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

GB/T 28768-2012

**Determination of hydrocarbon types and oxygenates in
automotive-motor gasoline by multidimensional gas
chromatography method**

车用汽油烃类组成和含氧化合物的测定 多维气相色谱法

(English Translation)

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Foreword

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

This standard uses redrafted Law Amendment uses ISO 22854:2008 "Liquid petroleum products - motor gasoline hydrocarbons and oxygenates Multidimensional was measured by gas chromatography. " this standard and ISO 22854:2008 as compared to some adjustments in the structure, specific clauses control the situation, see Appendix A in Table A.1. this Standard and ISO 22854:2008 technical differences and for the following reasons.

--- This standard adds aromatic olefins aromatics belonging explained in 3.1.3, "aromatic" terms and definitions, since the aromatic olefins containing Triple bond cyclic aromatic hydrocarbons;

--- The standard method in the process of increasing the flow chart summary 4.1, to clarify the method of operation of the program (see Figure 1);

--- This standard ISO 22854:2008 5.2 before the injection vial increase the "Applies to autosampler Used" content, to clarify to apply to the injection vial autosampler use (see 5.2);

--- This standard ISO 22854:2008 in 8.1 "according to the manufacturer's instructions to meet the requirements of the instrument" to "Refer to Appendix B Instrument specifications required to configure equipment "in order to meet the requirements of this standard (see 8.1);

--- The standard 8.4 increase in the recommended adequate gas flow parameters and the recommended conditions of temperature control system parameters, as well as a warning Add oxygenate proportion of pure components other oxygenates added complexity and purity pure component content in full Foot of the standard requirements;

--- The standard 8.5 increase in the value of a standard reference sample obtaining methods to meet the requirements of this standard;

--- The standard delete the ISO 22854:2008 8.6 "analysis sample preparation" and 8.7 "to prepare the instrument and test conditions" phase Off the content of this standard 8.6 adds

the contents of sample analysis to simplify and improve procedures;

--- This standard adds to Appendix C (normative), shows the recommended chromatography system controlled temperature parameters, and examples to supplement Chromatographic control conditions.

This standard also includes the following editorial changes.

--- This standard increases the volatilization of methanol in gasoline is relatively large in Note 4.2, the sample pre-treatment of such irregularities would Affect its precision content to determine the type of samples attention;

--- This standard adds support for compressed air, hydrogen and helium gas pipeline installation suitable gas purifier content 5.1.3 injection in order to Reduce interference chromatographic system;

--- The standard car increased 5.3 Note the use of low sulfur content in gasoline example, in order to meet the requirements of this standard;

--- This standard adds content 5A molecular sieve column in Appendix B, Table B.1, to supplement chromatographic configuration information.

This standard by the National Standardization Technical Committee on products and lubricant oil (SAC/TC280) proposed.

This standard by the National Standardization Technical Committee of petroleum products lubricants oil and lubricants and fuels Technical Committee (SAC/TC280 /SC1) centralized.

This standard was drafted. China PetroChina Urumqi Petrochemical Company, China National Petroleum Company Limited SECRETARY Lanzhou lubricant research and development centers and China Petrochemical Research Institute of Oil and Gas Limited.

Participated in the drafting of this Standard. China Petroleum & Chemical Corporation Refining Division, China Petroleum and Chemical Corporation Beijing Yan Hill Branch, China PetroChina Dalian West Pacific Petrochemical Company and Sinopec Yangzi Petrochemical Co., China shares the company.

1 Scope

This standard specifies the method of vehicle was saturated with gasoline hydrocarbons, olefins and aromatics was determined by gas chromatography. This standard can be measured by vehicle Benzene content in gasoline, oxygenates and total oxygen content.

This standard applies to the determination of total aromatic content (volume fraction) of not more than 50% of the total olefin content (volume fraction) of 1.5% to 30% Oxygenate content (volume fraction) of 0.8% to 15%, the total oxygen content (mass fraction) of 1.5% to 3%, the benzene content (volume fraction) Less than 2% of motor gasoline.

Note 1: The development of this standard, the final boiling point limit of 215 °C.

Note 2: The standard for oxygenate containing methyl tertiary butyl ether (MTBE), ethyl tertiary butyl ether (ETBE), tert-amyl methyl ether (TAME), isopropanol, Isobutanol, t-butanol, methanol and ethanol vehicle determines the precision of the sample data with gasoline, methanol precision data may not comply with this standard Precision listed formula. The applicability of the standard has also been confirmed for the determination of motor gasoline in n-propanol, acetone and diisopropyl ether (DIPE), but without the precision of the compounds are determined.

Although this standard can be used to determine the olefin content (volume fraction) up to 50% of the gasoline samples, but only gives the olefin content (volume fraction) 1.5% to 30% of the precision data.

Although this standard can be used with a car containing oxygenates in gasoline, but can also be used to analyze other with the same boiling range hydrocarbons, for example, such as naphtha and reformat.

Note 3: Although it may overlap aromatic carbons 9 and 10, but the total is accurate, cumene separated from the aromatics in the carbon contained in the carbon 9 aromatic Hydrocarbons.

2 Normative references

The following documents for the application of this document is essential, dated references, only the dated version suitable for use herein Member, undated references, the latest edition (including any amendments) applies to this document.

GB/T 4756 petroleum liquids hand sampling method (GB/T 4756-1998, eqv ISO 3170. 1988) SY/T 5317 petroleum liquids pipeline automatic sampling (SY/T 5317-2006, ISO 3171. 1988, IDT)

3 Terms and Definitions

The following terms and definitions apply to this document.

Hydrocarbon hydrocarbongroup the same type of hydrocarbon. For example. saturated hydrocarbons and olefins and the like.

3.1.1

Saturated hydrocarbons saturatedhydrocarbon it does not contain any double bond number from 3 to 12 carbon atoms in linear or cyclic hydrocarbons. For example. n-paraffins, iso-paraffins, naphthenic Hydrocarbons and polycyclic hydrocarbons.