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**NATIONAL STANDARD OF THE  
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**Potassium dichromate for industrial use**

工业重铬酸钾

**(English Translation)**

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### Foreword

This standard Chapter 7, Chapter 8 8.1,8.3,8.4, Chapter 9 is mandatory, the rest are recommended.

According to the rules of drafting this standard GB/T 1.1-2009 given.

This standard GOCT2652. 1978 "Industrial dichromate technical conditions" (Russian) technical differences and structural differences see Appendix A and Appendix B.

The standard proposed by China Petroleum and Chemical Industry Federation.

This standard by the National Standardization Technical Committee chemical inorganic chemicals branch (SAC/TC63/SC1).

This standard is mainly drafted by. CNOOC Tianjin Chemical Research & Design Institute, Sichuan Anxian Yinhe built of (Group) Co., Ltd.

### 1 Scope

This standard specifies the requirements, test methods, inspection rules, marking, labeling, packaging, transportation, storage and security industry potassium dichromate.

This standard applies to industrial production mainly as chromium potassium sulfate, chromium oxide, chrome yellow pigment, potassium, matches, enamels, welding electrodes feedstock Potassium dichromate.

## 2 Normative references

The following documents for the application of this document is essential. For dated references, only applies to the version dated paper Pieces. For undated references, the latest edition (including any amendments) applies to this document.

GB 190-2009 dangerous goods packaging logo GB/T 191-2008 Packaging Pictorial signs GB/T 6678 General Principles for Sampling Chemical Products GB/T 6682-2008 specifications and test methods for water analysis laboratory GB/T 8170 rounding off means about rules and determining limiting values GB 12463-2009 transport of dangerous goods packaging technology Preparation HG/T 3696.1-2002 Inorganic chemicals for chemical analysis of standard titration solution Preparation HG/T 3696.2 Inorganic chemicals solution used for chemical analysis of standard impurities Preparations with HG/T 3696.3 Inorganic chemicals Chemical Analysis Molecular formula and molecular weight 3 Molecular formula.  $K_2Cr_2O_7$  Molecular weight. 294.18 (according to 2007 international relative atomic mass)

## 4 Requirements

### 4.1

Appearance. bright orange-red needles or small granular crystals.

### 4.2

Potassium dichromate industry should meet the requirements of Table 1.

Table 1

project

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| Premium grade | First grade | Qualified | Potassium dichromate ( $K_2Cr_2O_7$ in terms) w /% >=                                                                                                                                                            |
|---------------|-------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 99.8          | 99.5        | 99.0      | Sulfate (in terms of $SO_4$ ) w /% <= 0.02 0.05 0.05 Chloride (based on Cl) w /% <= 0.03 0.05 0.07 Sodium (Na) w /% <= 0.4 1.0 1.5 Moisture w /% <= 0.03 0.05 0.05 Water insoluble matter w /% <= 0.01 0.02 0.05 |

### 5.1 Safety Tips

Reagents used in this test method are toxic, corrosive, the operator should be careful as splashed on the skin should be washed with water immediately Wash, severe cases should seek medical care immediately. When using flammable materials, it prohibited the use of

open flame heating.

## 5.2 General Provisions

This standard reagent in the absence of water and other requirements stated, refer to three predetermined analytical reagents and GB/T 6682-2008 of water. The test standard titration solution, impurity standard solution, formulations and products, in the absence of other requirements specified, are by HG/T 3696.1 used, HG/T 3696.2, preparing a predetermined HG/T 3696.3 is.

## 5.3 Visual inspection

In natural light, the appearance was visually determined.

### 5.4.1.1 Method summary

In an acidic medium, hexavalent chromium ions to divalent iron ions in the sample oxidation-reduction reaction, to phthalic acid as indicated Agent titrated solution was titrated to standard ferrous ammonium sulfate solution turned green.

### 5.4.1.2 Reagents

#### 5.4.1.2.1

phosphoric acid.

#### 5.4.1.2.2

sulfuric acid. 14.

#### 5.4.1.2.3

standard ferrous ammonium sulfate titration solution.  $c[(\text{NH}_4)_2\text{Fe}(\text{SO}_4)_2] \sim 0.2\text{mol/L}$ .

Preparation. Weigh about 80g of ferrous ammonium sulfate  $[(\text{NH}_4)_2\text{Fe}(\text{SO}_4) \cdot 6\text{H}_2\text{O}]$  was dissolved in 300mL sulfuric acid solution (17), followed by addition 700mL of water, shake. This calibration solution before use.

Calibration. Weigh about 0.37g finely and at  $120\text{ }^\circ\text{C} \pm 2\text{ }^\circ\text{C}$  dried to a constant reference mass of potassium dichromate, accurate to 0.0001g, Placed in 500mL Erlenmeyer flask, 150mL of water was added to dissolve. Was added a solution of 15mL sulfuric acid, phosphoric acid 5 mL, dropwise with standard ferrous ammonium sulfate Given solution was titrated to yellow-green solution. O-aminobenzoic acid was added 1mL indicator solution and continue the titration to the solution from purple to green as the end point.

Concentration of ammonium ferrous sulfate standard titration solution C, the value in mol/L, calculated according to formula (1).

$$c = mMV \times 10^{-3}$$

Where.

Numerical volume standard titration solution of ammonium ferrous sulfate titration  $V$  --- consumed in milliliters (mL);

--- potassium dichromate reference value of mass  $m$  in grams (G);

$M$  --- potassium dichromate ( $K_2Cr_2O_7$ ) Molar mass values, in units of grams per mole (g/mol) ( $M = 49.03$ ).

Calibration errors shall HG/T 3696.1-2002 specified in 3.6, 3.7.

#### **5.4.1.2.4**

o-aminobenzoic acid indicator solution. 1g/L.

### **5.4.1.3 Apparatus, equipment**

#### **5.4.1.3.1**

weighing bottle.  $\phi 50\text{mm} \times 30\text{mm}$ .

#### **5.4.1.3.2**

electric oven. temperature can be controlled at  $120\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ .

### **5.4.1.4 Analysis of step**

A test solution is prepared 5.4.1.4.1 Weigh 4.99g ~ 5.01g sample, accurate to 0.0001g, was placed in a 150mL beaker, add water dissolved, transferred to 500mL volume Volumetric flask, diluted with water to the mark. This solution is a test solution A, for the content of potassium dichromate, sulfate content (visual turbidimetry) and Determination of sodium content.

#### **5.4.1.4.2 Determination**

Pipette with a pipette 25mL of test solution A, placed in 500mL Erlenmeyer flask, was added 150mL of water, 15 mL of sulfuric acid solution, 5 mL Phosphoric acid solution was titrated to titration with standard ferrous ammonium sulfate solution was yellow-green. O-aminobenzoic acid was added 1mL indicator solution and continue the titration to the solution from purple to green as the end point.

### **5.4.2.1 Method summary**

The sample was dissolved in water, in acidic medium, titrated with standard ferrous ammonium sulfate solution was titrated to the maximum rate of potential change point determination trans it should end, obtained potassium dichromate content.