



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

GB/T 12585-2020

**Rubber, vulcanized or thermoplastic. Rubber sheets and
rubber-coated fabrics. Determination of transmission rate of
volatile liquids(gravimetric technique)**

Issued on: November 19, 2020

Implemented on: October 1, 2021

Issued by: SAMR; SAC

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Foreword

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

This standard replaces GB/T 12585-2001 "Rubber, vulcanized or thermoplastic

- Rubber sheets and rubber-coated fabrics - Determination of transmission rate of volatile liquids (gravimetric technique)". Compared with GB/T 12585-2001,

the main technical changes are as follows:

- ADD the contents of "Warning 2";
- ADD ISO 2231 and ISO 18899:2013 to the normative references; USE ISO

23529 to replace GB/T 2941-1991, GB/T 5723-1993, GB/T 9865.1-1996,

(see Chapter 2; Chapter 2 of the 2001 edition);

- MODIFY the "transmittance" as mentioned in the terms and definitions and the full text into "transmission rate" (see Chapter 3; Chapter 3 of the 2001

edition)

- ADD the calibration requirements of the test instrument (see Chapter 5);
- ADD the description of adjustment options (see Chapter 8);
- MODIFY the presentation method of the test report (see Chapter 12; Chapter 11 of the 2001 edition);
- ADD the "calibration plan" (see Appendix A).

This standard, using the translation method used, identically adopts ISO 6179:2017 "Rubber, vulcanized or thermoplastic - Rubber sheets and rubber-coated fabrics - Determination of transmission rate of volatile liquids (gravimetric technique)".

The Chinese documents that have a consistent correspondence relationship with the normatively cited international documents in this standard are as follows:

- GB/T 2941-2006 Rubber - General procedures for preparing and conditioning test pieces for physical test methods (ISO 23529:2004, IDT)
- GB/T 3512-2014 Rubber, vulcanized or thermoplastic - Accelerated ageing and heat resistance tests (ISO 188:2011, IDT)
- GB/T 6003.1-2012 Test sieves - Technical requirements and testing - Part 1: Test sieves of metal wire cloth (ISO 3310-1:2000, MOD)
- GB/T 24133-2009 Rubber - or plastics-coated fabrics - Standard Rubber, vulcanized or thermoplastic - Rubber sheets and rubber-coated fabrics - Determination of transmission rate of volatile liquids (gravimetric technique)

Warning 1: The personnel using this standard shall be familiar with the formal laboratory operating procedures. This standard is not intended to involve all safety issues that may arise due to the use of this standard. It is the user's responsibility to formulate corresponding safety and health

systems and ensure compliance with national laws and regulations.

Warning 2: Certain procedures specified in this standard may contain used or generated substances or generated wastes, so as to constitute a locally hazardous environment. Safe handling and disposal after use shall refer to appropriate documents.

1 Scope

This standard specifies two methods for measuring the permeability of rubber when volatile liquids diffuse into the atmosphere by measuring the transmission rate.

This method is only suitable for sheet materials and rubber-coated fabrics which have a thickness between 0.2 mm and 3.0 mm.

This method is limited to the measurement of transmission rates greater than

0.1 g/(m² · h).

This method is especially suitable for comparing the transmission rate of the same liquid to different materials and the transmission rate of several liquids to the same material.

Method A: It is necessary to refill the liquid, to test a mixed liquid composed of several liquids with different transmission rates.

Method B: It does not need to refill the liquid; it is used to test single-component liquid.

Note: The method for measuring water vapor's transmission rate is given in ISO 2528.

container (i.e., invert the container). Keep the test liquid in contact with the inner surface of the specimen for 24 h +/- 2 h at the test temperature; weigh again at the end (see 9.2).

Excessive mass loss (greater than the natural volatilization mass of the test liquid in the same environment) indicates that leakage has occurred due to improper sealing; then the specimen shall be discarded.

All weighing operations shall be performed at $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ or $27\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$.

10.2 Method A

After completing the preparations described in 10.1, the container is emptied by the injection valve; then fill approximately 50 cm^3 of test liquid.

After conditioning for 1 h, weigh the container, accurate to 1 mg, to ensure that the outer surface is clean and dry; the mass is m_1 . The container which contains the test liquid in contact with specimen is kept at the test temperature for a period (t) of $24\text{ h} \pm 2\text{ h}$. Weigh again at the end of the period (see 9.2); the mass is m_2 .

Calculate the mass change k of the specimen per unit time, expressed in milligrams per hour (mg/h), as shown in formula (1):

Repeat the operation until the difference between the k value of any one of the

3 consecutive $24\text{ h} \pm 2\text{ h}$ test cycles and the average value k_m obtained from

these 3 test cycles is not more than 10%.

Note: According to the transmission rate, there may be other more suitable periods (see 9.2).

Repeat the procedure by the use of the remaining specimens, starting from 10.1 each time.

The average value k_m obtained from the three specimens shall be within 15% of its median value K_M . Otherwise, repeat the measurement and use the full set of data from the two sets of measurements to calculate the result (see Chapter 11).

10.3 Method B

Determine the rate of change of mass in accordance with 10.1 and 10.2, without emptying and filling the container between successive weighing.

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