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# Octanol (2-ethylhexanol) for industrial use

工业用辛醇(2-乙基己醇)

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# Table of Contents

Foreword ..... 3

1 Scope ..... 4

2 Normative references ..... 4

3 Technical requirements ..... 5

4 Test methods ..... 5

5 Inspection rules ..... 13

6 Marks and accompanying documents ..... 14

7 Packaging, transportation and storage ..... 15

Annex A (Normative) Typical chromatogram for the determination of 2-ethylhexanol and impurities, and the relative retention value and relative mass correction factor of each component ..... 16

Annex B (Informative) Safety ..... 18

# Octanol (2-ethylhexanol) for industrial use

## 1 Scope

This Standard specifies technical requirements, test methods, inspection rules, marks and accompanying documents, packaging, transportation and storage for octanol (2-ethylhexanol) for industrial use.

This Standard is applicable to octanol (2-ethylhexanol) for industrial use prepared by propylene oxo synthesis method and acetaldehyde condensation method.

Molecular formula: $C_8H_{18}O$

Relative molecular mass: 130.23 (according to 2016 international relative atomic mass)

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 601, *Chemical reagent - Preparations of standard volumetric solutions*

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

GB/T 2013, *Standard test method for density of liquid petrochemical products*

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

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

GB/T 6324.8, *Test methods of organic chemical products - Part 8: Determination of water of liquid products - Carl-Fischer coulometric method*

GB/T 6678, *General principles for sampling chemical products*

GB/T 6680, *General rules for sampling liquid chemical products*

The reagents and water used in this Standard, when other requirements are not specified, refer to analytically-pure reagents and grade three water that meets the requirements of GB/T 6682. The standard titration solution, standard solution for impurity determination, preparations and products used in the test are all prepared in accordance with the provisions of GB/T 601 and GB/T 603 when other requirements are not specified.

### 4.2 Determination of chromaticity

According to GB/T 3143.

### 4.3 Determination of density

According to GB/T 2013. The temperature correction coefficient K value of the sample density is 0.00073 g/(cm$^3$ • °C).

Take the arithmetic mean of two parallel determination results as the determination result. The absolute difference between the two parallel determination results is not more than 0.0005g/cm$^3$.

### 4.4 Determination of mass fraction of 2-ethylhexanol and 2-ethyl-4-methylpentanol

#### 4.4.1 Principle

Inject an appropriate amount of specimen into the gas chromatograph. 2-Ethylhexanol and impurities are effectively separated on a capillary column. Use a hydrogen flame ionization detector (FID) to measure the peak area of each component. Use the corrected area normalization method to calculate the concentration of each component. After deducting the water, calculate the content of 2-ethylhexanol, 2-ethyl-4-methylpentanol and other impurities.

#### 4.4.2 Reagents and materials

**4.4.2.1** 2-ethyl-4-methylpentanol: The mass fraction is not less than 99.6%.

**4.4.2.2** 2-ethylhexanol: The mass fraction is not less than 99.6%.

**4.4.2.3** Nitrogen: The volume fraction is not less than 99.99%. It is dried and purified by silica gel and 5A molecular sieve.

**4.4.2.4** Hydrogen: The volume fraction is not less than 99.99%. It is dried and purified by silica gel and 5A molecular sieve.

**4.4.2.5** Air: It is dried and purified by silica gel and 5A molecular sieve.

#### 4.4.3 Instruments

**4.4.3.1** Gas chromatograph: Equipped with hydrogen flame ionization detector

hydroxide ethanol consumed by the sample, in milliliters (mL);

$V_0$ - The blank consumption of potassium hydroxide ethanol standard titration solution (see 4.6.2.4) volume, the unit is milliliters (mL);

0.1282 - The mass of 2-ethylhexanal in grams equivalent to 1.00mL of potassium hydroxide ethanol standard titration solution [c(KOH)=1.000mol/L];

ρ - The density of the sample at 20°C, in grams per cubic centimeter ($g/cm^3$);

V - The volume of the sample, in milliliters (mL).

Take the arithmetic mean of two parallel determination results as the determination result. The absolute difference between the two parallel determination results is not more than 0.005%.

### 4.7 Sulfuric acid color test

#### 4.7.1 Principle

Under certain conditions, use sulfuric acid to process the specimen. Compare the color produced by the specimen with the same volume chromaticity standard.

#### 4.7.2 Reagents

Sulfuric acid: Guaranteed reagent.

#### 4.7.3 Test steps

Use sulfuric acid solution to clean the used instruments. Then use tap water and distilled water rinse and dry.

Measure 100.0mL of specimen in a ground conical flask. Place in an ice water bath to cool for 5min. Keep immersing in the ice water bath. Immediately at a rate of 2 drops per second, use a burette to add 8mL of sulfuric acid dropwise. Shake the Erlenmeyer flask vigorously during the dripping process to ensure that the temperature of the solution in the flask does not exceed 20°C. After adding the acid, cap the bottle and cool in an ice-water bath for exactly 3min. Then take it out and put it in a boiling water bath immediately. Slightly open the cork twice to prevent it from popping out. The water level in the boiling water bath shall exceed the liquid level of the solution in the Erlenmeyer flask. And keep it for (60±1) min, then take out the conical flask. Use tap water to cool to room temperature. Pour the solution in the bottle into a 100mL colorimetric tube. Perform color comparison according to GB/T 3143.

#### 4.7.4 Calculation of test results

The color of the specimen is expressed by the chromaticity of the platinum-cobalt standard solution closest to the specimen.

Take the arithmetic mean of two parallel determination results as the determination result. The difference between the two parallel determination results is not more than No. 3.

### 4.8 Determination of moisture content

#### 4.8.1 Carl-Fischer direct coulometric titration (arbitration law)

Measure according to GB/T 6283. Measure the volume of the specimen to 10.0mL or take an appropriate volume according to the moisture content in the specimen.

Take the arithmetic mean of two parallel determination results as the determination result. The absolute difference between the two parallel determination results is not more than 0.002%.

#### 4.8.2 Carl-Fischer coulomb method

According to GB/T 6324.8.

Take the arithmetic mean of two parallel determination results as the determination result. The absolute difference between the two parallel determination results is not more than 0.001%.

## 5 Inspection rules

**5.1** Octanol for industrial use shall be inspected by the quality inspection department of the manufacturer. Type inspection items are appearance and all inspection items specified in Table 1, of which appearance, color, density, 2-ethylhexanol, acid content, sulfuric acid color test, moisture, 2-ethyl-4-methylpentanol are items of the exit-factory inspection. Under normal circumstances, the type inspection shall be carried out at least once every 3 months. The type inspection should be conducted in one of the following cases:

a) When the product is produced in a different place;

b) When there are major changes in the production formula, process and raw materials;

c) When the production is resumed after the production is stopped;

d) When there is a significant difference between the exit-factory inspection result and the last type inspection.

**5.2** Sampling shall be carried out according to the regulations of GB/T 6678 and GB/T 6680. The total sampling amount is not less than 2L. Mix thoroughly and dispense evenly into two clean, dry 1L ground-mouth bottles with stoppers. Put on labels to indicate: product name, lot number, sampling date, name of sampler. One bottle is used for quality inspection. The other is sealed and stored for 1 month for future inspection.

**5.3** The inspection result shall be judged according to the rounding value comparison method stipulated in GB/T 8170 whether it meets this Standard. If an indicator of the test result does not meet the requirements of this Standard, the sampling shall be doubled for re-inspection. Even if one indicator does not meet the requirements of this Standard in the re-inspection result, the whole batch of products is nonconforming.

# 6 Marks and accompanying documents

**6.1** The packaging containers for octanol for industrial use shall have strong and clear marks [1], including:

a) Name of the manufacturer;

b) Product name;

c) Product batch number or production date;

d) Net content;

e) Reference to this Standard.

**6.2** Each batch of products shipped out of the factory shall be accompanied by a certain format of quality certificate, which includes:

a) The name of the manufacturer;

b) Product name;

c) Product batch number or production date;

d) Product inspection results and inspection conclusions;

e) The number of this standard.

[1] See Annex B for safety information related to this chemical.

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