JCMAS

Hydraulic Fluids for Construction Machinery -- Filterability Test Method

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Japan Construction Mechanization Association

Forward

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- The draft of this JCMAS was approved on 2004-06-24 at JCMA Domestic Standardization Committee
- Invitation for submission of comments on the draft JCMAS according to WTO/TBT agreement "Code of good practice" was made from 2004-09-15 to 2004-11-15.
- Then this JCMA has been published on 2004-11-30.

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Japan Construction Mechanization
Association Standard
JCMAS
P 043 : 2004

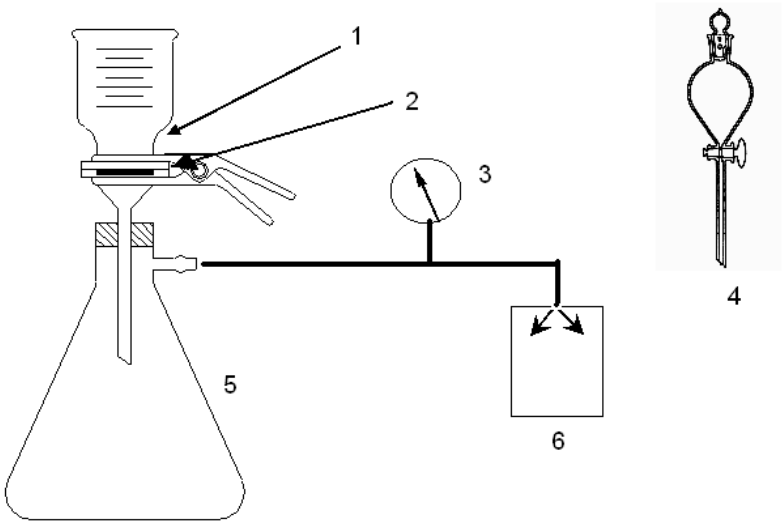
Hydraulic Fluids for Construction Machinery -- Filterability Test Method

1 Scope

This standard specifies a test method for evaluating the tendency of a hydraulic fluid for construction machinery to cause filter clogging due to ingress of a small quantity of water into the fluid.

2 Outline of testing apparatus

Figure 1 shows the schematic of the testing apparatus.



1 Filter holder
2 Membrane filter
3 Vacuum gauge
4 Sepratory funnel, 200 ml
5 Aspiration flask
6 Vacuum pump

Fig.1 Schematic of a filterability test apparatus

3 Apparatus:

The test apparatus and equipment shall consist of the components listed in Table 1 below:

Table 1 Test Apparatus and equipment

Apparatus and equipment	Description
Filter holder[1)]	Graduated glass funnel, 250 ml Clamp Holder suitable for supporting a membrane filter
Membrane filter[2)]	47 mm in diameter, with a 3.0 μm pore size
Aspiration flask	1 L in capacity
Vacuum pump	Capable of attaining 66.7 kPa (500 mmHg) vacuum ; absolute pressure of 33.3 kPa

NOTE 1) Reference model: Millipore XX1004730
2) Reference model: Millipore SSWP04700

4 Test procedure:

The filterability test shall be conducted in the following steps, throughout which temperatures are maintained within the range 25 +/- 5℃ for both the test samples and the test ambience:

4.1 Prepare two 100 ml batches of test sample by adding 1 ml of distilled water into 99 ml of an original sample fluid.

4.2 Place each of the above sample batches in 200 ml separatory funnels and shake the funnels in an automatic separatory funnel shaker for 5 minutes, with a vertical shake of 250 strokes per minute.

4.3 Allow the sample batches to stand for 24 hours at room temperature.

4.4 Shake the samples again for 5 minutes and then remove them into a beaker, where the sample is allowed to stand for 3 minutes while foaming settles.

4.5 Place the entire sample into the filter cup and reduce the pressure of the aspiration flask to an absolute pressure of 33.3 kPa. Measure the time for all sample volume to pass through the filter, and record it as the first pass data.

4.6 Return the entire sample back into the filter cup, without replacing the filter element, and reduce the pressure of the aspiration flask to an absolute pressure of 33.3 kPa. Measure the time for the sample to pass through the filter for the second time, and record it as the second pass data. If the sample does not complete the filtering within 40 minutes, terminate the procedure and the test.

5 Reporting of test results:

The filterability test results shall be recorded as follows. Confirm that temperatures have been maintained within the range 25 +/- 5℃ for both the test samples and the test ambience during the test:

5.1 Sample identification;

5.2 Description of the filter and the filter holder used;

5.3 Measurement results for the first pass and the second pass.

Annex (Informative)
Explanatory Note on JCMAS P043
Hydraulic Fluids for Construction Machinery --
Filterability Test Method

This explanatory note, which does not form a part of this Standard, elaborates on the main body of the Standard and matters specified or described therein, as well as items of reference and other matters related thereto.

1 Purpose of establishing the Standard:

In the process of developing a quality standard for hydraulic fluids for use in construction machinery, this Standard has been established as a method for evaluating filterability of hydraulic fluids as a requisite performance item for application in construction machinery.

2 History of establishment of the Standard:

The draft for this Standard was prepared by the Equipment Engineering Committee - Fuels and Lubricants Subcommittee of the JCMA, and after the review and approval by the Standard Committee - Domestic Standard Subcommittee, was posted for comment according to WTO Agreement on Technical Barriers to Trade (TBT) “Code of good practice (CGP)” prior to publication as a JCMAS.

Although it was contemplated to adopt a filterability test method widely used in Europe and the U.S. at first, since the test method lacked adequate test data accumulated on commercially available hydraulic fluids used for construction machinery in Japan, it has been decided to adopt this Standard based on a method already used by Japanese construction machinery manufacturers.

3 Issues discussed during the deliberation:

Nothing to state in particular.

4 Scope:

This Standard applies to hydraulic fluids for construction machinery.

5 Supplementary notes on items specified in this Standard:

Nothing to state in particular.

6 Issues at hand:

Nothing to state in particular.

7 Issues concerning the normative references:

Nothing to state in particular.

8 Issues concerning patent and intellectual properties:

Nothing to state in particular.

9 Other issues:

Nothing to state in particular.

10 Composition of the Drafting Committees:

Listed as follows are members who compose the Drafting Committee and the Reviewing Committee related to this Standard:

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