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Replacing GB 25199-2015, GB/T 20828-2015

B5 diesel fuels

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Standardization Administration of the People's Republic of China.

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Foreword

Clause 5 of this standard is mandatory, the rest are recommended.

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

This standard replaces GB 25199-2015 “Biodiesel fuel blends (B5)” and GB/T 20828-2015 “Biodiesel blend stock (BD100) for diesel engine fuels”.

As compared with GB 25199-2015 and GB/T 20828-2015, the main technical changes of this standard are as follows:

- COMBINE these two standards, CHANGE the name to “B5 diesel fuels”;
- DELETE the technical requirements and test methods of B5 vehicle diesel (IV);
- ADD the technical requirements and test methods of B5 vehicle diesel (VI);
- INCLUDE the content of GB/T 20828-2015 as Appendix C of this standard.

As compared with GB/T 20828-2015, the main technical changes in Appendix C of this standard are as follows:

- MODIFY the name from “Biodiesel blend stock (BD100) for diesel engine fuels” to “BD100 Biodiesel”;
- MODIFY the closed flash point from not less than 101 °C to not less than 130 °C;
- CANCEL the methanol content indicator;
- CANCEL the 90% recovery temperature indicator.

This standard was proposed by the National Energy Administration.

This standard shall be under the jurisdiction of the National Standardization Technical Committee for Petroleum Products and Lubricants (SAC/TC 280).

Drafting organizations of this standard: China Petroleum & Chemical Corporation Petrochemical Research Institute.

The main drafters of this standard: Lin Jianmin, Li Baoshi, Huang Yanmin, Zhang Jianrong, Liu Jinsheng, Gao Lan.

This standard replaces the standard previously issued as follows:

- GB/T 20828-2007, GB/T 20828-2014, GB/T 20828-2015;

B5 diesel fuels

Warning - If it does not take appropriate precautionary measures, the product to which this standard belongs may be hazardous during production, transportation, handling, storage, transportation, and use. This standard is not intended to suggest all safety issues related to this product. Users are responsible for adopting appropriate safety and preventive measures and ensuring compliance with the conditions stipulated by relevant national laws and regulations.

1 Scope

This standard specifies the terms and definitions, classifications and markings, requirements and test methods, inspection rules and markings, packaging, transportation, storage and safety of B5 diesel blended from BD100 biodiesel and petroleum diesel.

This standard is applicable to B5 common diesel fuel and B5 motor vehicle diesel fuel used in compression-combustion engines with BD100 biodiesel as the blending component.

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 standard.

GB 190 Packing symbol of dangerous goods

GB 252 General diesel fuels

GB/T 261 Determination of flash point - Pensky-Martens closed cup method

GB/T 264 Petroleum products - Determination of acid number

GB/T 265 Petroleum products - Determination of kinematic viscosity and calculation of dynamic viscosity

GB/T 268 Petroleum products - Determination of carbon residue - Conradson method

GB/T 386 Standard test method for cetane number of diesel fuel oil

GB/T 508 Petroleum products - Determination of ash

GB/T 510 Petroleum products - Determination of solidification point

GB/T 511 Petroleum products and additives - Determination of mechanical impurities-Gravimetric method

GB/T 1884 Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method

GB/T 1885 Petroleum measurement tables

GB/T 2433 Petroleum products - Lubricating oils and additives - Determination of sulfated ash

GB/T 4756 Method for manual sampling of petroleum liquids

GB/T 5096 Test method for corrosiveness to copper from petroleum products by copper strip test

GB/T 5526 Inspection of vegetable oils - Methods for determination of specific gravity

GB/T 5530 Animal and vegetable fats and oils - Determination of acid value and acidity

GB/T 6536 Standard test method for distillation of petroleum products at atmospheric pressure

GB/T 6540 Petroleum products - Determination of color

GB/T 7304 Standard test method for acid number of petroleum products by potentiometric titration

GB/T 11140 Standard test method for sulfur in petroleum products by wavelength dispersive X-ray fluorescence spectrometry

GB/T 12700 Petroleum products and hydrocarbons - Determination of sulfur content - Wickbold combustion method

GB/T 13377 Crude petroleum and liquid or solid petroleum products - Determination of density or relative density-Capillary stoppered pyknometer and graduated bicapillary pyknometer methods

GB/T 17040 Standard test method for sulfur in petroleum and petroleum products by energy dispersive X-ray fluorescence spectrometry

GB/T 17144 Petroleum products - Determination of carbon residue - Micro method

SH/T 0765 Diesel fuel - Assessment of lubricity using the high-frequency reciprocating rig (HFRR)

SH/T 0796 Test method for determination of free and total glycerine in B-100 biodiesel methyl esters by gas chromatography

NB/SH/T 0825 Standard test method for determination of oxidation stability of fatty acid methyl ester by accelerated oxidation test

NB/SH/T 0831 Test method for determination of fatty acid methyl esters and linolenic acid methyl ester contents in biodiesel by gas chromatography

NB/SH/T 0842 Standard test method for sulfur in gasoline and diesel fuel by monochromatic wavelength dispersive X-ray fluorescence spectrometry

NB/SH/T 0873 Determination of oxidation stability of biodiesel fuel and its blending fuel - Accelerated oxidation method

NB/SH/T 0916 Determination of biodiesel (fatty acid methyl esters) content in diesel fuels - Infrared spectroscopy

ASTM D4951 Standard test method for determination of additive elements in lubricating oils by inductively coupled plasma atomic emission spectrometry

ASTM D7039 Standard test method for sulfur in gasoline and diesel fuel by monochromatic wavelength dispersive X-ray fluorescence spectrometry

ASTM D7111 Standard test method for determination of trace elements in middle distillate fuels by inductively coupled plasma atomic emission spectrometry (ICP-AES)

EN14107 Fat and oil derivatives - Fatty acid methyl ester (FAME) - Determination of phosphorus content by inductively coupled plasma (ICP) emission spectrometry

EN14538 Fat and oil derivatives - Fatty acid methyl ester (FAME) - Determination of Ca, K, Mg and Na content by optical emission spectral analysis with inductively coupled plasma (ICP OES)

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

BD100 biodiesel

b) When there are significant changes have taken place in raw materials and processes, which may affect product quality;

c) When there is significant difference between the results of the exit-factory inspection or periodic inspection and the results of the last type inspection.

6.2 Batching

Under the condition of unchanged raw materials and processes, each tank of kettle of products are considered as one batch.

6.3 Sampling

Sampling is made in accordance with GB/T 4756, 4 L sample is taken for inspection and retention.

6.4 Judgment rules

When the results of the exit-factory inspection meet all the technical requirements in Table 1, Table 2 or Table 3 of this standard, the batch of products is determined to be qualified.

6.5 Re-inspection rules

If the exit-factory inspection results do not meet the technical requirements of Table 1, Table 2 or Table 3, double-quantity of samples shall be taken from the same batch of products in accordance with the provisions of GB/T 4756 to perform re-inspection for the unqualified items. If the re-inspection result still does not meet the specified technical requirements, the batch of products shall be judged as unqualified.

7 Markings, packaging, transport and storage

7.1 The dispensers used for B5 diesel oil which is sold to users that meet the requirements of Table 1, Table 2 and Table 3 of this standard shall clearly indicate the name, designation and grade (V or VI) of the product, such as No.0 B5 general diesel, No. 0 B5 vehicle diesel (V), etc.

7.2 B5 diesel is a flammable liquid. The marking, packaging, transportation and storage of the product and delivery acceptance are carried out in accordance with SH/T 0164, GB 30000.7-2013 and GB 190.

8 Safety

B5 diesel is a flammable liquid. Please refer to Appendix D of GB 30000.7-2013 for the hazard description and precautionary statements.

Appendix B

(Normative)

Test of nitrate cetane number improver in diesel

B.1 Scope

This method is suitable for testing nitrate cetane improver used in diesel fuel. This method can be used as a qualitative screening method for the determination of carbon residue.

B.2 Method summary

The diesel specimen is saponified in a mixture of potassium hydroxide and n-butanol, filtered through glass fiber filter paper, the material left on the filter paper is dried and treated with a diphenylamine reagent. Diphenylamine is oxidized by nitrates into dark blue quinoid compounds. The resulting blue or blue-black spots show the presence of nitrate cetane improvers. If there is no color change, it is determined that there is no cetane improver.

B.3 Instruments or equipment

B.3.1 Reaction flask: A 30 mL wide-mouth bottle with a screw cap and a tin or plastic lining inside the cap.

B.3.2 Glass fiber filter: diameter 37 mm.

B.3.3 Pipette: capacity 10 mL, with suction ball.

B.3.4 Measuring cylinder: 10 mL and 25 mL.

B.3.5 Suction filter bottles: Suitable for connection with 60 mL glass sintering filters.

B.3.6 Glass sintering filter: Capacity 60 mL.

B.3.7 Oven: Suitable for drying glass fiber filter paper at 110 °C.

B.4 Reagents

The reagents used in this test are analytical reagents.

B.4.1 Potassium hydroxide.

B.4.2 n-butanol.

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