



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

GB 1886.184-2016

**National food safety standard - Food additives - Sodium
Benzoate**

食品安全国家标准

(English Translation)

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1 Application Scope

This Standard applies to food additive sodium benzoate; the food additive is made from benzoic acid which is reacted with sodium hydroxide or sodium bicarbonate.

Benzoic acid is made by catalytic oxidation of petroleum toluene; sodium hydroxide or sodium bicarbonate is made with the method of ion exchange membrane.

2 Structural Formula, Molecular Formula and Relative

Molecular Mass

2.2 Molecular formula

$C_7H_5O_2Na$

2.3 Relative molecular mass

144.11 (in accordance with International Standard Relative Atomic Masses 2011)

3.1 Sensory requirements

Sensory requirements shall be as specified in Table 1.

Table 1 - Sensory Requirements

Item	Requirement	Test method
Color	White	Take an appropriate amount of specimen to place on a clean, dry white porcelain dish; observe its color and
State	Granules or crystalline powder	

Annex A

Test Methods

A.1 General

Unless specified otherwise, all reagents and water used in this Standard are analytically pure reagents and grade 3 water specified in GB/T 6682. Unless specified otherwise, all standard solutions used in tests, standard solutions used for the determination of impurities, preparations and products are prepared as specified in

GB/T 601, GB/T 602, GB/T 603. A solution used in test refers to an aqueous solution if the solvents used for its preparation are not specified.

A.2 Identification test

A.2.1 Reagents and materials

A.2.1.1 Hydrochloric acid solution: 1 + 2.

A.2.1.2 Ferric chloride solution: 100 g/L.

A.2.2 Identification of benzoate anion

Add 1 drop of ferric trichloride solution in specimen solution (100 g/L) to generate ochreous precipitates; add hydrochloric acid for acidification to separate white precipitates.

A.2.3 Identification of sodium element

Weigh about 0.2 g of specimen to dissolve in 10 mL of water; use platinum wire to dip hydrochloric acid solution to burn on a colorless flame until colorless; then dip a small amount of test solution to burn on a colorless flame. The flame shall appear bright yellow.

A.3 Determination of sodium benzoate content (based on a dry basis)

A.3.1 Method summary

Neutral reaction occurs between hydrochloric acid and sodium benzoate. Use benzoic acid generated from ether extraction; then calculate the content of benzoic acid in accordance with the consumption of hydrochloric acid standard titration solution.

A.3.2 Reagents and materials

A.3.2.1 Diethyl ether.

A.3.2.2 Hydrochloric acid standard titration solution: $c(\text{HCl}) = 0.5 \text{ mol/L}$.

Weigh 1.0 g of specimen, accurate to 0.000 1 g; add 20 mL of water free of carbon dioxide to dissolve; add 2 drops of phenolphthalein indicator solution. If the test solution appears colorless, add 0.20 mL of sodium hydroxide standard titration solution and then the test solution appears light red; if the test solution appears light red, add 0.20 mL of hydrochloric acid standard titration solution and then the light red color shall disappear.

A.7 Determination of heavy metals (based on Pb)

A.7.1 Reagents and materials

A.7.1.1 Hydrochloric acid solution: 234 -> 1 000. The content of HCl in this solution shall be 9.5% ~ 10.5%.

A.7.1.2 Thioacetamide solution: take 4 g of thioacetamide; add water to dissolve; add dropwise to 100 mL; store in a refrigerator. Take 5.0 mL of mixture (composite of 15.0 mL of 40 g/L sodium hydroxide solution, 5.0 mL of water and 20.0 mL of glycerine);

add 1.0 mL of thioacetamide solution; heat on a water bath for 20 s immediately before use.

A.7.1.3 pH 3.5 acetate buffer solution: prepared as specified in GB 5009.74.

A.7.1.4 Lead standard working solution (10 µg/mL): prepared as specified in GB 5009.74.

A.7.2 Apparatus

Nessler tube: 25 mL.

A.7.3 Analytical procedure

A.7.3.1 A tube: take a Nessler tube; add 1.0 mL of lead standard working solution and 2 mL of pH 3.5 acetate buffer solution before adding water to dilute to 25 mL.

A.7.3.2 B tube: take 2.0 g of specimen to place in a beaker; add 45 mL of water; keep stirring; add dropwise 5 mL of hydrochloric acid before filtering; separate 25 mL of filtrate and store in a Nessler tube.

A.7.3.3 C tube: take 1.0 g of specimen to place into a Nessler tube; add an appropriate amount of water to dissolve; then add 1.0 mL of lead standard working solution (10 µg/mL) and 2.0 mL of pH 3.5 acetate buffer solution before using water to dilute to 25 mL.

A.7.3.4 Add separately 2 mL of thioacetamide test solution into three tubes, A, B and

C; shake up; store for 2 min; observe longitudinally from top to bottom on a white background. If the chromaticity of C tube is not lighter than that of A tube and the chromaticity of B tube is not darker than that of A tube, then it can be decided that the content of heavy metals (based on Pb) is lower than 10 mg/kg.