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

GB/T 16578.1-2008

**Plastics - Film and sheeting - Determination of tear resistance -
Part 1: Trouser tear method**

塑料 薄膜和薄片 耐撕裂性能的测定 第1部分: 裤形撕裂法

(English Translation)

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Foreword

GB/T 16578 "Determination of tear resistance of plastic films and sheets" is divided into 2 parts.

--- Part 1: Trouser-shaped tearing method;

--- Part 2: The Elmendorf Method (Elmendorfmeth).

This part is part 1 of GB/T 16578, which is equivalent to ISO 6383-1:1983 "Plastics-Films and sheets-tear resistance Determination of performance. Part 1: Trouser tearing method (English version).

This part is equivalent to the translation of ISO 6383-1:1983, which is completely consistent in technical content.

For ease of use, the following editorial changes have been made to this standard.

--- Change "this part of ISO 6383" to "this part of GB/T 16578";

--- Deleted the preface of ISO 6383-1:1983;

--- Added the foreword of national standards;

--- Replace the international standards listed in the "normative references" chapter with the

national standards equivalent to the documents;

--- Replace the ISO standard involved in the standard with the corresponding national standard.

This part replaces GB/T 16578-1996 "Test method for tear resistance of plastic films and sheets".

Compared with GB/T 16578-1996, the main changes in this part are.

- Changed the standard name and added a preface;
- Added normative references;
- The definition content is different, the definition of maximum tearing force has been deleted;
- Delete the original 6.3 (tool);
- Delete the original figure 2 sample cutting method;
- Increased the test speed of 250mm/min;
- Increased tear expansion pattern;
- Delete the load-time diagram of the original 11.2 and Figure 5 highly stretched film;
- Delete the 11.5 standard deviation calculation formula.

This part is proposed by China Petroleum and Chemical Industry Association.

This part is under the jurisdiction of the National Plastic Standardization Technical Committee (SAC/TC15).

This section is responsible for drafting unit. National Synthetic Resin Quality Supervision and Inspection Center.

Participated in the drafting of this part. Beijing Yanshan Petrochemical Resin Institute, National Chemical Building Materials Testing Center (Material Testing Department), National Petrochemical Organic Raw Material Synthetic Resin Quality Inspection Center, National Plastic Quality Inspection Center (Beijing), Guangzhou Jinfa Technology Co., Ltd.

1 Scope

This part of GB/T 16578 specifies the use of standard pant-shaped samples to measure the tearing properties of films and sheets with a thickness of less than 1 mm method. The test shall be carried out under the prescribed state adjustment and test speed.

This section applies to films and sheets of soft and hard materials. The material should not be brittlely damaged or irreversibly deformed during the test.

The energy consumed by the deformation of the two trouser legs should not affect the energy consumed by the tear.

This section does not apply to the determination of the tear properties of foam sheets and foam films.

2 Normative references

The clauses in the following documents become the clauses of this part by quoting GB/T 16578 in this part. For dated references, their all subsequent amendments (not including errata content) or revisions do not apply to this section, however, encourage each agreement reached in accordance with this section Fang studies whether the latest version of these documents can be used. For the cited documents without date, the latest version applies to this section.

GB/T 2918-1998 Standard environment for plastic sample condition adjustment and testing (idt ISO 291.:1997) GB/T 6672-2001 Plastic film and sheet thickness determination mechanical measurement method (idt ISO 4593.:1993) GB/T 104.3-2006 Test method for tensile properties of plastic films (ISO 527-3.:1995, IDT) GB/T 20220-2006 Determination of the average thickness of plastic film and sheet samples, the average thickness of the roll and the weight per unit area Method (Weighing Thickness) (ISO 4591.:1992, IDT)

3 Terms and definitions

The following terms and definitions apply to this section.

At a constant test speed, the average force required to make the crack traverse the sample shown in Figure 1.

The unit is mm

Figure 1 Sample

The tearing force is divided by the thickness of the sample.

GB/T 16577.1-2008/ISO 6383-1:1983

4 Significance

4.1

This method can be used as a basis for quality control, acceptance or rejection according to standards, and data required for research and development.

4.2

Tear performance may vary with sample preparation, test speed and test environment. Therefore, when you need to accurately compare the results, you should pay attention to

Control these factors.

Generally speaking, as long as the thickness of samples of different materials does not differ by more than $\pm 10\%$, their tear strengths can be compared (see 3.2). But in when interpreting the test results, it should be noted that the tearing energy of different materials may vary significantly with the test speed.

5 Principle

Cut the sample to 1/2 place in the long axis direction of the sample, subject the two "trouser legs" formed by the incision to a tensile test, and test the tear along the long axis direction. Calculate the tear strength of the material based on the average force required to crack the specimen (see Figure 1).

6 Instruments

6.1

Tensile testing machine (non-pendulum type). similar to that specified in GB/T 104.3-2006, with the following characteristics.

6.1.1

With the jig separation speed specified in Chapter 9: The load measuring device should be equipped with an automatic recorder, which can be applied from the beginning of the test the load on the sample is recorded as a function of time.

6.1.2

The clamp shall be equipped with jaws that can firmly hold the sample "trouser legs" without slipping. The width of the jaws should be greater than the width of the sample.

The jaws should be parallel to each other and should not be mounted on a rotatable joint.

6.2

Thickness measuring device. an instrument for measuring the thickness of the sample according to the method described in GB/T 6672-2001. For embossed films or sheets, use the instruments specified in GB/T 20220-2006.

7 Sample

7.1

The shape and size of the sample are shown in Figure 1. The length of the cut in the center of the sample is $75\text{mm} \pm 1\text{mm}$.