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

中华人民共和国石油化工有限公司行业标准

SH/T 0805-2008

Determination of the filterability of lubricating oils

润滑油过滤性测定法

**(ISO 13357 - 2:2005, Petroleum products- Determination of
the filterability of lubricating oils- Part 1: Procedure for dry
oils; ISO 13357 -1: 2002, Part 2: Procedure for oils in the
presence of water, MOD)**

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Foreword

The standard is modified by using the national standards *ISO 13357-2:2005P Petroleum products – Determination method of the filterability of lubricating oils - Part 2: Procedure for dry oils* and *ISO 13357- 1:2002 Petroleum products – Determination method of the filterability of lubricating oils –Part 1: Procedure for oils in the presence of water*.

The method one in this standard is redrafted according to the standard ISO 13357-2:2005 and the method two in it is redrafted according to the standard ISO13357 -1:2002.

In view of our country condition, this standard is modified partly in using ISO 13357-2:2005 and ISO13357 -1:2002. The comparison table between the clause number of this standard and the clause number of ISO 13357-2:2005 and ISO13357 -1:2002 is shown in Annex B. The main technical differences between this standard and ISO 13357-2:2005 and ISO13357 -1:2002 are as follows:

-Changed the $70^{\circ}\text{C} \pm 10^{\circ}\text{C}$ of the oven precision in method one in ISO 13357-2:2005 to $70^{\circ}\text{C} \pm 2^{\circ}\text{C}$. The change is done to simplify the test device for the $70^{\circ}\text{C} \pm 2^{\circ}\text{C}$ of the oven precision is used in method two.

-Changed parts of reference standards to our national current standards.

-Modified the repeatable and reproducible textual representation according to the habits in our nation.

Annex A and Annex B in this standard are informative annexes.

This standard is proposed by China Petroleum & Chemical Co., Ltd.

This Standard is under the jurisdiction of Research Institute of Petroleum Processing of China Petroleum and Chemical Corporation.

Drafting units of this standard: Dalian lubricant research and development center of petrochina company limited, lubricant research and development center (Beijing) of China Petroleum and Chemical Corporation.

Main drafters of this standard: Li Chuncheng, Cui Haiou and Yanghua.

Introduction

As a lubricant in hydraulic system, the fluid mainly used to reduce the wear and tear of mechanical components, so lowering the concentration of the hard particle contamination in the system is very important, especially in the sophisticated systems with small gap. Generally, the particulate contaminants are removed through filters. That the capacity of not being clogged of hydraulic oil filter when it passes through filters with certain specification is called filtration. ISO 13357-1 describes the laboratory determination of the filterability of the mineral oil after being heated in the presence of water for evaluating the filterability of it. ISO 13357 -2 describes the laboratory determination of the filterability of the mineral oil under dry environment for evaluating the filterability of it. The filterability defined here is not the physical property of oil products, but the assessed performance of oils at work.

Each part of the ISO 13357 method contains two evaluation methods, known as the "stage." Stage I uses the ratio between the mean flow rate of the fluid through the filtration membrane and the initial flow rate to assess the filtration. When the fluid has good filterability at stage I, while has poor filterability in stage II (see below), the use of it will not generate performance problems generally unless the very sophisticated system filter is used.

Stage II uses the ratio between the mean flow rate of the fluid through the filtration membrane and the initial flow rate to assess the filtration. It is generally believed that the test conditions at stage II are more demanding and more sensitive to the gel and fine debris in the oil products. Especially in the aging of oil or the heating at high temperatures, the debris and gel are easier to generate. If oils at stage II has good filtration, it will not arise filterability problem even under extreme conditions or under the condition where the precision filter (pore diameter is less than 5 μ m) is used. Therefore, this kind of oils applies to more demanding hydraulic and lubrication systems.

This test method can be used to assess mineral oil with viscosity grade being not higher than 100 and does not apply to oils with higher viscosity grade. At present, the actual reason for it has not been found (the highest viscosity of oils used in reality is 220).

Similarly, the applicable scope of this method can also be expanded to fluids other than mineral oils. However, some fluids, such as fire resistance fluid, are not compatible with the filtration membrane specified in this method. For some fluids, even the filtering membrane with the same pore size and pore density as that of them is used, the obtained test data can only be used for comparison.

Determination of the Filterability of Lubricating Oils

Warning: this standard involves certain hazardous materials, operations and equipment, but recommendations about safety problem of equipment related to it are not been proposed, so the user has the responsibility to establish appropriate safety and health practices and determine the appropriate management system before using this standard.

1 Scope

1.1 This standard specifies the determination of filterability of lubricating oil taking mineral oil as base oil, especially the hydraulic oil in hydraulic system. This standard applies to oils with viscosity grade being not higher than 100 classified according to the provisions of GB/T 3141. This standard does not apply to liquids taking other materials as base material, such as fire resistant fluid. Because there may be compatibility problems between the oils and the filter membrane used in this standard, this standard does not apply to e hydraulic oil with special properties for that it may contain insolvable additives or partially dissolved additive or special macromolecules.

1.2 Method one: dry method; it is suitable for evaluating the filterability of lubricating oils under dry conditions.

1.3 Method two: wet method; it is suitable for evaluating the filterability of lubricating oils in the presence of water.

2 Normative references

The articles contained in the following documents have become 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 that 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 document.

GB/T 3141 Industrial liquid lubricants—ISO viscosity classification (GB/T 3141 - 1994,

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