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

GB/T 6682-2008

Replacing GB/T 6682-1992

**Water for analytical laboratory use - Specification and test
methods**

分析实验室用水规格和试验方法

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Foreword

This Standard is modified in relation to ISO 3696.1987 "Water for Analytical Laboratory Use - Specification and Test Methods" (English edition). This Standard was modified during the adoption of ISO 3696.1987, in consideration of the national conditions of China. Those technical differences have already been incorporated into the text and marked with perpendicular single line on the margin of relevant clauses. Comparison Between chapter and article numbers of this Standard and ISO 3696.1987 is listed in Annex A. Technical differences and reasons between this Standard and ISO 3696.1987 is listed in Annex B for reference. This Standard replaces "Water for Analytical Laboratory Use - Specification and Test Methods" GB/T 6682 - 1992. Compared with GB/T 6682 - 1992, this Standard has the following main changes. - ADD the test report (Chapter 8 of this edition). Annex C of this Standard is normative; Annex A and Annex B are informative. This Standard is proposed by

China Petroleum and Chemical Industry Association. This Standard is under the jurisdiction of Chemical Reagent Subcommittee of National Technical Committee on Chemical of Standardization Administration of China (SAC/TC 63/SC 3). Drafting organization of this Standard. Sinopharm Chemical Reagent Co., Ltd. Main drafters of this Standard. Chen Haoyun, Chen Hong. This Standard was issued in 1986 for the first time and revised in 1992 for the first time. Water for Analytical Laboratory Use - Specification and Test Methods

1 Scope

GB/T 6682-2008 specifies the grades, the specification, the sampling and storage, the test methods and the test report for the water used in an analytical laboratory. It applies to the water used for chemical analysis and for inorganic trace analysis, and it defines three grades chosen according to what the work requires: grade 1 for analysis with strict requirements, including work with particle requirements such as HPLC; grade 2 for inorganic trace analysis such as atomic absorption; grade 3 for general chemical analysis. It is a modified adoption of ISO 3696:1987, with the technical differences incorporated into the text, marked by a vertical line in the margin, and listed in Annex B. This is the standard that almost every Chinese analytical method points at when it says which water to use, which is why it is cited by more than a hundred other standards: a method is only as reproducible as the water it is run in, and a determination at parts per million is measuring the water as much as the sample. Issued on 15 May 2008 and in force since 1 November 2008, it replaces GB/T 6682-1992, from which it differs mainly by the addition of the test report in Clause 8.

This Standard specifies the grade, specification, sampling and storage, test methods and test report of water for analytical laboratory use. This Standard is applicable to the water for chemical analysis and inorganic trace analysis tests. Water of different grades may be selected according to the requirements of actual work.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 601 Chemical reagent - Preparations of standard volumetric solutions

GB/T 602 Chemical reagent - Preparations of standard solutions for impurity (GB/T 602-2002, ISO 6353-1.1982, NEQ)

GB/T 603 Chemical reagent - Preparations of reagent solutions for use in test methods (

GB/T 603-2002, ISO 6353-1.1982, NEQ)

GB/T 9721 Chemical reagent - General rules for the molecular absorption spectrophotometry (ultraviolet and visible)

GB/T 9724 Chemical reagent - General rule for the determination of pH (GB/T 9724-2007, ISO 6353-1.1982, NEQ)

GB/T 9740 Chemical reagent - General method for the determination of dry residue after evaporation (GB/T 9740-2008, ISO 6353-1.1982, NEQ)

3 Appearance

Water for analytical laboratory use shall be colorless and clear liquid through visual observation.

4 Classification

Raw water for analytical laboratory use shall be drinking water or water in proper purity.

4.1 Grade 1 water Grade 1 water is used for the analytical test with strict requirements, including the test with requirements for particles, such as water for high performance liquid chromatography analysis.

4.2 Grade 2 water Grade 2 water is used for inorganic trace analysis test, such as water for atomic absorption spectroscopy.

4.3 Grade 3 water Grade 3 water is used for general chemical analysis test.

5 Specification

Specification of water for analytical laboratory use is detailed in Table 1.

6.1 Container

6.1.1 Water of various grades shall be held in closed and special polyethylene container. Grade 3 water may be held in closed and special glass container.

6.1.2 New container shall be processed before application through soaking for 2d~3d with hydrochloric acid solution (mass fraction 20%), repeatedly washing with to-be-measured water, and filling in to-be-measured water and soaking more than 6h.

6.2 Sampling In the case of testing according to this standard, at least 3L of representative water sample shall be taken. Before sampling, the container shall be washed repeatedly with to-be-measured water; during sampling, the container shall be prevented from being contaminated. The container shall be full of water sample.

6.3 Storage During the storage period of water at various grades, the main contamination

sources are soluble constituent of container, carbon dioxide in the air and other impurities. Therefore, grade 1 water shall not be stored, but prepared before application.

7 Test Methods

In the test methods, each test shall be carried out in the clean environment and adequate measures shall be taken to prevent the sample from being contaminated. Water sample shall be measured to the accuracy of 0.1mL; adopted solution represented by "%" is mass fraction. Analytical reagent and water of corresponding grade shall be used in the test.

7.1 pH value 100mL of water sample shall be measured out and determined according to the requirements of GB/T 9724.

7.2.2 Determination procedures

7.2.2.1 Install and trial the instrument according to the instructions of conductivity meter.

7.2.2.2 Grade 1 and grade 2 water measurement. install the conductivity cell at the flow water outlet of water treatment unit, adjust the water rate, expel the gas bubble in the pipe and conductivity cell, and then start measurement.

7.2.2.3 Grade 3 water measurement. TAKE 400mL of water sample to a conical flask, INSERT conductivity cell, and then start measurement.

7.2.3 Precautions Conductivity meter and conductivity cell for measurement shall be calibrated regularly.

7.3.1 Reagent preparation

7.3.1.1 Sulfuric acid solution (20%) It shall be prepared according to the requirements of GB/T 603.

7.4 Absorbance It shall be measured according to the requirements of GB/T 9721.

7.4.1 Instrument conditions Quartz absorption cell. thickness of 1cm and 2cm.

7.4.2 Determination procedures Respectively POUR the water sample into 1cm and 2cm absorption cells, USE the water sample in 1cm absorption cell as reference at 254nm, DETERMINE the absorbance of water sample in 2cm absorption cell. If the sensitivity of instrument is insufficient, the thickness of measurement absorption cell may be added properly.

7.5.1 Instrument

7.5.1.1 Rotary evaporator. equipped with 500mL distillation flask.

7.5.1.2 Thermostatic water-bath.