- "Meanwhile, carry out blank test" is added in lead nitrate reference titration solution (see 4.18.2; 4.18.2 in edition 2002);
- Mercuric nitrate reference titration solution is added (see 4.22);
- Temperature of titrated solution during calibration of sodium nitrite reference titration solution is adjusted; "Meanwhile, carry out blank test" is added; Method II is added (end point is judged with external-use starch-potassium iodide test paper); Calibration prior to use in case of $c(\text{NaNO}_2)=0.5 \text{ mol/L}$ is specified and "Calibration prior to use" is changed to "Storage time is 4 months" in case of $c(\text{NaNO}_2)=0.1 \text{ mol/L}$ (see 4.23.2.1, 4.23.2.2 and 3.10 a); 4.22.2 in edition 2002);
- "Meanwhile, carry out blank test" is added in perchloric acid reference titration solution; "Calibration prior to use" is changed to "storage time is 2 months" (see 4.24.2 and 3.10 a); 4.23.2 and 4.23.3 in edition 2002);
- Preparation method of potassium hydroxide-ethanol reference titration solution is modified; "Calibration prior to use" is changed to "Storage time is 2 months" (see 4.25.1 and 3.10 a); 4.24.1 in edition 2002);
- Hydrochloric acid-ethanol reference titration solution is added (see 4.26);
- Ammonium iron (III) sulfate reference titration solution is added (see 4.27);
- "Annex B (Normative) Determination Method of Burette Capacity" (see Annex B) is added.

This standard was proposed by China Petroleum and Chemical Industry Federation.

This standard is under the jurisdiction of Subcommittee on Chemical Reagents of National Technical Committee on Chemical of Standardization Administration of China (SAC/TC 63/SC 3).

The previous editions of the standard replaced by this standard are as follows:

--GB/T 601-1965, GB/T 601-1977, GB/T 601-1988 and GB/T 601-2002.

Warning: Considering that test process specified in this standard may cause dangerous conditions, Operator is responsible to take appropriate safety and health measures.

It replaces GB/T 601-2002, which is superseded.

1 Scope

GB/T 601 is the Chinese standard for preparing standard volumetric solutions, and it is the most widely cited analytical standard in the country: almost every Chinese test method that involves a titration refers to it rather than repeating the preparation. It gives, for each of the common titrants, the preparation and the standardisation: hydrochloric acid, sulfuric acid, sodium hydroxide, potassium hydroxide, sodium carbonate, potassium dichromate, potassium permanganate, sodium thiosulfate, iodine, silver nitrate, ammonium thiocyanate, EDTA, zinc, lead and the rest, each at the concentrations in normal use. For each it names the primary standard to be used, the drying conditions for it, the procedure, the calculation, the permissible difference between parallel determinations and the period of validity of the solution. This is the clear-print edition. For any laboratory doing wet chemistry to Chinese standards, this document is the foundation the numbers rest on.

This standard specifies preparation and calibration method of chemical reagent reference titration solution.

This standard is applicable to both preparation and calibration of reference titration solution whose chemical reagent purity and impurity content is determined by titration and other areas.

2 Normative References

The following documents for the application of this document are essential. For dated reference, only the edition cited applies. For undated references, the latest edition (including any amendments) applies.

GB/T 603 Chemical Reagent - Preparations of Reagent Solutions for Use in Test Method

GB/T 606 Chemical Reagent - General Method for the Determination of Water - Karl Fischer Method

GB/T 6379.6-2009 Accuracy(trueness and precision) of Measurement Methods and Results - Part 6: Use in Practice of Accuracy Values

GB/T 6682 Water for Analytical Laboratory Use-Specification and Test Methods

GB/T 9725-2007 Chemical Reagent - General Rule for Potentiometric Titration