

ICS 67.220.20

CCS X 42



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

GB 25554-2010

**National food safety standards of food additives
polyoxyethylene (20) sorbitan monooleate (Tween 80)
(English Translation)**

Issued on: December 21, 2010

Implemented on: February 21, 2011

Issued by: Ministry of Health of the People's Republic of China

Table of Contents

Foreword

1 Scope

2 Normative reference documents

3 Technical requirements

Foreword

Appendix A of this standard is a normative appendix.

National standards for food safety Food Additives Polyoxyethylene (20) Sorbitan Monooleate (Tween 80)

1 Scope

This standard applies to sorbitan monooleate and ethylene oxide as raw materials, the addition reaction of the food additives made of polyoxyethylene (20) sorbitan monooleate (Tween 80).

2 Normative reference documents

The documents cited in this standard are indispensable for the application of this standard. Any reference to the date of the document, only the date of the edition this applies to this standard. For undated references, the latest edition (including all amendments) applies to this standard.

3 Technical requirements

3.1

sensory requirements. should be consistent with the provisions of Table 1.

Table 1 sensory requirements

The project requires a test method Color at room temperature for the light yellow Tissue state at room temperature for the oil Take appropriate laboratory samples, placed in a clean, dry glass tube, in natural light Line, visual observation

3.2

Physical and chemical indicators. should be consistent with the provisions of Table 2.

Table 2 Physical and chemical indicators

Item Index Test Method Acid value (in KOH)/(mg/g) ≤ 2.0 Appendix A A.4 Saponification value (in KOH)/(mg/g) 45 ~ 55 Appendix A A.5 Hydroxyl value (in KOH)/(mg/g) 65 ~ 80 Appendix A A.6 Moisture, w /% ≤ 3.0 Appendix A A.7 Residue on ignition, w /% ≤ 0.25 Appendix A A.8 Arsenic (As)/(mg/kg) ≤ 3 Appendix A A.9 Lead (Pb)/(mg/kg) ≤ 2 Appendix A. A.10 Oxyethylene group (calculated as C_2H_4O), w /% 65.0 to 69.5 GB/T 7385 Appendix A (Normative appendix) Testing method A.1 Warning Some of the test procedures specified in the test method may result in a hazardous situation. Operators should take appropriate safety and protective measures.

A.2 General provisions Unless otherwise stated, only the reagents identified as analytical reagents and the tertiary water specified in GB/T 6682-2008 are used in the analysis.

Standard titration solution used in the test method, standard solution for the determination of impurities, preparations and articles, in the absence of other requirements, GB/T 601, GB/T 602 and GB/T 603.

A.3 Identification test A.3.1 Reagents and materials A.3.1.1 Sodium hydroxide solution. 43 g/L.

A.3.1.2 cobalt thiocyanate solution. 17.4 g of ammonium thiocyanate, 2.8 g of cobalt nitrate, dissolved in water to 100 mL.

A.3.1.3 Hydrochloric acid solution. 23 77.

A.3.2 Analysis steps A.3.2.1 Take 1 mL of laboratory sample and dissolve in 20 mL of water. Take the solution 10mL, placed in 25mL test tube, add 5mL thiocyanate Cobalt ammonium solution, mix, add 5mL of chloroform, shaking mixed, after standing, the chloroform layer was blue.

A.3.2.2 Take 1 mL of laboratory sample and dissolve in 20 mL of water. Take the solution 5mL, placed in 25mL test tube, add 5mL of hydroxide Sodium solution, boil for a few minutes, cooling, acidified with hydrochloric acid solution, milky white turbidity.

A.3.2.3 Take 6mL of laboratory samples, placed in 25mL test tube, add 4mL of water to mix, was jelly.

A.4 Determination of acid value A.4.1 Methodological Summary the samples were heated and dissolved in isopropanol and toluene. The titration of titration with sodium hydroxide was carried out with phenolphthalein as the indicator, and the solution was titrated with potassium hydroxide (KOH), the value is expressed in milligrams per gram (mg/g).

A.4.2 Reagents and materials A.4.2.1 isopropanol.

A.4.2.2 Toluene.

A.4.2.3 sodium hydroxide standard titration solution. $c(NaOH) = 0.1mol/L$.

A.4.2.4 phenolphthalein indicator solution. 10g/L.

A.4.3 Analysis steps Weigh about 5g of laboratory samples, accurate to 0.0001g, placed in a conical flask, add isopropyl alcohol and toluene 40mL, heated to dissolve solution. Add 5 drops of phenolphthalein indicator solution, titration with sodium hydroxide titration solution to the solution was pink, keep 30s does not fade for the end.

A.4.4 Calculation of results the acid value w_1 , expressed in potassium hydroxide (KOH), is expressed in milligrams per gram (mg/g) and is calculated according to formula (A.1) $w_1 = \frac{V_1 c M}{m_1}$ (A.1) where.

V_1 --- sodium hydroxide standard titration solution (A.4.2.3) volume of the value in milliliters (mL);

c - the exact value of sodium hydroxide standard titration solution concentration in moles per liter (mol/L);

m_1 --- the mass of the sample, in grams (g);

M - the molar mass of potassium hydroxide in grams per mole (g/mol) [$M = 56.109$].

The arithmetic mean of the results of two parallel measurements is the result of the report. The absolute difference between the two parallel determinations is not greater than 0.2 mg/g.

A.5 Determination of saponification value A.5.1 Reagents and materials A.5.1.1 anhydrous ethanol.

A.5.1.2 Potassium hydroxide solution. 40 g/L.

A.5.1.3 Standard titration solution for hydrochloric acid. $c(\text{HCl}) = 0.5 \text{ mol/L}$.

A.5.1.4 phenolphthalein indicator solution. 10g/L.

A.5.2 Analysis steps Approximately 2.5 g of laboratory samples were weighed to 0.0001 g, placed in a 250 mL Erlenmeyer flask, $(25 \pm 0.02) \text{ mL}$ of hydrogen Potassium ethanol solution, connected to the condenser, placed in a water bath heated reflux 1h, slightly cold with 10mL anhydrous ethanol leaching condenser, remove the cone Bottle, add 5 drops of phenolphthalein indicator solution, titrated with hydrochloric acid standard titration solution to the red just disappeared, heating the test solution to boiling. If there is powder Red, continue to titration to the red disappearance is the end point.

At the same time as the measurement, the same amount of the reagent solution was used as a blank test in the same manner as in the measurement.

A.5.3 Calculation of results the saponification value w_2 , expressed as potassium hydroxide (KOH), is expressed in milligrams per gram (mg/g), calculated according to formula (A.2) $w_2 = \frac{(V_0 - V_2) c M}{m_2}$ (A.2) where.

V_2 --- sample consumption of hydrochloric acid standard titration solution (A.5.1.3) volume of the value in milliliters (mL);

V0 --- blank test consumption of hydrochloric acid standard titration solution (A.5.1.3)
volume of the value in milliliters (mL);

c - the exact value of the standard titration solution for hydrochloric acid, in moles per liter (mol/L);

m2 --- the mass of the sample, in grams (g);

M - the molar mass of potassium hydroxide in grams per mole (g/mol) [M = 56.109].

The arithmetic mean of the results of two parallel measurements is the result of the report.
The absolute difference between the two parallel determinations is not greater than 1 mg/g.

A.6 Determination of hydroxyl value A.6.1 Reagents and materials A.6.1.1 pyridine.
phenolphthalein as indicator, with c (HCl) = 0.1mol/L hydrochloric acid solution and.

A.6.1.2 n-butanol. phenol as the indicator, with potassium hydroxide ethanol standard
titration solution and.

A.6.1.3 Acetylating agent. Acetic anhydride and pyridine were mixed in 1 3 and stored in a
brown bottle.

A.6.1.4 Potassium hydroxide ethanol standard titration solution. c (KOH) = 0.5mol/L.

A.6.1.5 phenolphthalein indicator solution. 10g/L.

A.6.2 Analysis steps Approximately 2.2 g of laboratory samples were weighed to 0.0001 g,
placed in a 250 mL Erlenmeyer flask, (5 ± 0.02) mL of acetyl Chemical agent, connected to
the condenser, placed in a water bath heated to reflux 1h. Add 10 mL of water from the top
of the condenser to the conical flask and continue heating After 10 min, cool to room
temperature. Rinse the condenser with 15 mL of n-butanol, remove the condenser, and
rinse the wall with 10 mL of n-butanol. plus Into the 8 drops of phenolphthalein indicator
solution, titration with potassium hydroxide ethanol titration solution to the solution was pink
is the end point.

At the same time as the measurement, the same amount of the reagent solution was used
as a blank test in the same manner as in the measurement.

To calibrate the free acid, weigh about 10g of laboratory samples, accurate to 0.01g. Placed
in a conical flask, add 30 mL of pyridine, add 5 drops of phenolphthalein indicator solution,
titration with potassium hydroxide ethanol titration solution to the solution was pink.

A.6.3 Calculation of results Hydroxyl value of w3, potassium hydroxide (KOH), the value in
milligrams per gram (mg/g), according to formula (A.3).

(V0-V3) cM

V4cM

Where.