

ICS 75.160.20

SH

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

SH/T 0248-2006

**Diesel and domestic heating fuels - Determination of cold filter
plugging point**

柴油和民用取暖冷滤点测定法

(English Translation)

Issued on: May 12, 2006

Implemented on: November 1, 2006

Issued by: National Development and Reform Commission

Table of Contents

Foreword	3
1 Scope	5
2 Normative references	5
3 Terms	6
4 Method summary	6
5 Reagents and materials	6
6 Instruments	6
7 Sampling	17
8 Specimen preparation	18
9 Instrument preparation	18
10 Test procedures	18
11 Result expression	20
12 Precision	21
13 Test report	22

Foreword

This Standard modifies and adopts British Energy Research Society standard IP 309/99 Diesel and domestic heating fuels - Determination of cold filter plugging point.

This Standard is redrafted based on the IP 309/99.

In order to adapt to Chinese national situation, this Standard makes modifications when adopting IP 309/99. These technical differences are marked with vertical single-line at the margin of the pages in which the clauses are involved. The main differences between this Standard and IP 309/99 are as follows.

- The reference standards in this Standard quote the corresponding national standards.
- Delete Specifications for Thermometer in annex A of IP 309/99; and change it to be two thermometers GB-36 and GB-37 which conform to the requirements of GB/T 514 Specification for liquid-in-glass thermometers for testing of petroleum products.
- This Standard keeps the provisions "specimens shall reach 30°C±5°C before the specimens are put into the cooling bath" in SH/T 0248-1992 Distillate fuels -Determination of cold filter plugging point.

For convenience of use, this Standard also makes the following editorial modifications.

- Delete the chapter "keywords" in IP 309/99.
- Modify the expression of repeatability and reproducibility based on customs in our country.

This Standard replaces SH/T 0248-1992 Distillate fuels - Determination of cold filter plugging point. SH/T 0248-1992 refers and adopts IP 309/83.

Compared with SH/T 0248-1992, the main changes of this Standard are as follows.

- The name of this Standard is changed to be Diesel and domestic heating fuels -Determination of cold filter plugging point.
- This Standard adds the contents about the operating steps and precision of the automatic instruments.
- The hole size of mesh-filter in this Standard is 45um (330 mesh); the hole size of mesh-filter in SH/T 0248-1992 is 363 mesh.
- This Standard adds a chapter "sampling".
- The instrument cleaning solvent in this Standard is heptane and acetone; the cleaning solvent in SH/T 0248-1992 is solvent oil.

Diesel and domestic heating fuels -determination of cold filter plugging point

1.1 This Standard specifies the method that using the manual and automatic instruments

to determine the cold filter plugging point test of diesel and domestic heating fuels. Both the manual and automatic instruments can be used in referee test.

1.2 This Standard is applicable for the distillate fuel, including the fuels containing a flow-

improving or other additive, intended for used in diesel engines and domestic heating devices.

1.3 The test results of this Standard can be used to evaluate the lowest temperature of normal flow of fuel in the fuel system.

Note: The cold filter plugging point of diesel fuel is usually close to the temperature of failure in service except when the fuel system contains, for example, a paper filter installed in a location exposed to the weather or if the filter plugging temperature is more than 12°C below the cloud point of the fuel. Domestic heating devices are usually less critical and often operate satisfactorily at temperatures somewhat lower than those indicated by the test results.

1.4 This Standard involves in some hazardous materials, operations and devices, however, it does not put forward suggestion on all the relevant safety problems. Therefore, it is necessary for users to establish the appropriate safety and counter measures and the relevant management system before using this Standard.

2 Normative references

The articles contained in the following documents have become part of this document when they are quoted herein. For the dated documents so quoted, all subsequent modifications (including all corrections) or revisions made thereafter do not apply to this Standard.

However, the parties who reach an agreement according to this Standard are encouraged to study whether the latest versions of these documents may be used. For the undated documents so quoted, the latest versions (including all modification sheets) apply to this Standard.

GB/T514 Specification for liquid-in-glass thermometers for testing of petroleum products
GB/T4756 Petroleum liquids - Manual sampling (GB/T 4756-1998, ISO 3170:1988, EQV)
GB/T 6003.1 Test sieves of metal wire cloth (GB/T6003.1-1997, ISO 3310-1:1997, EQV)

3 Terms

The following terms and definitions apply to this Standard.

Cold filter plugging point (CFPP) Specimens are cooled under the specified conditions, the highest temperature when the specimens cannot flow through the filter or the time, spent by 20mL of specimen flowing through the filter, is more than 60s, or the specimen cannot fully flow back to the test jar. It can be expressed by "°C" (as per the integer of 1°C).

4 Method summary

Specimen is cooled under the specified conditions; through a controllable vacuum device, the specimens can be absorbed into a pipette after passing through the standard mesh-filter. Before the fuel has been cooled by a further 1 °C, this procedure is repeated, as the fuel continues to cool, for each 1 °C below the first test temperature, until the amount of wax crystals which have been separated out of the specimen is sufficient to stop or slow down the flow, so that the time taken to fill the pipette exceeds 60 s or the fuel fails to return completely to the test jar. Record the temperature as the cold filter plugging point of the specimen.

5 Reagents and materials

5.1

Heptane. analytically pure.

5.2

Acetone. analytically pure.

5.3

Lintless filter paper.

5.4

Certified reference materials.

6.1 Manual instrument

6.1.1

Instrument shall be assembled as per the Figure 1, detailed in 6.1.2~6.1.14.

8 Specimen preparation

Under the indoor temperature (the temperature shall not be lower than 15°C), filter 50mL of specimen on the dry lintless filter paper.

9 Instrument preparation

Note: the automatic instrument and manual instrument shall be calibrated twice a year; it shall use the certified reference material if possible. It shall use the working standard reference material which has known cold filter plugging point to calibrate the instrument regularly (such as once a week). When the deviation of test results is larger than the standard repeatability, or it appears the abnormal quality control deviation, the test shall be further analysed and studied. The manual from the instrument manufacturer shall provide the instructions to ensure the correct use and calibration.

9.1 Manual instrument

Take the filter apart before each test; use heptane to clean the connection tube, test jar pipette, and thermometer; then use acetone to wash; finally, use filtered dry air to blow to dry. Check whether all of the parts, including jacket, are clean and dry; check whether the brass body, brass nut and mesh-filter are in perfect condition. If needed, change the parts into the new ones, and check the calibration condition of the thermometer.

See Figure 1 for the assembly of instrument. The brass nut shall be screwed tightly to avoid leakage.