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

GB/T 687-2011

**Chemical reagent -- Glycerol
(English Translation)**

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1 Scope

This Standard specifies the properties, specifications, tests, inspection rules, packaging and marking of glycerol in chemical reagents.

This Standard applies to the inspection of glycerol in chemical reagents.

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/T 601, Chemical reagent - Preparations of reference titration solutions

GB/T 602, Chemical reagent - Preparations of standard solutions for impurity (GB/T 602-2002, ISO 6353-1:1982, NEQ)

GB/T 603, Chemical reagent - Preparations of reagent solutions for use in test methods (GB/T 603-2002, ISO 6353-1:1982, NEQ)

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

GB/T 610-2008, Chemical reagent - General method for the determination of arsenic (ISO 6353-1:1982, NEQ)

GB/T 6682, Water for analytical laboratory use - Specification and test methods (GB/T 6682-2008, ISO 3696:1987, MOD)

GB/T 9728, Chemical reagent - General method for the determination of sulphate (GB/T 9728-2007, ISO 6353-1:1982, NEQ)

GB/T 9729, Chemical reagent - General method for the determination of chloride (GB/T 9729-2007, ISO 6353-1:1982, NEQ)

Sucrose and glucose Qualified Qualified

Substances that reduce silver Qualified Qualified

Readily carbonizable substances Qualified Qualified

5.1 Warning

Some of the reagents which are used in this test method are toxic or corrosive; therefore, some test procedures may cause dangerous conditions, and the operator shall take appropriate safety and health measures.

5.2 General provisions

Unless otherwise specified in this chapter, all the used standard titration solutions, standard solutions, preparations and products are prepared in accordance with the provisions of GB/T 601, GB/T 602, GB/T 603; the experimental water shall meet the specifications of grade-III water in GB/T 6682;

the samples are weighed to the nearest 0.01 g; the used solutions which are expressed in "%" are all mass fractions.

5.3.1.1 Preparation of sodium periodate solution

Weigh 60 g of sodium periodate; put it in a beaker; add 120 mL of sulfuric acid standard titration solution [$c(\text{H}_2\text{SO}_4) = 0.1 \text{ mol/L}$] and a small amount of water to dissolve; do not heat during dissolution. If the solution is not clear, use a sand funnel to filter (do not use the filter paper to filter); transfer the solution to a 1

000 mL volumetric flask; dilute to the mark.

5.3.1.2 Preparation of neutral ethylene glycol solution

Take 50 mL of ethylene glycol to mix with 50 mL of water; add 5 drops of bromothymol blue indicator solution (1 g/L); use sodium hydroxide standard titration solution [$c(\text{NaOH}) = 0.05 \text{ mol/L}$] to titrate until the solution becomes pure blue. Prepare before use.

5.3.2 Determination

Weigh 0.35 g of sample; accurate to 0.000 1 g; put it in a conical flask with a stopper; dilute it to 50 mL. Add 5 drops of bromothymol blue indicator solution (1 g/L); the solution shall be

green or yellow-green; if the solution is blue-green,

[$c(\text{NaOH}) = 0.02 \text{ mol/L}$] to titrate until the solution becomes pure blue; keep it for 30 s. Add 30 g (24 mL) of sample; shake well; if the solution is yellow, use sodium hydroxide standard titration solution [$c(\text{NaOH}) = 0.02 \text{ mol/L}$] to titrate until the solution becomes pure blue; keep it for 30 s. Calculate the result according to the provisions of 5.1.2 in GB/T 9736-2008.

5.7 Alkalinity

Take 100 mL of carbon dioxide-free water; add 3 drops of bromothymol blue indicator solution (1 g/L); use sodium hydroxide standard titration solution

[$c(\text{NaOH}) = 0.02 \text{ mol/L}$] to titrate until the solution becomes pure blue; keep it for 30 s. Add 30 g (24 mL) of sample; shake well; if the solution is pure blue, use hydrochloric acid standard titration solution [$c(\text{HCl}) = 0.02 \text{ mol/L}$] to titrate until the solution becomes yellow; keep it for 30 s. Calculate the result according to the provisions of 5.1.2 in GB/T 9736-2008.

5.8.1 Preparation of test solutions

Weigh 62.5 g (50 mL) of sample; dissolve in water; dilute to 100 mL.

5.8.2 Determination

Take 8 mL of the test solution; measure according to the provisions of GB/T

9729; shake well. The turbidity of the solution shall not be greater than the standard turbidity solution.

The standard turbidity solution is prepared by taking the standard solution that contains the following amount of chloride:

Analytical pure.....0.005 mg Cl;

Chemical pure...0.050 mg Cl.

Dilute to 8 mL; treat as the test solution of the same volume at the same time.

5.9 Sulfate

Take 8 mL of the test solution (5.8.1); add 5 mL of methanol; dilute to 20 mL;

add 0.5 mL of hydrochloric acid solution (20%) to acidify; measure according to

GB/T 9728. The turbidity of the solution shall not be greater than the standard turbidity solution.

The standard turbidity solution is prepared by taking the standard solution that contains the following amount of sulfate:

Analytical pure.....0.025 mg SO₄;

M -- the numerical value of the molar mass of tributyl glyceride, in grams per mole (g/mol)
[M(C₁₅H₂₆O₆) = 100.8];

m -- the value of sample mass, in grams (g).

5.15 Sucrose and glucose

Take 10 mL of the test solution (5.8.1); add 1 mL of sulfuric acid solution (20%);

heat on the water bath for 5 min; add 2 mL of sodium hydroxide solution (100 g/L) and 5 mL of Fehring's solution; then, heat for 10 min. The solution must not appear cloudy or precipitate.

5.16.1 Warning

The silver-ammonia mixed solution is explosive and shall be discarded after use.

5.16.2 Determination

Weigh 5 g (4 mL) of the sample; add 5 mL of ammonia solution (5%); shake well; heat to 60 °C in a water bath; add 0.5 mL of silver nitrate solution (17 g/L);

shake well; place in a dark place for 5 min. The dark color of the solution must not be darker than the color of the same amount of sample that is treated without the addition of silver nitrate solution.

5.17 Readily carbonizable substances

Weigh 6.25 g (5 mL) of the sample; add 5 mL of sulfuric acid (guaranteed reagent, 95% ± 0.5%) dropwise when stirring. At this time, the temperature shall not exceed 50 °C. Leave for 30 min. The color of the solution must not be darker than the standard color F or P that is specified in GB/T 9737.

6 Inspection rules

Perform sampling and acceptance according to HG/T 3921.

7 Packaging and marking

Perform packing, storage and transportation according to the provisions of GB

15346; give signs, of which:

Packaging unit: category 4;

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