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

GB/T 1634.3-2026

Replacing GB/T 1634.3-2004

**Plastics - Determination of temperature of deflection under load
- Part 3: High-strength thermosetting laminates and
long-fibre-reinforced plastics**

塑料 负荷变形温度的测定 第3部分：高强度热固性层压材料和长纤维增强塑料
(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 Part 3 of GB/T 1634, "Determination of Deformation Temperature under Load for Plastics". GB/T 1634 has been published as follows.

part.

---Part 1: General Test Methods;

---Part 2: Plastics and Hard Rubber;

---Part 3: High-strength thermosetting laminates and long fiber reinforced plastics.

This document replaces GB/T 1634.3-2004 "Determination of Deformation Temperature of Plastics under Load - Part 3: High Strength Thermosetting Laminates".

Compared with GB/T 1634.3-2004, the main technical changes in the "Materials" are as follows, except for structural adjustments and editorial modifications.

---The scope has been changed (see Chapter 1, Chapter 1 of the 2004 edition);

---The preferred sample thickness dimension has been added (see 6.2);

---The specification for specimen thickness has been added for tests with a fixed span of 64 mm (see 6.5);

---Calculations for initial deflection, initial deflection error, and standard deflection have been added (see Table 1 in 8.1 and Table 2 in 8.3);

---Precision data has been added (see Chapter 11).

This document is modified to adopt ISO 75-3:2025 "Determination of temperature of deformation under load for plastics - Part 3: High-strength thermosetting laminates".

And long fiber reinforced plastics.

This document has undergone the following structural adjustments compared to ISO 75-3:2025.

---A.2.3.1 corresponds to A.2.3 of ISO 75-3:2025;

---A.2.3.2~A.2.3.3 correspond to A.2.3.1~A.2.3.2 of ISO 75-3:2025;

---A.2.4.1 corresponds to A.2.4 of ISO 75-3:2025;

---A.2.4.2~A.2.4.3 correspond to A.2.4.1~A.2.4.2 of ISO 75-3:2025;

---A.2.5.1 corresponds to A.2.5 of ISO 75-3:2025;

---A.2.5.2~A.2.5.3 correspond to A.2.5.1~A.2.5.2 of ISO 75-3:2025.

The technical differences between this document and ISO 75-3:2025, and the reasons therefor, are as follows.

---ISO 75-1:2020 (see Chapters 4-9, Chapter 11) has been replaced by the normatively referenced GB/T 1634.1-2025.

Adapt to my country's technological conditions and increase operability;

---The description of the sample thickness (see Chapter 4) has been removed to avoid redundancy;

---Added requirements for reporting machined surfaces when reducing specimen thickness by machining (see 6.5, Chapter 11) to enhance reporting.

Information integrity;

---The requirement to select the appropriate test conditions based on the sample size has been added (see 6.2) to increase operability;

---ISO 295 has been replaced by the normatively referenced GB/T 5471, and all parts of GB/T 27797 have been replaced by ISO 1268.

(Partially), GB/T 39812 replaced ISO 2818, and GB/T 46607.1 replaced ISO 10724-1 (see 6.5) to adapt to my the country's technical conditions increase operability;

---ISO 14125 has been replaced by the normatively referenced GB/T 1449, and ISO 291 has been replaced by GB/T 2918 (see 8.1) to conform to...

Given my country's technological capabilities, this increases operability;

---ISO 16012 (see 8.3) has been replaced with the normatively referenced GB/T 44535 to

adapt to my country's technical conditions and increase operability.

Acting.

The following editorial changes have been made to this document.

---ISO 178 (see 5.1) has been replaced by GB/T 9341, which is cited as informative reference;

---Added informative Appendix B, "Degree of conformity between GB/T 27797 (all parts) and ISO 1268 (all parts)".

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).

Introduction

GB/T 1634 "Determination of Deformation Temperature of Plastics under Load" is proposed to consist of three parts.

---Part 1: General Test Methods. The purpose is to specify the general requirements for performing load deformation temperature tests. To accommodate different types of...

The material specifies different types of specimens and different constant test loads.

---Part 2: Plastics and Hard Rubber. The purpose is to address plastics (including filled plastics and fibers with a fiber length not exceeding 7.5 mm).

Specific requirements are specified for reinforced plastics and hard rubber.

---Part 3: High-strength thermosetting laminates and long-fiber reinforced plastics. The aim is to develop high-strength thermosetting laminates and...

Specific requirements are specified for long fiber reinforced plastics (fiber length greater than 7.5 mm before processing).

This method specifies the following parameters.

---Span, which depends on the thickness of the specimen;

---The standard deflection δ_s is a function of the bending strain increment $\Delta\epsilon_f$, which is related to both the span and the specimen thickness;

---The bending stress is 1/1000 of the initial (room temperature) bending modulus of the tested material.

This method is commonly referred to as the heat distortion temperature test (HDT).

The results obtained by this method do not represent the highest usable temperature of the tested material, as the main influencing factors in actual use may differ from those in this test.

The testing conditions differ, such as time, load conditions, and nominal surface stress. Only data obtained for materials with the same flexural modulus at room temperature are valid.

They are comparable.

The results obtained by this method are not applicable to predicting the actual performance of the tested material, nor are they applicable to analyzing or predicting the material's resistance to high temperatures.

Durability.

Determination of Plastic Load Deformation Temperature, Part 3.

High-strength thermosetting laminates and long fiber reinforced plastics

1 Scope

This document describes the determination of the load-deflection temperature of high-strength thermosetting laminates and long fiber-reinforced plastics with a length greater than 7.5 mm.

method.

This document applies to high-strength thermosetting laminates and long fiber reinforced plastics.

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 1449 Test method for flexural properties of fiber-reinforced plastics (GB/T 1449-2005, ISO 14125:1998, NEQ) Note. There are no technical differences between the content referenced in GB/T 1449 and the content referenced in ISO 14125.

GB/T 1634.1-2025 Determination of temperature of deformation under load in plastics-Part 1: General test methods (ISO 75-1:2020) MOD) Note. There are no technical differences