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

GB/T 11546.2-2022

**Plastics - Determination of creep behaviour - Part 2: Flexural
creep by three-point loading**

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foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules for Standardization Documents" drafting.

This document is part 2 of GB/T 11546 "Determination of Creep Properties of Plastics". GB/T 11546 has issued the following parts.

--- Part 1. Tensile creep;

--- Part 2. Three-point bending creep.

This document is modified to adopt ISO 899-2:2003 "Determination of creep properties of plastics - Part 2. Three-point bending creep".

The technical differences between this document and ISO 899-2:2003 and their reasons are as follows.

--- Replace ISO 472:1999 (see Chapter 3) with the normatively quoted GB/T 2035 to adapt to the technical conditions of our country;

--- Changed the accuracy requirements of timers, micrometers and vernier calipers (see 4.4~4.6), so as to make the requirements of standard instruments standardized;

--- Replace ISO 178:2001 (see Chapter 5, 6.2) with the normatively quoted GB/T 9341 to adapt to the technical conditions of our country;

--- Replace ISO 291:2008 (see 6.1) with the normatively quoted GB/T 2918 to adapt to the technical conditions of our country;

--- Replace ISO 62:2008 (see 6.1) with the normatively quoted GB/T 1034 to adapt to the technical conditions of our country.

The following editorial changes have been made to this document.

---Incorporated the amendments of ISO 899-2.2003/Amd.1.2015, the outer margin position of the terms involved is vertical

Double lines (||) are marked;

--- Added the description of the index number in Figure 1;

---Deleted the duplicated content in 4.1;

--- Added the serial number of the 6.2 formula, and the serial numbers of the subsequent formulas were revised in turn.

Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

GB/T 11546 "Determination of Creep Properties of Plastics" is a method standard for the determination of creep properties of plastic materials, which provides a basis for the determination of properties of plastic products.

Provided support. At present, GB/T 11546.1 has already adopted ISO 899-1 equivalently, so ISO 899-2 was adopted for this modification, and GB/T 11546.2 was formulated.

GB/T 11546 consists of two parts.

--- Part 1.Tensile creep. The purpose is to establish a method suitable for determining the tensile creep properties of plastic samples.

--- Part 2.Three-point bending creep. The purpose is to establish a method suitable for determining the three-point bending creep properties of plastic samples.

At present, in the sample preparation and performance measurement standards of polyethylene, polypropylene, polystyrene and other resins in my country, the tensile creep property is regarded as the

An important test item for characterizing and evaluating resin materials. However, there is no standard test method for bending creep in China, and it is impossible to perform bending

Creep testing, therefore, is necessary for international standard conversion in accordance with ISO 899-2.Based on this, the enterprise gets a scientific and reasonable

The variable performance data is of great significance in product research and design of plastic components.

Determination of creep properties of plastics

Part 2.Three-point bending creep

1 Scope

This document describes a method for the determination of flexural creep of standard specimens of plastics under given conditions such as pretreatment, temperature and humidity.

This document applies only to tests with free support at both ends and loading at the center (three-point bending test). This document applies to unreinforced, filled and fiber

This document applies to molded specimens of specified dimensions, to test specimens machined in the middle of multipurpose specimens.

samples, or samples machined from finished or semi-finished products such as molded parts, extruded or cast sheets.

Note 1. Due to the difference in fiber orientation, this document may not apply to some fiber-reinforced materials.

Note 2 to entry. Flexural creep will vary greatly with specimen preparation, specimen size and test environment. The thermal history of the specimen can also affect the creep behavior of the specimen

have a greater impact (see Appendix A).

This document does not apply to the determination of flexural creep properties of rigid foamed plastics.

The methods described in this document can provide data for engineering design, research and development. If it is used in engineering design, it should be used in a larger range

Plastic materials are tested under force, time and environmental conditions.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document.

GB/T 1034 Determination of water absorption of plastics (GB/T 1034-2008, ISO 62.2008, IDT)

GB/T 2035 Plastic terms and their definitions (GB/T 2035-2008, ISO 472.1999, IDT)

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

2918-2018, ISO 291.2008, MOD)

GB/T 9341 Determination of bending properties of plastics (GB/T 9341-2008, ISO 178.2001, IDT)

3 Terms and Definitions

The following terms and definitions defined in GB/T 2035 apply to this document.

3.1

creep creep

The phenomenon that strain increases with time under constant stress.

[Source. GB/T 2035-2008, definition 2.229, modified]

3.2

Bending stress flexural stress

Stress on the outer surface of the center of the specimen span.

Note. The unit is megapascal (MPa).

[Source. GB/T 2035-2008, definition 2.413, modified]