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

GB 25588-2010

**National food safety standards of food additive potassium
carbonate**

(English Translation)

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Foreword

Appendix A of this standard is a normative appendix.

National Food Safety Standard Food additive potassium carbonate

1 Scope

This standard applies to electrolysis and ion exchange method obtained food additive potassium carbonate.

2 Normative references

The standard file referenced in the application of this standard is essential. For dated references, only the edition date of the note this applies to this standard. For undated references, the latest edition (including any amendments) applies to this standard.

3 Formula and relative molecular mass

Formula 3.1

K_2CO_3

3.2 Relative molecular mass

138.20 (according to 2007 international relative atomic mass)

4 Technical Requirements

4.1

Sensory requirements. comply with Table 1.

Table 1 Sensory requirements

Project requires test methods Color White take appropriate sample is placed in a beaker 50mL watch in natural light Observing the color and texture. Crystalline powder or granular state organization

4.2

Physical indicators. to comply with Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method Potassium carbonate (dry basis), w /% $\geq$ 99.0 Appendix A A.4 Chloride (KCl dollars) (dry basis), w /% $\leq$ 0.015 Appendix A A.7 Sulfur compounds (in terms K₂SO₄) (dry basis), w /% $\leq$ 0.01 Appendix A A.8 Iron (Fe) (dry basis), w /% $\leq$ 0.0010 A.9 in Appendix A Water insoluble matter (dry basis), w /% $\leq$ 0.02 Appendix A A.10 Heavy metals (Pb)/(mg/kg) $\leq$ 10 Appendix A A.11 Arsenic (As)/(mg/kg) $\leq$ 2 Appendix A A.12 Loss on ignition, w /% $\leq$ 0.60 Appendix A A.13 Appendix A (Normative) Testing method A.1 Warning Reagents of this standard test method for use in corrosive, the operator must be careful! Such as water splashed on the skin should immediately Flushing, severe cases should seek medical care immediately. When using flammable, do not use open flame heating.

A.2 General Provisions the standard test methods used in the reagents and water, did not indicate when the other requirements, refer to analytically pure reagents and GB/T 6682-2008 Three water regulations. Used in the test standard titration solution, impurity standard solution, preparations and products, in the absence of other specified requirements, According to HG/T 3696.1, HG/T 3696.2, the provisions of HG/T 3696.3 of preparation.

A.3 Identification Test A.3.1 Reagents and materials A.3.1.1 hydrochloric acid.

A.3.1.2 ethanol.

A.3.1.3 saturated solution of calcium hydroxide.

Weigh 3 g of calcium hydroxide into 1000 mL of water, by vigorous stirring or shaking, place clarified supernatant take backup.

A.3.1.4 magnesium sulfate solution. 120 g/L.

A.3.1.5 ethanol solution of sodium tetraphenylborate. 34 g/L.

A.3.1.6 red litmus paper.

A.3.2 Analysis step

A.3.2.1 Identification of carbonate A.3.2.1.1 take 50 mL 0.1 g/mL of test solution, placed in 250mL conical flask, a solution of hydrochloric acid, which release gases. This gas Introduced into a saturated solution of calcium hydroxide, white turbidity occurs.

A.3.2.1.2 proper amount of 0.1 g/mL of test solution, a solution of magnesium sulfate solution, which occurred in a white precipitate.

A.3.2.2 Identification of potassium ions A.3.2.2.1 proper amount of 0.1 g/mL of test solution was added sodium tetraphenylborate solution, that a large number of white precipitate formed.

A.3.2.2.2 first to colorless combustion flame with hydrochloric acid in the colorless infiltration of platinum wire. Then dipped a little test solution, the colorless flame burning Burning, the flame was observed by cobalt glass purple.

A.4 Determination of potassium carbonate A.4.1 potassium tetraphenylborate gravimetric method (Arbitration Act) A.4.1.1 Method summary in acid medium, potassium carbonate and sodium tetraphenylborate generate potassium tetraphenylborate precipitate. Depending on the quality Tetraphenylboron precipitated potassium chloride deduction, Potassium sulfate content was calculated mass of potassium carbonate.

A.4.1.2 Reagents and materials A.4.1.2.1 ethanol.

A.4.1.2.2 glacial acetic acid. 19.

A.4.1.2.3 ethanol solution of sodium tetraphenylborate. 34 g/L.

A.4.1.2.4 Tetraphenylboron ethanol saturated solution of potassium.

A.4.1.2.5 methyl red indicator solution. 1 g/L.

A.4.1.3 instruments and equipment A.4.1.3.1 sintered glass crucible. filter plate aperture 5 μ m ~ 15 μ m.

A.4.1.3.2 electric oven. capable of controlling the temperature of 120 °C ~ 125 °C.

A.4.1.4 analysis step Weigh 0.8 g ~ 0.85 g calcined at 270 °C ~ 300 °C to constant mass of sample, to the nearest 0.0002 g, is dissolved in water and transferred to 500mL Volumetric flask, dilute to the mark, shake. If the test solution muddy, you need to dry filter, discard the initial 10 mL ~ 15 mL filtrate.

With pipette 25 mL of the test solution was placed in 100 mL beaker, add 35 mL of water, 1 drop of methyl red indicator solution, with glacial acetic acid solution Raised to red, in a water bath heated to 40 °C. Stirring was added dropwise 8.5 mL ethanol solution of sodium tetraphenylborate, placed 10 min to remove, Cool to room temperature. At 120 °C ~ 125 °C drying to constant quality glass sand filtration crucible with potassium tetraphenylborate saturated ethanol solution was transferred with Precipitated and washed with 15 mL each Tetraphenylboron saturated solution of potassium ethanol precipitated three times to four times with, drained. Remove the sand glass crucible with 2 mL Ethanol along the glass wall of the crucible sand wash, dry. Placed in the electric oven, at 120 °C ~ 125 °C dried to constant mass set.

A.4.1.5 Calculation Results Potassium content of potassium carbonate (K_2CO_3) mass fraction w_1 and its value is expressed in%, according to formula (A.1) Calculated.

(ρ) 7931.09269.0 (050 025 1928.0 1 w_{wm} m_w - xx = (A.1) where.

Numerical m_1 -- potassium tetraphenylborate precipitated mass in grams (g);

m - mass of the sample value in units of grams (g);

0.192 8-- the conversion into potassium carbonate, potassium tetraphenylborate coefficient;

w_4 -- determined in accordance with A.7 Chloride (KCl meter) mass fraction, expressed as a percentage;

w_5 -- determined in accordance with A.8 sulfur compounds (in K_2SO_4 meter) mass fraction, expressed as a percentage;

0.926 9-- be converted to potassium chloride coefficient;

Potassium carbonate, potassium sulfate 0.793 1-- The conversion factor is.

Take the arithmetic mean of the parallel determination results of the measurement results, the results of two parallel determination of the absolute difference is not more than 0.3%.

A.4.2 acid-base titration A.4.2.1 Method summary Potassium carbonate in alkaline aqueous solution, titration with hydrochloric acid standard solution titration test solution, according to the consumption of hydrochloric acid standard solution titration, and deduct the amount of sodium carbonate, calcium carbonate, magnesium carbonate, and determine the amount of potassium carbonate.

A.4.2.2 Reagents and materials A.4.2.2.1 hydrochloric acid standard titration solution. c (HCl) = 0.5 mol/L.

A.4.2.2.2 Bromocresol green - methyl red mixed indicator solution.

A.4.2.3 instruments and equipment High temperature furnace. the temperature can be controlled at $270\text{ }^{\circ}\text{C} \sim 300\text{ }^{\circ}\text{C}$.

A.4.2.4 analysis step Weigh approximately 1 g at $270\text{ }^{\circ}\text{C} \sim 300\text{ }^{\circ}\text{C}$ ignition to constant mass of the sample to the nearest 0.0002 g. Placed in 250 mL conical flask, Add 50 mL of water to dissolve. Add 5 drops of Bromocresol green - methyl red mixed indicator solution, titration with hydrochloric acid standard titration solution until the solution turns from green dark red. The solution was boiled for 2 min, after cooling, continue titration to dark red.

Make a blank test simultaneously. In addition to the blank test without the sample, but (except for standard titration solution) the type and amount of addition of reagents and other operations and determined in the same test.

A.4.2.5 Calculation Results Potassium content of potassium carbonate (K_2CO_3) mass fraction w_1 and its value is expressed in%, according to formula (A.2) Calculated.