

ICS 67.220.20

CCS X 42



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

GB 1886.12-2015

Replacing GB 1916-2008

**National Food Safety Standard -- Food Additives -- Butylated
hydroxyanisole (BHA)**

食品安全国家标准 食品添加剂 丁基羟基茴香醚 (BHA)

(English Translation)

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Foreword

This standard replaces GB 1916-2008 "food additive tert-butyl-4-hydroxy anisole." this standard compared with GB 1916-2008, the main changes are as follows.

--- Standard name was changed to "national food safety standards for food additives butyl hydroxy anisole (BHA)".

National Food Safety Standard Food Additives butylhydroxyanisole (BHA)

1 Scope

This standard applies to hydroxyanisole or hydroquinone and tertiary butyl alcohol produced by the reaction of a food additive butyl hydroxy anisole (BHA).

2.1 Chemical Name

Formula 2.2

C₁₁H₁₆O₂

2.3 Formula

2.3.1 2-tert-butyl-4-hydroxy-anisole 2.3.2 3-tert-butyl-4-hydroxy-anisole

2.4 Relative molecular mass

180.24 (according to 2007 international relative atomic mass)

3.1 Sensory requirements

Sensory requirements shall comply with the requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods White or slightly yellow color Crystalline or waxy solid state
Odor with a slight characteristic odor Take the right amount of sample is placed in a clean, dry white porcelain dish, self Natural light, to observe its color and status, and smell the odor

3.2 Physical and Chemical Indicators

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

Table 2. Physical and chemical indicators

Item Index Test Method Butylhydroxyanisole (C₁₁H₁₆O₂) content, w /% ≥ 98.5 Appendix A A.3 Melting point/°C 48 ~ 63 GB/T 617 Sulfated ash, w /% ≤ 0.05 Appendix A A.4 Arsenic (As)/(mg/kg) ≤ 2.0 GB 5009.76 Lead (Pb)/(mg/kg) ≤ 2.0 GB 5009.75 Appendix A Testing method A.1 General Provisions this standard reagents and water in the absence of other specified requirements, refer to the three water analytical reagent and GB/T 6682 regulations. test in the standard titration solution, impurity measurement standard solution, preparations and products, did not indicate when the other requirements, according to GB/T 601, GB/T 602 and GB/T 603 provisions prepared. Solution was used in the tests did not indicate what is formulated with solvent, it refers to an aqueous solution.

A.2 Identification Test A.2.1 solubility Insoluble in water, soluble in ethanol and propylene glycol.

A.2.2 color reaction A.2.2.1 Reagents and materials A.2.2.1.1 ethanol solution. 72% (volume fraction).

A.2.2.1.2 2,6- dichloro-quinone imine chlorine solution. Weigh 0.1g 2,6- dichloro-quinone imine dissolved chlorine 1000mL ethanol.

A.2.2.1.3 sodium borate solution. Weigh 2g of sodium borate (Na₂B₄O₇ · 10H₂O) was dissolved in 100mL of water.

A.2.2.2 Identification Weigh 0.1g sample was dissolved in ethanol 1000mL, whichever 5mL of this solution was added 2mL sodium borate and 1mL 2,6-Dichloro-quinone imine chlorine solution, mixed it should be blue.

A.3 Determination of butylhydroxyanisole (C₁₁H₁₆O₂) Content A.3.1 Reagents and materials A.3.1.1 4- tert-butylphenol.

A.3.1.2 acetone.

A.3.1.3 3- tert-butyl-4-hydroxy-anisole (3-BHA) and 2-tert-butyl-4-hydroxy-anisole (2-BHA) standard.

A.3.2 Instruments and Equipment Gas chromatograph. with hydrogen flame ionization detector.

A.3.3 reference chromatographic conditions A.3.3.1 Column. 1.8m x 2mm (i.d.) stainless steel column or other equivalent column, filled with 10% GEXE-60 silicone or other Equivalents.

A.3.3.2 flow rate. 30mL/min.

A.3.3.3 Column temperature. 175 °C ~ 185 °C.

A.3.3.4 carrier gas. helium.

A.3.3.5 Injection volume. 5μL.

A.3.4 Analysis step

A.3.4.1 Preparation of internal standard solution Weigh about 500mg 4- tert-butyl-phenol (accurate to 0.2mg), dissolve with acetone and set the volume to 100mL.

A.3.4.2 Preparation of standard solutions Weigh approximately 90mg 3- tert-butyl-4-hydroxy anisole (3-BHA) standards about 10mg 2- t-butyl-4-hydroxy-anisole (2-BHA) standard (accurate to 0.2mg), dissolve with the internal standard solution and dilute to 10mL, making 3-BHA and the final concentration of 2-BHA Respectively 9mg/mL and 1mg/mL.

A.3.4.3 Preparation of sample solution Weigh about 100mg sample (accurate to 0.2mg), dissolve with the internal standard solution and dilute to 10mL.

A.3.4.4 Determination in A.3.3 reference chromatographic conditions, the standard solution and the sample solution each injection about 5μL, record the chromatograms. Measured peak isomers area.

A.3.5 Calculation Results Sample mass fractions of each isomer w_i , according to formula (A.1) Calculated.

$\rho_{oi} \times$

100% (A.1)

Where.

Concentration ρ_{oi} --- standard solution in 3-BHA or 2-BHA in milligrams per milliliter (mg/mL);

R_u --- or a sample solution chromatogram area ratio of 2-BHA peak and the internal standard solution peak area 3-BHA;

R_i --- or standard solution chromatogram area ratio of 2-BHA peak and the internal

standard solution peak area 3-BHA;

10 --- sample volume of the treated volume in milliliters (mL);

M1 --- the quality of the sample, in milligrams (mg).

By the formula (A.1) calculated two isomers of 3-BHA and 2-BHA content is the sum of butylhydroxyanisole (C₁₁H₁₆O₂) content.

A.4 Determination of sulfated ash A.4.1 Reagents and materials Concentrated sulfuric acid.

A.4.2 Instruments and Equipment A.4.2.1 Crucible. a quartz or platinum crucible.

A.4.2.2 dryer (with color gel desiccant).

A.4.2.3 high-temperature furnace.

A.4.3 Analysis step

Weigh about 5g samples, accurate to 0.0001g, placed in the constant weight of the crucible, slowly burn to completely carbonized. Let cool, add 0.5mL ~ 1.0mL of concentrated sulfuric acid to make it moist, heated at a low temperature to after smoke divisible by firing at 800 ° C ± 25 ° C to complete a high temperature furnace Ashing. Removed, placed in a desiccator to cool and weigh. Then at 800 ° C ± 25 ° C to constant weight burning.

A.4.4 Calculation Results Sulfated ash mass fraction w, according to equation (A.2) Calculated.

$m_3 - m_2$

$m_4 - m_2 \times$

100% (A.2)

Where.

m_3 --- after ignition and the sample crucible mass in grams (g);

m_2 --- crucible mass in grams (g);

Quality m_4 --- sample before ignition and crucible in grams (g).

The test results mean of two parallel determination results shall prevail (two decimal places). Twice under repeated condition alone Li absolute difference between the measurement results shall not exceed 10% of the arithmetic mean.