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

GB/T 3729-2023

n-Butyl acetate for industrial use

工业用乙酸正丁酯

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Foreword

This document was issued on 7 September 2023 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 April 2024.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

1 Scope

GB/T 3729-2023 covers n-butyl acetate for industrial use, the ester solvent obtained by esterification - the technical requirements gathered into a single specification table, the test method for each of them, the inspection rules, and the marking, packaging, transport and storage. The test methods clause opens with its own warning that some of the procedures can create a dangerous situation and that operators are to take protective measures, and an informative safety appendix closes the document. The inspection rules divide the work in two: appearance, chroma, n-butyl acetate content, n-butyl alcohol, moisture and acidity are checked batch by batch as factory inspection, while type inspection covers every item in the table. That short batch list is chosen rather than merely convenient. Moisture and acidity are what turn a drum of ester solvent into a problem downstream, since together they drive hydrolysis in storage and reappear as blush or as loss of adhesion in a film that was mixed to the right formula, and chroma is what a clear coat cannot hide. Marking then ties each drum back to its maker and batch. Written for solvent producers, coating and adhesive formulators, and the laboratories that release incoming drums.

This document specifies the technical requirements, test methods, inspection rules and

marking, packaging, transportation and storage of n-butyl acetate for industrial use.

This document applies to n-butyl acetate for industrial use produced by esterification of acetic acid and n-butanol in the presence of a catalyst.

NOTE. The molecular formula of n-butyl acetate is $C_6H_{12}O_2$, the structural formula is $CH_3COO(CH_2)_3CH_3$, and the relative molecular mass is 116.16 (according to the 2022 International

Relative Atomic Mass).

2 Normative references

The provisions of the following documents constitute the essential clauses of this document through normative references in this text. Among them, for referenced documents with dates, only the versions corresponding to the dates are applicable to this document; for referenced documents without dates, the latest versions (including all amendments) are applicable to this document.

GB 190 Packing symbol of dangerous goods

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

GB/T 603 Chemical reagent - Preparations of reagent solutions for use in test methods

GB/T 3143 Colour determination method of liquid chemicals (Hazen unit - Platinum-cobalt scale)

GB/T 3723 Sampling of chemical products for industrial use - Safety in sampling

GB/T 4472 Determination of density and relative density for chemical products

GB/T 6283 Chemical products - Determination of water Karl - Fischer method (general method)

GB/T 6324.2 Test method of organic chemical products - Part 2.Determination of dry residue after evaporation on a water bath for volatile organic liquids

GB/T 6324.8 Test methods of organic chemical products - Part 8.Determination of water of liquid products - Karl - Fischer coulometric method

GB/T 6678 General principles for sampling chemical products

GB/T 6680 General rules for sampling liquid chemical products

GB/T 6682 Water for analytical laboratory use - Specification and test methods

GB/T 8170 Rules of rounding off for numerical values & expression and judgment of limiting values

GB/T 9722 Chemical reagent - General rules for the gas chromatography

3 Terms and definitions

There are no terms or definitions that require definition in this document.

4 Technical requirements

The n-butyl acetate for industrial use shall comply with the requirements of Table 1.

5 Test methods

WARNING -- Some test procedures specified in the test methods may lead to dangerous situations. Operators shall take appropriate safety and protective measures.

5.1 General provisions

The reagents and water used in this document, unless otherwise specified, refer to analytical reagents and Grade III water specified in GB/T 6682.

The standard titration solutions, preparations and products used in the test shall be prepared in accordance with the provisions of GB/T 601 and GB/T 603 unless otherwise specified.

5.2 Determination of appearance

Add an appropriate amount of sample into a stoppered colorimetric tube and observe visually under natural light or fluorescent light.

5.3 Determination of chromaticity

Carry out the test according to the method specified in GB/T 3143.

5.4 Determination of n-butyl acetate, n-butanol, benzene, methylbenzene, ethylbenzene and xylene

5.4.1 Principle of the method

Using the capillary column gas chromatography, under selected working conditions, the sample is vaporized and then passed through the chromatographic column to separate the components, which are detected by a hydrogen flame ionization detector and quantified by the corrected area normalization method.

5.4.2 Reagents

5.4.2.1 Nitrogen. with a volume fraction of not less than 99.999%, purified by silica gel and deoxygenation tube.

5.4.2.2 Hydrogen. with a volume fraction of not less than 99.999%, purified by silica gel or molecular sieve.

5.4.2.3 Air. Purified by silica gel or molecular sieve.

5.4.2.4 n-Butanol, benzene, methylbenzene, ethylbenzene, p-xylene, o-xylene, m-xylene. chromatographically pure.

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

The arithmetic mean of the results of two parallel measurements is taken as the measurement result, and the absolute difference between the two parallel measurement results shall not be greater than 0.001%.

5.7 Determination of density

The density is measured according to the density meter method in GB/T 4472. In the range of 0 °C~40 °C, the temperature correction coefficient of the sample density is 0.0010 g/(cm³ · °C).

The arithmetic mean of the results of two parallel measurements is taken as the measurement result. The absolute difference between the two parallel measurement results shall not be greater than 0.0005 g/cm³.

5.8 Determination of evaporation residue

The test is carried out according to the method specified in GB/T 6324.2, with a sample size of 200 g.

The arithmetic mean of the results of two parallel measurements is taken as the measurement result, and the absolute difference between the two parallel measurement