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CCS E 21



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

GB/T 18608-2012

Replacing GB/T 18608-2001

**Determination of Nickel, Vanadium, Iron, and Sodium in Crude
Oils and Residual Fuels by Flame Atomic Absorption
Spectrometry**

原油和渣油中镍、钒、铁、钠含量的测定 火焰原子吸收光谱法

(English Translation)

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Foreword

This standard rule according to GB/T 1.1-2009 given draft.

This standard replaces GB/T 18608-2001 "crude iron, atomic nickel, sodium, vanadium content absorption spectrometry", and GB/T 18608-2001 compared to the main technical changes are as follows.

--- Standard name from "Atomic crude iron, nickel, sodium, vanadium content absorption spectrometry" to "crude and residual oil in nickel, vanadium, Iron and sodium content - Flame atomic absorption spectrometry";

--- Modify the treatment of the sample (see 54, 2001 version 8.1.);

--- Modification method precision (see 57, Chapter 10, 2001 edition.);

--- Increasing the organic solvent assay samples of nickel, vanadium content and sodium content (see Chapter 6);

--- The sodium content determination method of modifying a method B (see Chapter 6, Chapter 8, 2001 edition);

--- The determination of vanadium content was revised to flame atomic absorption spectrometry;

--- Added "Quality Assurance and Control" (see Chapter 7);

--- Added "Test Report" (see Chapter 8);

--- Added "Notes" (see Appendix A).

This standard uses redrafted Law Amendment uses ASTM D5863-00a (2005) "measuring crude oil and residual nickel, vanadium, iron, sodium content Given by Flame Atomic Absorption Spectrometry. " this standard ASTM D5863-00a (2005) compared the structure have more adjustments listed in Appendix B of this standard and ASTM D5863-00a (2005) of the reg number control list.

This standard ASTM D5863-00a (2005) and the technical differences for the following

reasons.

--- On normative references, this standard has been adjusted technical differences, in order to adapt our technical conditions, the adjusted situation Focus is reflected in the status of Chapter 2, "Normative references", the specific adjustments are as follows.

- use equivalent to international standards of GB/T 4756 instead ASTM D4057 (see 4.1);
- Modify with international standards of GB/T 6682 instead ASTM D1193 (see 5.2.4);
- equivalents adoption of international standards SY/T5317 instead ASTM D4177 (see 4.1).

This standard made the following editorial changes.

- Removed ASTM D5863-00a (2005) of Chapter 4, "meaning and purpose";
- Removed ASTM D5863-00a (2005) 22.2 "bias";
- Removed ASTM D5863-00a (2005) of Chapter 23, "keyword";
- Removed ASTM D5863-00a (2005) Information Appendix X1.

This standard by the National Standardization Technical Committee of Oil and Gas (SAC/TC355) and focal points.

This standard was drafted. Daqing Oilfield Engineering Limited, Chemical Engineering, China University of Petroleum (East China), China Lanzhou Lubricating oil Oil Research and Development Center.

1 Scope

This standard specifies the flame atomic absorption spectrometry crude oil and residual oil are two methods of nickel, vanadium, iron, sodium content, including party Measurement sample method of nickel, vanadium and iron content and the method of determination of the organic solvent B --- samples of nickel, vanadium and sodium-containing acid digestion method A ---Amount. Method B is an oil-soluble metal element as a standard sample to determine the content of an oil-soluble metal element does not apply for the quantitative determination of non-oil containing Samples insoluble particles, and therefore, the total content of the method that the metal element may be low, especially in the determination of inorganic sodium salt form Sodium.

This standard applies to nickel, the determination of vanadium, iron and sodium content of the crude oil and Residual for different elements, precision two methods do not with, according to the precision requirements for specific analysis to select the appropriate method.

2 Normative references

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

GB/T 4756 petroleum liquids hand sampling method (GB/T 4756-1998, eqvISO 3170. 1988) GB/T 6682 analytical laboratory use specifications and test methods (GB/T 6682-2008, ISO 3696. 1987, MOD) SY/T5317 petroleum liquids pipeline automatic sampling (SY/T5317-2006, ISO 3171. 1988, IDT) Principle 3

3.1 Method A. Weigh 1g ~ 20g sample is placed in a quartz beaker with concentrated sulfuric acid to dissolve and heated to dryness at 525 °C for in a muffle furnace.

Divisible by burning carbon residue, and the resulting ash (inorganic residue) was dissolved in dilute nitric acid, and then evaporated to dryness, then add dilute nitric acid to dissolve and set the volume when measured Vanadium, should be added to the test solution using masking agents nitrous oxide - acetylene flame measured vanadium, air - acetylene flame measured determination of nickel and iron Given the resulting absorbance intensity proportional to the concentration.

3.2 Method B. the sample is diluted with an organic solvent to obtain a mass fraction of 5% or 20% of the test solution was diluted by the concentration of the test solution.

The concentration of analyte in the sample is determined when the determination of vanadium, should be added to the test solution using masking agents nitrous oxide - acetylene flame measured Vanadium, air - acetylene flame - Determination of nickel and sodium resulting absorbance was measured intensity proportional to the concentration.

4 Sampling

4.1

according to GB/T 4756 or SY/T5317 getting a representative sample.

Should be fully mixed. If the sample does not flow easily at room temperature, the sample should be heated to a fluid state, and then the sample was weighed before 4.2 Mix well.