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

GB 10731-2008

Primary chemical - Potassium dichromate

第一基准试剂 重铬酸钾

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Foreword

The standard Chapter 4 5.2.3,

5.2.4.1 are mandatory, other provisions are recommended. This standard replaces GB 10732-1989 "first reference reagent (capacity) of potassium dichromate," Compared with GB 10732-1989, the main changes as follows:

- Standard name changed to "first reference reagent potassium dichromate";
- Increasing the normative references (1989 edition Chapter 2, Section 2 of this edition);
- Modify the description of the determination of the principles of the (1989 version 4.1.1, this version 5.2.1);
- Modified Coulomb constant current device diagram (1989 version 4.1.3.4, this edition 5.2.2.3);
- Modify the inspection rules (1989 edition Chapter 5, Chapter 6 of this edition);
- Increasing the content of the calculation method of Uncertainty (Excerpts Appendix B) was measured;
- Canceled Appendix B, Appendix C (1989 edition Appendix B, Appendix C). This

standard appendix A normative appendix, Appendix B is an informative annex. The standard proposed by China Petroleum and Chemical Industry Association. This standard by the Chemicals Branch of the National Chemical Standardization Technical Committee. This standard is drafted by: China Institute of Metrology, Beijing Institute of Chemical reagents. The main drafters of this standard. FEI brother, Wu Bing, Han Baoying, strong Jing Lin. This standard replaces the standards previously issued as follows:

--- GB 10731-1989. The first reference reagent potassium dichromate Warning. some of the test procedure specified in this standard can lead to dangerous situations, the user has the responsibility to take appropriate safety and health practices. Molecular formula. $K_2Cr_2O_7$

7 Molecular Weight. 294.185 (according to 2005 international relative atomic mass).

1 Scope

China's mandatory national standard for potassium dichromate as a primary chemical. Potassium dichromate is the primary standard of oxidation-reduction titration, and it holds that position for reasons no other oxidant matches: it can be obtained pure and dried without decomposition, its solutions are stable indefinitely in the light and the air, and its formal potential is high enough to be useful and low enough to be selective. It is what standardises the thiosulfate and ferrous solutions on which iron and chemical oxygen demand determinations rest, which means a large part of routine metallurgical and environmental analysis is traceable to it. Its own hazard is worth stating: hexavalent chromium is carcinogenic and this is one of the compounds through which laboratory workers are exposed to it. The standard specifies the requirements, the assay and the certification of the primary standard grade.

5.2.2.4 end indication circuit (see FIG. 2). Platinum electrode as the indicator electrode, a saturated calomel electrode as the reference electrode, the voltage between the two electrodes is 0.85V. Figure 2 indicates the end of the circuit

5.2.2.5 electrolytic cell apparatus (see Figure 3). A cathode compartment (left) and an anode compartment (right) is a diameter of 50mm, 125mm high cylinder 95 made of glass material. With between two chambers Diameter 20mm, glass horizontal length 80mm connections in the tube melting inside back cover sheet respectively No. 2,2,3 glass sand core, thereby forming two Have an intermediate chamber manifold with the piston, and the pressure by pumping nitrogen gas pressurization method the electrolyte solution out of the intermediate chamber. Small room two sand core The distance between the distance 20mm, two large chamber between the sand core is 40mm. The cathode chamber mouth tight with a good pre-treated white rubber A plug, the plug is inserted through the working electrode 2 are platinum, platinum bis indicator electrode, saturated calomel electrode 4, 5 nitrogen inlet, nitrogen outlet pipe 6, The bottom of the cathode compartment 20mm long was stirred in a sealed Teflon tube about the magnet 8, an anode chamber having a platinum working electrode 10, The bottom of a cast silicone gel plug 9. Electrolytic cell unit

on magnetic stirrer workbench. 1

--- white rubber plug; 2

--- platinum working electrode; 3

--- double platinum indicator electrode; 4

--- saturated calomel electrode; 5

--- nitrogen inlet; 6

--- nitrogen outlet pipe; 7

--- sample hole; 8

--- Silica gel plug. 9; 10

--- platinum working electrode; . 11

--- piston 1; 12

--- piston 2. 3 cell apparatus of FIG.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 602 Determination of impurities in chemical reagents prepared standard solution (GB/T 602-2002,

ISO 6353-1. 1982, NEQ) with

GB/T 603 chemical reagent test method Preparations of articles (GB/T 603-2002,

ISO 6353-1 with. 1982, NEQ)

GB 6682 analytical laboratory use specifications and test methods (GB/T 6682-2008, ISO 3696. 1987, MOD)

GB/T 9723-2007 Chemicals flame atomic absorption spectrometry General

GB/T 9728 General method for determination of chemical reagents sulfate (GB/T 9728-2007, ISO 6353-1. 1982, NEQ)

GB/T 9738 Chemicals water insoluble determination General method (GB/T 9738-2008, ISO 6353-1. 1982, NEQ)

GB 15258 rules for preparation of chemical safety labels

GB 15346 chemical reagent packaging and marking JJG99 weight JJG116 standard resistor JJG153 standard battery JJG1006 a standard material specification

3 Characters

This reagent is orange-red crystalline particles or powder, soluble in water, soluble in ethanol.

4 Specification

Potassium dichromate as shown in Table 1. Table

1 Name the first reference Content ($K_2Cr_2O_7$), /% 99.98 ~ 100.02 Water-insoluble, /% $\leq$

0.003 Chloride (Cl), /% $\leq$

0.001 Sulphate (SO_4), /% $\leq$

0.003 Table 1 (continued) Name the first reference Sodium (Na), /% $\leq$

0.01 Calcium (Ca), /% $\leq$

0.001 Iron (Fe), /% ≤ 0.001

5 Test

5.1 General provisions Unless specified otherwise in this chapter, the use of reagent purity should be more analytical, standard solution, preparations and products, according to GB/T 602, GB/T 603 provisions of preparation, test water should be consistent with GB/T 6682 specifications in two water samples according to precise weighing 0.01g, used Solution "%" are represented by the mass fraction. High purity nitrogen gas should be used.

5.2 Content

5.2.1 The principle of the method Coulomb analysis is performed by measuring a quantitative analysis of material from one electrode reaction, or a substance to be analyzed and the electrode reaction Charge (coulombs) chemical reaction product was quantitatively consumed to quantitative analysis. Coulometry principle is based on the law Where. Molar mass M

--- material in units of grams per mole (g/mol);

--- Like the number of electron transfer; F

--- Faraday constant ampere seconds per mole of ($A \cdot s/mol$); I

--- the current solution by electrolysis, in amperes (A); Constant current precision