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GB 252-2015

Replacing GB 252-2011

General diesel fuels

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Issued by: General Administration of Quality Supervision, Inspection and Quarantine;

Standardization Administration of PRC.

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Foreword

Clauses 4, 6 and 8 of this standard are mandatory and the rest are recommended.

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

This standard replaces GB 252-2011 “General diesel fuels”. As compared with GB 252-2011, the main changes of this standard are as follows:

- ADD clause 4.1 additives used in general diesel fuel shall have no known harmful effects and shall be used in accordance with the recommended appropriate dosage. General diesel fuel shall not contain any additives or contaminants that can cause the engine to malfunction (see 4.1).

- MODIFY the second paragraph of the Scope to: This standard applies to petroleum-based or additive-added additives general diesel fuel used in compression ignition engines such as tractors, diesel locomotives, construction machinery, inland vessels and generator sets (see clause 1).

- DELETE clause 3 Terms and definitions (see clause 3 of the 2011 version);

- DELETE the relevant content of No.10 general diesel fuel (see Table 1);

- MODIFY the limit of sulfur content index in general diesel fuel (see Table 1);

- ADD the technical requirements for general diesel lubricity and fatty acid methyl ester content (see Table 1);

- MODIFY clause 5 into “Sampling”, with content is modified accordingly (see clause 5; clause 6 of the 2011 version);

- MODIFY clause 7.1 to: “6.1 The equipment used for general diesel fuel sold to the user in accordance with Table 1 of this standard shall clearly indicate the grade and name of the product. Example: No.0 general diesel fuel (see 6.1; clause 7.1 of 2011 version);

- ADD clause 8: Implementation of standard (see clause 8).

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

The drafting organization of this standard: Petrochemical Research Institute of China Petroleum and Chemical Corporation.

The main drafter of this standard: Ni Bei.

This standard replaces the standard previously issued as follows:

General diesel fuels

Warning: If the appropriate precautions are not observed, the products covered by this standard may be dangerous during production, storage and use. This standard is not intended to advise on all safety issues related to this product. It is the responsibility of the user to establish appropriate safety and precautions before using this standard and to determine the applicability of the relevant regulatory restrictions.

1 Scope

This standard specifies the product classification, technical requirements and test methods, sampling and marking, packaging, transportation and storage, safety and standard implementation of general diesel fuels.

This standard applies to petroleum-based or additive-added additives general diesel fuel used in compression ignition engines such as tractors, diesel locomotives, construction machinery, inland vessels and generator sets

Note: Other special uses besides this may be negotiated between the supplier and the purchaser.

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/T 258 Determination of acidity of gasoline, kerosene and diesel fuels

GB/T 260 Petroleum products - Determination of water

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

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

rules

SH/T 0175 Standard test method for oxidation stability of distillate fuel oil (accelerated method)

SH/T 0248 Diesel and domestic heating fuels - Determination of cold filter plugging point

SH/T 0604 Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method

SH/T 0689 Standard test method for determination of total sulfur in light hydrocarbons motor fuels and oils by ultraviolet fluorescence

SH/T 0694 Calculation of cetane index of middle - Distillate fuels by the four - Variable equation

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

ASTM D7039 Sulfur in gasoline and diesel fuel by monochromatic wavelength dispersive X-ray fluorescence spectrometry

3 Product categories

General diesel fuel is divided into six grades in accordance with the freezing point:

- No.5 general diesel fuel: Applicable to areas where the minimum temperature with a risk ratio of 10% is above 8 °C;
- No.0 general diesel fuel: Applicable to areas where the minimum temperature with a risk ratio of 10% is above 4 °C;
- No.-10 general diesel fuel: Applicable to areas where the minimum temperature with a risk ratio of 10% is above -5°C;
- No.-20 general diesel fuel: Applicable to areas where the minimum temperature with a risk ratio of 10% is above -14 °C;
- No.-35 general diesel fuel: Applicable to areas where the minimum temperature with a risk ratio of 10% is above -29 °C;
- No.-50 general diesel fuel: Applicable to areas where the minimum temperature with a risk ratio of 10% is above -44 °C.

Note: See Appendix A for the use of diesels of different grades.

90% recovery temperature / °C, not higher than 95% recovery temperature / °C, not higher than	355 365	
Lubricity Correction wear scar diameter (60 °C) / μm, not more than	460	SH/T 0765
Density (20 °C) [e] / (kg/m^3)	As reported	GB/T 1884, GB/T 1885
Fatty acid methyl ester [f] (volume fraction) /%, not more than	1.0	GB/T 23801

[a] It can be measured by the method of GB/T 380, GB/T 11140, GB/T 17040, ASTM D7039. When the result is controversial, the SH/T 0689 method shall prevail.

[b] If general diesel fuel contains a nitrate type cetane number improver, the determination of 10% steam residue carbon residue is carried out using a base fuel without nitrate. See Appendix B for the test method for whether or not the diesel ester type cetane number improver is contained in the diesel fuel. It can be measured by the method of GB/T 17144. When the results are controversial, the GB/T 268 method shall prevail.

[c] Visual inspection can be used to inject the specimen into a 100 mL glass cylinder and observe it at room temperature (20 °C ± 5 °C). It shall be transparent, free of suspended and settled moisture and mechanical impurities. When the result is controversial, it is measured in accordance with GB/T 260 or GB/T 511.

[d] The cetane number or cetane index of each general diesel fuel produced by the intermediate or naphthenic crude oil is allowed to be not less than 40 (when there is special requirement, it shall be determined by the supplier and the purchaser); the calculation of cetane index is also available in GB/T 11139. When the results are controversial, the GB/T 386 method shall prevail.

[e] It can also use the method of SH/T 0604. When the results are controversial, the GB/T 1884 and GB/T 1885 methods shall prevail.

[f] Fatty acid methyl ester shall meet the requirements of GB/T 20828.

5 Sampling

Sampling is carried out in accordance with GB/T 4756, taking 4 L for inspection and sample retention.

6 Marking, packaging, transportation and storage

6.1 The equipment used for general diesel fuel that meets the requirements of Table 1 sold to the user shall clearly indicate the grade and name of the product.

Example: No.0 general diesel fuel.

6.2 In accordance with GB 13690, general diesel oil is a flammable liquid. The marking, packaging, transportation and storage of the product and acceptance

Appendix B

(Normative)

Inspection of nitrate ester type cetane number improver in diesel

B.1 Scope

B.1.1 This method is applicable to the testing of nitrate ester type cetane number improvers used in diesel fuel. The method can be used as a qualitative screening method for determining residual carbon and calculating the cetane index.

B.1.2 This method involves certain hazardous substances, operations and equipment and is not intended to advise on all safety issues involved. Therefore, appropriate safety and protective measures shall be established prior to the use of this method and the applicability of the relevant regulatory restrictions shall be determined.

B.2 Method summary

The diesel specimen is saponified in a potassium hydroxide-n-butanol mixture, filtered by a glass fiber filter paper, the material remaining on the filter paper is dried and treated with a diphenylamine reagent. Diphenylamine is oxidized by nitrate to a deep blue quinoid compound. The resulting blue or blue-black spots indicate that there is a nitrate type cetane number improver. No color change indicates that there is no nitrate type cetane number improver.

B.3 Instruments or equipment

B.3.1 Reaction bottle: A 30 mL wide mouth jar with a thread cap, there is a tin or plastic lining inside the cap.

B.3.2 Glass fiber filter paper: diameter 37 mm.

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

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

B.3.5 Suction filter bottle: suitable for connection with 60 mL glass sintered filter.

B.3.6 Glass sintered filter: capacity 60 mL.

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

B.4 Reagent

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