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

GB/T 11133-2015

Replacing GB/T 11133-1989

**Standard test method for determination of water in petroleum
products, lubricating oils and additives - Coulometric Karl
Fischer titration method**

石油产品、润滑油和添加剂中水含量的测定 卡尔费休库仑滴定法

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Table of Contents

- 1 Scope
- 2 Normative references
- 3 Method Summary

Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. This standard replaces GB/T 11133-1989 "Liquid petroleum products - Determination of water (Karl Fischer method)", and GB/T 11133- The main technical changes compared to 1989 are as follows:

- Standard name from "Liquid petroleum products - Determination of water (Karl Fischer method)" to "petroleum products, lubricants and additives Determination of water content Karl Fischer coulometric titration method ";
- Measurement methods by Karl Fischer volumetric method to the Karl Fischer coulometry;
- Expanding the range of the method of measuring the water content (see Chapter 1);
- Increase the measured interference factor method analyzes the content (see Chapter 4);
- The sample is expected to increase the water content of the sample injection volume selection table (Table 1);
- Remove the GB/T 11133-1989 preparation in Karl Fischer reagents and calibration Hugh content (see the 1989 edition of the
- Increased calibration and standardization of the content of the method (see Chapter 9);
- The test steps are divided into A, B, C three steps to increase the volume of direct titration step B, step C, the water evaporates and the indirect Titration (see Chapter 11 and Chapter 12);
- Increased quality control check the contents (see Chapter 13);
- Modify the water content of the result of the calculation formula (see Chapter 14, 1989 version 8.3);
- Modification method precision and bias increases the content (see Chapter 15, Section 9 of the 1989 edition);
- Modify the content of the report (see Chapter 16, Chapter 10, 1989 edition);

--- Modify the contents of Appendix A of the GB/T 11133-1989 technical content as informative annex be added to facilitate Use (see Appendix A, 1989 edition of Appendix A);

1 Scope

GB/T 11133-2015 is the Chinese national standard on standard test method for determination of water in petroleum products, lubricating oils and additives - coulometric karl fischer titration method, in the field of petroleum and related technologies. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 31 December 2015 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 June 2016. Classification: ICS 75.100, CCS E30. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the use of the automatic titrator direct determination of petroleum products and hydrocarbons in water content approach. Direct titration The water content in the range of 10mg/kg ~ 25000mg/kg. This standard also specifies the method of indirect determination of water content of the sample by heating the party Method, the sample was separated in the water by a dry inert gas loaded into the Karl Fischer titrator analyzed. Thiol, sulfide, and other Interfering compounds on test methods see Chapter 4. This standard applies to the use of a commercially available coulometric Karl Fischer reagent of additives, lubricants, base oils, automatic transmission fluids, hydrocarbon solvents and He petroleum products in water content. By selecting a suitable sample injection volume, the water content of the standard measurement range from mg/kg to the level of quality The percentage of volume level. NOTE. Karl Fischer volumetric method for the determination of water content of liquid petroleum products method see Appendix A.

2 Normative references

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

GB/T 1884 crude oil and liquid petroleum products - Laboratory determination of density (density meter method) (GB/T 1884-2000, eqv ISO 3675. 1998)

GB/T 1885 Petroleum Measurement Tables (GB/T 1885-1998, eqv ISO 91-2.1991)

GB/T 4756 petroleum liquids hand sampling method (GB/T 4756-1998, eqv ISO 3170. 1988)

GB/T 6682 analytical laboratory use specifications and test methods (GB/T 6682-2008,

ISO 3696. 1987, MOD) SH/T 0604 crude oil and petroleum products densitometry
(U-shaped vibrating tube method) (SH/T 0604-2000, eqv

ISO 12185. 1996) ASTM D5854 mixing and processing SOPs Petroleum and liquid
petroleum product sample (Practice for Mixing and
Handling of Liquid Samples of Petroleum and Petroleum Products) Standard methods
(Test Method for Water Using Volumetric Determination of water content Karl Fisher titration
ASTM E203 Karl Fischer Titration)

3 Method Summary

3.1 The amount of sample was added to the coulometer Karl Fischer titration cell, iodine
and sample titration cell anode produced water according to the reaction Stoichiometry,
according to the ratio of

1 Karl Fischer reaction occurs. When all the water consumed after the reaction of the
titration cell, by detecting titrator Measuring the electrical signal generated by an excess of
iodine, determine the endpoint and terminates the titration. Therefore, according to
Faraday's law, the amount of water and titrate the total score Current proportional
relationship. A sample injection volume of

3.2 units of measurement may be units of mass or volume units.

3.3 viscosity or the presence of a large sample interfere with the reaction may be used to
measure the water evaporator. The sample was added to the water evaporator heating,