

ICS 71.040.30

CCS G61



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

**GB 10734-2008**

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**Primary chemical - Ethylenediamine tetraacetic acid disodium  
salt**

第一基准试剂 乙二胺四乙酸二钠

**Issued on: June 18, 2008**

**Implemented on: June 1, 2009**

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**Issued by: General Administration of Quality Supervision, Inspection and  
Quarantine of the People's Republic of China;  
Standardization Administration of China**

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## Foreword

The standard Chapter 4 5.3.3,

5.3.4.1 are mandatory, other provisions are recommended. This standard replaces GB 10734-1989 "first reference reagent (capacity) disodium edetate" Compared with GB 10734-1989, The main changes are as follows:

- Standard name changed to "first reference reagent disodium edetate";
- 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 5.3.1);
- Modify the constant current coulometric apparatus diagram (1989 version 4.1.3.4, this edition 5.3.2.4);
- Improve the operation of the pre-titration (1989 version 4.1.4.3, this edition 5.3.3.4);
- Modify the inspection rules (1989 edition Chapter 5, Chapter 6 of this edition);

--- Canceled Appendix B, Appendix C (1989 edition Appendix B, Appendix C);

--- Increasing the calculation method assay results Uncertainty (edition of Appendix B). 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 10734-1989. The first reference reagent Disodium edetate Molecular formula.  $C_{10}H_{14}N_2O_8Na_2 \cdot H_2O$  Structure. Molecular Weight. 372.2381 (according to 2005 international relative atomic mass).

## 1 Scope

China's mandatory national standard for disodium ethylenediaminetetraacetate as a primary chemical. EDTA disodium is the primary standard of complexometric titration, which is how the concentration of metal ions is determined across water analysis, metallurgy and pharmaceuticals: the reagent binds almost every metal cation in a one-to-one complex of very high stability, so one standard solution serves for calcium, magnesium, zinc, lead and dozens of others with only the indicator and the pH changed. Water hardness, the most-run analysis in the world, is an EDTA titration. What makes the disodium salt the standard rather than the free acid is solubility: the acid is nearly insoluble in water, while the salt dissolves readily and can still be obtained and dried to a defined and reproducible hydration state. The standard specifies the requirements, the drying conditions, the assay and the certification of the primary standard grade.

a) high-precision timing constant current source. stability is better than one hundred thousandth of the dynamic characteristics of a good steady flow DC power supply, with  $1.0186 \times 1.0186 \times 10mA$  and  $100mA$  two output current, the current value is determined by the compensation method; the minimum timing resolution  $0.1ms$ , current Timing and synchronization of less than  $0.1ms$ .

b) temperature control standard battery pack. should meet the requirements of JJG153. Range  $1V$ , annual variation of less than  $5\mu V$ .

c) Standard resistance. should meet the requirements JJG116 of. Relative uncertainty is generally not more than  $3 \times 10^{-6}$ .

d) direct radiation galvanometer. resistance  $< 100\Omega$ , critical external resistance  $< 1000\Omega$ , dividing the value of  $< 3 \times 10^{-9}A/indexing$ .

5.3.2.5 end indication circuit (see FIG. 2). Gold amalgam electrode as indicator electrode, a saturated calomel electrode as the reference electrode, the voltage between the two

electrodes is 1.2V. Figure 2 indicates the end of the circuit

5.3.2.6 electrolytic cell apparatus (see Figure 3). An anode compartment (left) and a cathode chamber (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 anode chamber mouth tight with a good pre-treated white rubber Plug 1, respectively inserted through the stopper amalgamated zinc electrodes 2, 3 gold amalgam electrode, a saturated calomel electrode 4, 5 nitrogen inlet, nitrogen outlet pipe 6. The bottom of the anode compartment has 20mm long was stirred in a sealed Teflon tube about 8 magnet. The cathode compartment a platinum electrode 10, a bottom Ministry of casting a silicone gel plug 9. Electrolytic cell unit on magnetic stirrer workbench. 1

- white rubber stopper; 2
- zinc amalgam working electrode; 3
- gold amalgam indicator electrode; 4
- saturated calomel electrode; 5
- nitrogen inlet; 6
- nitrogen outlet pipe; 7
- sample hole; 8
- Silica gel plug. 9; 10

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

GB/T 9724 General rule for determination of pH chemical reagent ( GB/T 9724-2007, ISO 6353-1. 1982, NEQ)

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

GB/T 9729 General method for determination of chloride Chemicals ( GB/T 9729-2007, ISO 6353-1. 1982, NEQ)

GB/T 9735 General method for determination of heavy metals Chemicals ( GB/T 9735-2008, ISO 6353-1. 1982, NEQ)

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

GB/T 9739 General method for determination of iron chemical reagents ( GB/T 9739-2006, ISO 6353-1. 1982, NEQ)

GB 15346 chemical reagent packaging and marking

HG/T 3484 standard chemical reagents glass emulsion and clarity standards JJG99 weight JJG116 standard resistor JJG119-2005 Laboratory pH (acidity) meter JJG153 standard battery JJG1006 a standard material specification

### 3 Water-insoluble, /% <=

0.003 Chloride (Cl), /% <=

0.004 Sulphate (SO<sub>4</sub>), /% <=

0.01 Nitritotriacetic acid (C<sub>6</sub>H<sub>9</sub>NO<sub>6</sub>), /% <=

0.05 Iron (Fe), /% <=0.0005 Copper (Cu), /% <=0.00025 Heavy metals (Pb), /% <=0.001

### 4 Specification

Disodium edetate specifications shown in Table 1. Table

1 Name the first reference Content (C<sub>10</sub>H<sub>14</sub>N<sub>2</sub>O<sub>8</sub>Na<sub>2</sub> · 2H<sub>2</sub>O), /% 99.98 ~ 100.02 pH (50g/L, 25 °C) 4.0 ~

### 5 Test

5.1 Warning Reagents used in this test method are toxic or corrosive, some of the testing process can lead to dangerous situations, the operator should take Appropriate safety and health practices.