



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

GB/T 19977-2014

**Textiles -- Oil repellency -- Hydrocarbon resistance test
(English Translation)**

Issued on: September 3, 2014

Implemented on: March 1, 2015

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

Table of Contents

Foreword...	3
1 Scope...	5
2 Normative References...	5
3 Terms and Definitions...	5
4 Principles...	6
5 Safety Precautions...	6
6 Reagents...	6
7 Apparatus...	7
8 Test Specimens...	7
9 Procedure...	8
10 Evaluation...	8
11 Evaluation of Results...	10
12 Test Report...	10
Appendix A (Informative) Precision and Bias Statement...	11
Appendix B (Informative) Evaluation of Oil Repellency...	13
Bibliography...	14

1 Scope

This Standard specifies the methods for determination of fabric oil repellency with of a selected series of liquid hydrocarbons of different surface tensions.

This Standard is applicable to various textiles and their products.

This Standard is intended to provide a guide to oil stain resistance. It can provide a rough index of oil stain resistance as, generally, the higher the oil repellency grade, the better resistance to staining by oily materials, especially liquid oil substances. This is particularly true when comparing various finishes for a given substrate. This Standard can also be utilized in determining if washing and/or dry-cleaning treatments have any adverse effect on the oil repellency characteristics of a substrate.

Note: Washing and dry-cleaning treatment procedures are described in GB/T 8629 or GB/T 19981 (all parts), respectively.

This Standard is not intended to estimate the resistance to penetration of the substrate by oil- based chemicals.

2 Normative References

The following referenced documents are indispensable for the application of this document.

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 6529 Textiles - Standard Atmospheres for Conditioning and Testing (GB/T 6529-2008, ISO 139:2005, MOD)

3 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

3.1

Grade

Symbol for any step of a multistep standard reference scale for a quality characteristic.

9 Procedure

9.1

Place the first test specimen flat on the white blotting pad (7.2) on a smooth, horizontal surface with the face side on top. Testing should be conducted in standard atmosphere for testing in accordance with GB/T 6529. Testing should be completed within 30 min, if test specimens are removed from a conditioning chamber. When evaluating open-weave or "thin" substrates, place the test specimen on at least two layers of the substrate; otherwise, the test liquid can wet the underlying surface, not the actual test substrate, and thereby cause confusion in the reading of the results.

9.2

Wearing clean laboratory gloves (7.3), brush the pile of napped or pile substrates using the hand, in the direction giving the greatest lay of the surface prior to placing the drops of the test liquid.

9.3

Beginning with the lowest-numbered test liquid (oil test liquid No. 1), carefully place small drops (approximately 5 mm in diameter or 0.05 mL volume) on the test specimen in a minimum of five locations representing all physical and colour characteristics of the fabric. The drops should be approximately 4.0 cm apart. The dropper tip should be held at a height of approximately 0.6 cm from the substrate surface while placing drops. Do not touch the substrate with the dropper tip. Observe the drops for (30 ± 2) s from approximately a 45° angle. Assess each drop in accordance with Figure 1. Immediately examine the reverse of

the fabric for any wetting.

9.4

If no penetration or wetting of the substrate at the liquid-substrate interface and also no wicking around the drops occur, place drops of the next high-numbered test liquid at an adjacent site on the substrate so as not to interfere with the previous test and again observe for (30 ± 2) s. Assess each drop in accordance with Figure 1. Immediately examine the reverse of the fabric for any wetting.

9.5

Continue this procedure until one of the test liquids shows obvious wetting or wicking of the substrate under or around the drop within (30 ± 2) s. A maximum of six test liquids may be performed on one test specimen.

9.6

Repeat the procedure of 9.1~9.5 with the second sample. A third sample may be required (see Chapter 11).

10.1 Classification and description of liquid drop

Liquid drops are split into 4 grades (see Figure 1):

Grade A - clear, well-rounded drop;

11 Evaluation of Results

The oil repellency grade should be measured on two separate specimens. If the two grades agree, report the value. When the two grades are not in agreement, a third determination should be made. Report the grade of the third determination if that value is the same as either of the first two determinations. When the third determination is different from either of the first two, report the median value. For example, if the first two grades are 3.0 and 4.0 and the third determination is a 4.5 value, report the median value of 4.0. Report the oil repellency grade. This grade variation can be an indication of non-uniform fabric or contamination problems.

Appendix A provides precision and bias statement, Appendix B provides evaluation indexes of oil repellency for reference.

12 Test Report

The test report shall include the following information:

- a) reference to this Standard;
- b) complete identification of the sample;

- c) number of specimens tested;
- d) conditioning and testing atmosphere used;
- e) any deviation from the procedure specified;
- f) test result of oil repellency grade of each specimen;
- g) oil repellency grade of the sample;
- h) evaluation result of oil repellency, if necessary (see Appendix B).

.....