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

GB/T 36800.1-2018

**Plastics -- Thermomechanical analysis (TMA) -- Part 1: General
principles**

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Foreword

GB/T 36800 "Plastic Thermomechanical Analysis (TMA)" is divided into three parts.

--- Part 1. General;

--- Part 2. Determination of linear thermal expansion coefficient and glass transition temperature;

--- Part 3. Determination of penetration temperature.

This part is the first part of GB/T 36800.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This section uses the translation method equivalent to ISO 11359-1:2014 "Plastics Thermomechanical Analysis (TMA) Part 1. General Principles."

The documents of our country that have a consistent correspondence with the international documents referenced in this part are as follows.

---GB/T 2918-1998 Standard environment for conditioning and testing of plastic specimens (ISO 291:1997, IDT);

---GB/T 2035-2008 Plastic terminology and its definition (ISO 472:1999, IDT);

--- GB/T 36800.2-2018 Plastic thermomechanical analysis (TMA) Part 2. Linear thermal expansion coefficient and vitrification

Determination of transition temperature (ISO 11359-2:1999, IDT).

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

This part is under the jurisdiction of the National Plastics Standardization Technical Committee General Method and Product Subcommittee (SAC/TC15/SC4).

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1 Scope

This part of GB/T 36800 specifies the general conditions for thermomechanical analysis of filled or unfilled thermoplastic and thermoset materials.

The material is a sheet or molded sample.

Thermomechanical analysis is the study of the deformation of a sample under constant load with constant changes in temperature and time.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

Standard environment for ISO 291 plastic specimen conditioning and testing
(Plastics-Standardatmospheresfor

Conditioningandtesting)

ISO 472 Plastic Terms and Definitions (Plastics-Vocabulary)

ISO 11359-2 Thermoplastic Mechanical Analysis (TMA) Part 2. Measurement of linear thermal expansion coefficient and glass transition temperature

[Plastics-Thermomechanicalanalysis(TMA)-Part 2.Determinationofcoefficientoflinear
Thermalexpansionandglasstransitiontemperature]

Plastics - Thermoplastic analysis (TMA) - Part 3. Determination of penetration temperature
[Plastics-Thermome-

Mechanicalanalysis(TMA)-Part 3.Determinationofpenetrationtemperature]

3 Terms and definitions

The following terms and definitions defined by ISO 472 apply to this document.

3.1

Thermal expansion method thermodilatometry

A technique in which a material is subjected to program temperature control and its size (or volume) is measured in relation to temperature under almost no load conditions.

Note. The linear expansion method (measuring size) is different from the volume expansion method (measuring volume).

4 Principle

The change of the deformation amount of the material with temperature under constant stress, or its change with time at a certain temperature relationship.

5 instruments

The thermomechanical analyzer contains the following basic configurations.

5.1 Program temperature control furnace, meet the following requirements.

a) provide a constant rate of temperature rise or decrease for testing;