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

SN/T 5264-2020

**Determination of 14 trace oxides in naphtha by
heart-cutting-two-dimensional capillary gas chromatography**

石脑油中14种微量含氧化物的测定 中心切割-二维毛细管气相色谱法

(English Translation)

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed and managed by the General Administration of Customs of the People's Republic of China.

Drafting organizations of this standard. Shenzhen Customs of the People's Republic of China, Guangzhou Customs of the People's Republic of China.

1 Scope

This standard specifies the method for the determination of 14 trace oxygenated compounds in naphtha using a heart-cut-two-dimensional capillary gas chromatograph.

This standard applies to methyl tert-butyl ether, ethyl tert-butyl ether, diisopropyl ether,

tert-amyl methyl ether, methanol, propylene in naphtha Determination of the content of 14 oxygen-containing compounds including ketone, butanone, ethanol, n-propanol, isopropanol, isobutanol, tert-butanol, sec-butanol, and n-butanol the lower limit of quantitative determination is 0.4 mg/kg.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article Pieces. For undated reference documents, the latest version (including all amendments) is applicable to this document.

GB/T 11133 Determination of Water Content in Liquid Petroleum Products (Karl Fischer Method)

3 Terms and definitions

The following terms and definitions apply to this document.

Oxygenate

Any oxygen-containing organic compound that can be used as a fuel or fuel supplement, such as various alcohols, ethers, and ketones.

4 Method summary

The appropriate amount of sample is introduced into a two-dimensional capillary gas chromatography system equipped with a microfluidic plate-heart-cutting, and the sample flows through a the non-polar pre-column vents part of the light hydrocarbon components, and the system is switched to the forward blowing position before the oxygenated compounds flow out to allow the pre-column column flow to enter the analysis Column, after all oxygenated compounds flow out from the pre-column, place the system in the back-flushing position to vent the heavy hydrocarbon components in the pre-column. On the analytical column Above, the hydrocarbons with the boiling point close to the oxygenated compounds will flow out first, and then the oxygenated compounds will flow out into the detector (FID) in turn. through Qualitative by retention time, quantification by external standard method based on peak area.

5 Reagents and materials

5.1

Methyl tert-butyl ether. purity $\geq 99\%$, and no other oxygen-containing compounds to be analyzed.

5.2

Ethyl tert-butyl ether. purity $\geq 99\%$, and no other oxygen-containing compounds to be analyzed.

5.3

Diisopropyl ether. purity $\geq 99\%$, and no other oxygen-containing compounds to be analyzed.

5.4

Tert-Amyl Methyl Ether. Purity $\geq 99\%$, and does not contain other oxygen-containing compounds to be analyzed.

5.5

Methanol. Purity $\geq 99\%$, and does not contain other analyzed oxygen compounds.

5.6

Acetone. Purity $\geq 99\%$, and does not contain other analyzed oxygen compounds.

5.7

Butanone. purity $\geq 99\%$, and does not contain other analyzed oxygen compounds.

5.8

Ethanol. Purity $\geq 99\%$, and does not contain other oxygen-containing compounds to be analyzed.

5.9

n-Propanol. purity $\geq 99\%$, and does not contain other analyzed oxygen compounds.

5.10

Isopropanol. purity $\geq 99\%$, and no other oxygen-containing compounds to be analyzed.

5.11

Tert-Butanol. Purity $\geq 99\%$, and does not contain other oxygen-containing compounds to be analyzed.

5.12

Isobutanol. purity $\geq 99\%$, and no other oxygen-containing compounds to be analyzed.

5.13

S-butanol. purity $\geq 99\%$, and no other oxygen-containing compounds to be analyzed.

5.14

n-butanol. purity $\geq 99\%$, and no other oxygen-containing compounds to be analyzed.

5.15

Mixed liquid of tert-butanol, isobutanol and sec-butanol. mix tert-butanol (5.11), isobutanol (5.12), and sec-butanol (5.13) according to the quality the quantity ratio is 1.1.1.1 is mixed.

Note: It is also possible to use a mixed standard sample of certified reference materials containing all of the above-mentioned oxygen-containing compounds.

5.16

Isooctane or n-heptane (diluent). purity $\geq 99.5\%$ (mass fraction), and does not contain various oxygen-containing compounds to be analyzed.

5.17

Helium (He). carrier gas, purity $\geq 99.95\%$.

5.18

Nitrogen (N₂). makeup gas, purity $\geq 99.95\%$.

5.19

The standard solution of each oxygen-containing compound component is prepared as follows.

a) Use the water content measured in accordance with GB/T 11133 to correct the purity of each oxygen-containing compound reagent (5.1~5.15). Used to match the oxygen-containing compound reagents and diluents used to prepare the standard solution should be cooled to below 10 °C before use. The standard solution should be as Equipped for immediate use.

Note: When preparing the standard solution, operate as quickly as possible. Low-concentration methanol, ethanol, and n-propanol are especially easy to be adsorbed by the container wall. The prepared standard solution not suitable for long-term storage.

b) The weighing method is used to prepare each standard solution. Since the preparation concentration is low, the method of gradual dilution should be used for preparation.

c) Accurately weigh each oxygen-containing compound in the order of volatility of various oxygen-containing reagents from low to high (5.1~5.15) each 0.50 g to a 100 mL volumetric flask with stopper, weigh to 0.1 mg and record, tert-butanol (5.11), isobutanol (5.12), the three oxygen-containing compounds of sec-butanol (5.13) can only be added to the mixed solution (5.15); continue to add the diluent isooctane or n-heptane Alkane (5.16) to 50.00 g, weigh to 0.1 mg and record; cover the bottle stopper and shake well to obtain a standard concentration of about 10 000 mg/kg Quasi-stock solution, calculate the precise concentration of each oxygenated compound. Use the diluent (5.16) for the above 10 000 mg/kg standard stock solution Dilute to 100 mg/kg, and then use this 100 mg/kg solution as the mother liquor to dilute and prepare the concentration of about 0.5 mg/kg, 1 mg/kg, for standard solutions of 5 mg/kg and 20 mg/kg, the accurate concentration of various