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

GB/T 2091-2008

**Phosphoric acid for industry use
(English Translation)**

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Foreword

This Standard revises and adopts the Japanese standard JIS K 1449: 1978 (confirmed in 1988) "Phosphoric acid" (Japanese version).

This Standard is redrafted in accordance with the Japanese standard JIS K 1449: 1978 (confirmed in 1988) "Phosphoric acid".

In consideration of China's national conditions, when JIS K 1449:1978 is adopted, some amendments are made to this Standard. The technical and structural differences are incorporated into the text; vertical single-lines are used to mark in the margins of the articles to which they relate. A list of these technical and structural differences and their causes is given in Appendix A and Appendix B for reference.

This Standard replaces GB/T 2091-2003.

The main differences between this Standard and GB/T 2091-2003:

-- Revise the indicator parameter of the heavy metal mass fraction of qualified products from 0.05% to 0.005% (4.2 of version 2003, 5.2 of this version);

-- Modify chloride and heavy metal test methods;

-- Add Appendix A and Appendix B.

Appendix A and Appendix B of this Standard are informative appendices.

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

This Standard shall be under the jurisdiction of Subcommittee on Inorganic Chemical Industry of National Standardization Technical Committee of Chemical (SAC/TC 63/SC 1).

The main drafting organizations of this Standard: Hubei Xingfa Chemicals Group Co., Ltd., Tianjin Chemical Research and Design Institute.

The drafters of this Standard: Li Guangming, Wang Xiangsen, Xiong Ping, Wan Jinzhu, Yang Zhengyong.

The previous versions of the standards which are replaced by this Standard are:

-- GB 2091-1980, GB/T 2091-1992, GB/T 2091-2003.

Phosphoric acid for industry use

1 Scope

This Standard specifies the classification requirements, test methods, inspection rules, marking, labeling, packaging, transportation and storage of phosphoric acid for industry use.

This Standard applies to phosphoric acid for industry use which is produced from industrial yellow phosphorus. This product is mainly used in the production of electroplating, phosphating solution and industrial phosphate.

2 Normative references

The terms in the following documents become the terms of this Standard by reference to this Standard. For dated references, all subsequent amendments (not including errata content) or revisions do not apply to this standard.

However, parties to agreements that are based on this Standard are encouraged to study whether the latest versions of these documents can be used. For undated references, the latest edition applies to this Standard.

GB 190-1990, Labels for packages of dangerous goods

GB/T 605, Chemical reagent - General method for the measurement of colour (GB/T605-2006, ISO 6353-1:1982, EQV)

GB/T 610.1-1988, Chemical reagent - General method for the determination of arsenic

GB/T 1250, Representation and determination of limit values

GB/T 3049-2006, Chemical products for industrial use - General method for determination of iron content - 1,10-Phenanthroline spectrophotometric method (ISO 6685:1982, IDT)

GB/T 6678, General principles for sampling chemical products

GB/T 6682-1992, Water for laboratory use - Specifications (eqv ISO 3696:1987)

HG/T 3696.1, Inorganic chemical products - Preparations of standard volumetric solutions for chemical analysis

HG/T 3696.2, Inorganic chemical products - Preparations of standard solutions for chemical analysis

6.2 General provisions

The reagents and water that are used in this Standard, when no other requirements are specified, refer to analytical reagents and grade-III water which is specified in GB/T 6682-1992. The standard titration solutions, impurity standard solutions, preparations and products that are used in the test shall be prepared in accordance with the provisions of HG/T 3696.1, HG/T 3696.2, HG/T 3696.3, when no other requirements are specified.

6.3 Appearance determination

Determine visually under natural light conditions.

6.4 Color determination

Determine according to the method that is specified in GB/T 605.

6.5.1.1 Method summary

In the acidic medium, the phosphate radical in the test solution forms a precipitate with the added precipitating agent, quinoxaline ketone. Calculate the phosphoric acid content by filtration, drying, and weighing.

6.5.1.4.1 Preparation of test solution

Weigh approximately 1 g of the sample, accurate to 0.0002 g, in a 100 mL beaker; add 5 mL of hydrochloric acid and a small amount of water; cover the watch glass; boil for 10 min. After cooling, transfer to a 500 mL volumetric flask; add 10 mL of hydrochloric acid; use water to dilute to the mark; shake well.

6.5.1.4.2 Preparation of blank solution

Except that no sample is added, the amount of other added reagents is exactly the same as that of the test solution. The same treatment is carried out simultaneously with the sample.

6.5.1.4.3 Determination

Pipette 10 mL of the test solution and the blank test solution into the 250 mL beakers respectively; add water to a total volume of about 100 mL. Add 35 mL of quinoxaline ketone solution; cover the watch glass; heat in a water bath until the temperature in the cup reaches $75^{\circ}\text{C} \pm 5^{\circ}\text{C}$; keep for 30 s (do not use open flame when heating; do not stir when adding reagent or heating, so as to avoid clot formation). Cool to room temperature; stir 3 ~ 4 times during cooling. Use the sintered-glass filter crucible, which has been dried to a constant mass at $180^{\circ}\text{C} \pm 5^{\circ}\text{C}$ or $250^{\circ}\text{C} \pm 10^{\circ}\text{C}$ in advance, to suction-filter the supernatant; take decantation to wash the precipitate for 5 ~ 6 times, each with about 20 mL of water. Transfer the precipitate to the sintered-glass filter crucible; continue to use water to wash for 3 ~ 4 times. Place the sintered-glass filter crucible in an electrically heated drying oven at $180^{\circ}\text{C} \pm 5^{\circ}\text{C}$, to bake for 45 min; or bake at