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

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Plastics - Determination of migration of plasticizers

塑料 增塑剂迁移的测定

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is modified to adopt ISO 177:2016 "Determination of plasticizer migration in plastics".

Compared with ISO 177:2016, this document has undergone the following structural adjustments.

---Chapter 6 corresponds to Chapter 6 and 8.3 of ISO 177:2016, where 6.1~6.4 correspond to 6.1~6.4 of ISO 177:2016.

6.4 and 6.5 correspond to 8.3 of ISO 177:2016, and 6.6 corresponds to 6.5 of ISO 177:2016.

---Chapter 8 corresponds to Chapter 8 of ISO 177:2016, where 8.1 corresponds to 8.1 of ISO 177:2016, and 8.2 corresponds to ISO 177.

ISO 177:2016 standards 8.2 and 8.4, and 8.3-8.6 correspond to ISO 177:2016 standards 8.5-8.8.

---Chapter 9 corresponds to Chapter 9 of ISO 177:2016, with sections 9.2 to 9.4 corresponding to Chapter 9 of ISO 177:2016, and additional sections added.

The technical differences between this document and ISO 177:2016, and the reasons therefor, are as follows.

---The last paragraph of the "Scope" section (see Chapter 1 of ISO 177:2016) has been changed to Note 2 of the "Principles" section (see Chapter 4) for easier labeling.

Quasi-application understanding;

---The scale division of the analytical balance was changed (see 5.1), and the mass change

value was retained to four decimal places (see 9.2) to reduce error;

---The normative reference GB/T 7141 (see 5.3) has been added, and the provisions for forced convection aging ovens have been modified to suit my country's national standards.

Improve technical conditions and enhance operability;

---Increased tolerance for weights (see 5.5) to improve standardization;

---The normative references GB/T 9352, GB/T 17037.1, and GB/T 17037.3 have replaced ISO 293, ISO 294-1, and ISO 294-1, respectively.

ISO 294-3 (see Chapter 6) is used to adapt to my country's technical conditions and improve operability.

---The thin film sample preparation method has been changed to prepare samples according to GB/T 9352 (see 6.2) to improve standardization;

---ISO 291 has been replaced with the normatively referenced GB/T 2918 (see Chapter 7) to adapt to my country's technical conditions and improve operability.

Actual nature;

---The standard environment for "State Adjustment" has been changed to "23/50" (see Chapter 7) to improve standardization;

---The method of placing the sandwich assembly and weights into the aging oven has been changed, and the overlapping sandwich sample assemblies are now separated by glass plates.

The change to "can share a single glass panel" (see 8.3) makes the components more stable and improves operability;

---A schematic diagram of a single sandwich sample assembly forming a columnar combination with weights has been added (see Figure 1) to improve operability;

---Added the requirement that a new specimen should be used for each test (see 8.4), specifying migration testing over time;

---Added a step of cooling the heated sandwich sample assembly to room temperature before separation, and inspecting the appearance of the contact surface (see 8.5), improving the standard.

Paradigm;

---Added formulas for calculating mass change (see 9.1) and sample mass retention rate (see 9.5) to improve standardization and operability.

Actual nature;

---Added information to the test report regarding recording test temperature and time, as

well as the average mass retention rate of the specimens [see Chapter 10] the terms g) and j)) are consistent with the technical content of this document.

The following editorial changes have been made to this document.

---The section of Note 2 in Chapter 1 of ISO 177:2016 has been amended (see Note 1 in Chapter 4);

---Replace ISO 4649 with GB/T 9867 (see 5.6 and References);

---Added a note (see note 6.2);

---The description of dimensional accuracy in the test report has been removed [see Chapter 10, e).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Petroleum and Chemical Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Plastics Standardization (SAC/TC15).

1 Scope

Note: Plasticizers in plastics can also migrate to organic coatings, such as nitrocellulose lacquer.

This document applies to.

a) Evaluate the loss of certain specific liquid phase components (e.g., when plastics (especially films and sheets) come into contact with materials that absorb plasticizers.

Trends in plasticizers;

b) Investigate the migration trends of plasticizers in a specific resin or a series of resins to which one or more concentrations of plasticizers have been added.

In this case, a standard mixture is usually prepared by combining a resin with a plasticizer in a certain proportion, based on a resin with well-defined properties.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 2918 Standard environment for conditioning and testing of plastic specimens (GB/T

2918-2018, ISO 291:2008, MOD) GB/T 7141 Plastics - Test Method for Heat Aging (GB/T 7141-2008, ASTM D5510:1994(2001), MOD) GB/T 9352 Compression molding of thermoplastic materials (GB/T 9352-2008, ISO 293:2004, IDT) GB/T 17037.1 Plastics - Preparation of Injection Molded Specimens for Thermoplastic Materials - Part 1: General Principles and Multipurpose Specimens and Long Specimens Preparation of strip specimens (GB/T 17037.1-2019, ISO 294-1:2017, MOD) GB/T 17037.3 Plastics - Preparation of Injection Molded Specimens - Part 3: Small Square Specimens (GB/T 17037.3-2003, ISO 294-3:2002, IDT)

3 Terms and Definitions

The following terms and definitions apply to this document.

Plasticizer migration Under specified conditions, a plastic sample with added plasticizer is tightly sandwiched between two absorbent sheets made of other materials.

The mass loss that occurred in the material sample.

4 Principles

The sample cut from the sheet, board, or other finished product to be tested is brought into close contact with two absorbent sheets capable of absorbing plasticizers, and then...

The mass reduction of the sample after heating under specified conditions (theoretically equal to the mass increase of the absorbent sheet) can be used to measure the migration of plasticizer.

Note 1: When substances in the absorbent sheet can also migrate, the reverse migration of these substances from the absorbent sheet to the sample may be similar to the migration of plasticizers from the sample to the absorbent sheet.

It happens at any time.

Note 2: Migration of components other than plasticizers (e.g., oligomers) and reduction of volatile components in the sample or absorbent sheet may affect the test results.