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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 31776-2015

Determination method of methanol content in methanol gasoline for motor vehicles

车用甲醇汽油中甲醇含量检测方法

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Standardization Administration of the PRC

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Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009. This Standard was proposed by and under the jurisdiction of National Technical Committee for Standardization of Methanol-Ether Fuel (SAC/TC 414). Drafting organizations of this Standard. National Coal and Coal Chemical Product Quality Supervision and Inspection Center, Shanxi Wharton Co., Ltd., Shanxi Alcohol and Ether Clean Fuel Technical Center, Shaanxi Yanchang Zhongli New Energy Co., Ltd., Beijing Xiongtaoweiye Energy Technology Co., Ltd., Kailuan Energy Chemical Company Limited, and Zhongrunyou New Energy Co., Ltd.. Chief drafting staffs of this Standard. Li Yanru, Wu Yuequ, Xu Ying, Chang Yonglong, Li Jingsheng, Wang Yongmiao, Cui Jianfang, Wang Julin, Zhang Fading, and Fan Shouwei. Determination Method of Methanol Content in Methanol Gasoline for Motor Vehicles Warning. personnel using this Standard shall have hands-on experience in formal laboratory. This Standard doesn't address all possible safety issues. Users shall assume the responsibilities to take appropriate safety and preventative measures, and ensure the compliance with the relevant national regulations.

1 Scope

China's national test method for the methanol content of methanol gasoline for motor vehicles. It specifies the terms and definitions, the principle, the apparatus, the reagents and materials, the sampling, the test procedure, the calculation of results and the allowable differences, and it applies to the determination of methanol content in motor vehicle

methanol gasoline. It does not apply to the determination of methanol content by volume fraction in ethanol-free motor vehicle methanol gasoline. Methanol gasoline is gasoline blended with methanol, and China has used it at scale because methanol is made from coal, which China has, rather than from crude oil, which it largely imports. The blend is named by its methanol content - M15 and M85 being the familiar grades - and that number is the whole commercial and regulatory basis of the product: it determines the price, the tax treatment, whether the fuel is legal for a given vehicle, and whether an engine will tolerate it. Methanol attacks certain elastomers and light alloys, it carries less energy per litre than gasoline, and above a modest concentration it needs a vehicle built for it, so a blend sold as M15 that is actually far richer will damage engines that were never intended to run on it. Determining the content accurately is therefore a consumer protection measure as much as a quality one, and adulteration - blending in cheap methanol beyond the declared grade - is the specific practice this method exists to detect. The standard carries an explicit warning that its users must have practical laboratory experience and that it does not address every safety issue arising from its use. Issued on 3 July 2015 and in force since 1 October 2015.

This Standard specifies the terms and definitions, principle, apparatus, reagents and materials, sampling, test procedures, result calculation and allowable differences for the determination method of methanol content in methanol gasoline for motor vehicles. This Standard is not applicable to the determination of methanol content (volume fraction) in the ethanol-free methanol gasoline for motor vehicles.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

GB/T 4756 Method for Manual Sampling of Petroleum Liquids

GB/T 9722 Chemical Reagent - General Rules for the Gas Chromatography

GB 17930 Gasoline for Motor Vehicles

GB/T 22030 Blend stocks of Ethanol Gasoline for Motor Vehicles

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 Component oil

6.2 Absolute ethanol. chromatographically pure.

6.3 Component oil. conform to GB 17930 or GB/T 22030.

6.4 Carrier gas. nitrogen with purity no less than 99.99% (volume fraction).

6.5 Fuel gas. hydrogen with purity no less than 99.99% (volume fraction).

6.6 Air. air generator.

6.7 Separator-funnel. pear-shaped, 250mL.

6.8 Pipette. 50mL, 20mL, 10mL, 5mL, 1mL.

6.9 Measuring pipette. 10mL, sub-scale value 0.1mL.

6.10 Measuring pipette. 1mL, sub-scale value 0.01mL.

6.11 Preparation of chromatography column. inject the 60 mesh ~80 mesh Porapak T packed column into the chromatography column with length 1m, and inner diameter 3mm; gently shake during the adding process, so that the filling materials can be filled tightly; both ends of the column shall reserve 2cm, where the glass wool shall be filled, so that ensure the filling materials can't overflow. Prior to use, conduct the aging operation against the column when the column box temperature is at 180°C till the instrument baseline is stable.

7 Sampling

7.1 Sampling as per the procedure stipulated in GB/T 4765, take 2L of sample for inspection and retention sample use.

7.2 Sample shall be stored at 0°C~5°C.

7.3 Before analysis, shake the sample thoroughly to see if the sample has significant phase separation. If so, discard the sample; re-sampling is required.

8 Test Procedures

8.1 Sample preparation When analyzing, the sample, internal standard substance (6.2), distilled water and the container weighing the sample are required to be equilibrated at certain temperature.