

ICS 83.080.01

CCS G 31



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

GB/T 16582-2008

Replacing GB/T 16582-1996; GB/T 4608-1984

Plastics -- Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers by capillary tube and polarizing-microscope methods

塑料 用毛细管法和偏光显微镜法测定部分结晶聚合物熔融行为（熔融温度或熔融范围）

(English Translation)

Issued on: August 4, 2008

Implemented on: April 1, 2009

Issued by: Standardization Administration of China

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Foreword

This standard is identical with ISO 3146:2000 "Plastics --- measured by capillary microscopy and polarizing partially crystalline polymer melt Behavior (melting temperature or melting range) "(in English).

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

- a) to the "international standards" be replaced by "this standard";
- b) Delete the ISO 3146:2000 Foreword;
- c) increase the national standard foreword;
- d) the "Normative references" international standards with the corresponding equivalents listed in a chapter using this file in place of national standards;
- e) use of decimal notation. "" instead of the international standard decimal symbol "." this standard replaces GB/T 16582-1996 "partially crystalline polymer melting point Capillary tube method" and GB/T 4608-1984 "Standard Test Method for partially crystalline melting point of the polymer optical method", the GB/T 16582-1996, GB/T 4608-1984 combined, were party Method A and Method B.

The standard methods A and GB/T 16582-1996 differences are as follows.

- Increasing the normative references (Chapter 2);
- Thermometer. scale value 1 °C to scale value 0.1 °C (4.2.3);
- Original standard sample loading height. powder sample, loading height of about 5mm ~ 10mm, the standard does not provide now.

The standard methods B and GB/T 4608-1984 differences are as follows.

- Original standard thermometer division is 1 °C, no division is now standard predetermined value;

- Powder sample size and sample size. from 1mg ~ 2mg to 2mg ~ 3mg, powder particle size not exceeding 100µm kind of (5.3.1);
- Thickness of the film formed by heating a sample. from below 0.05mm to 0.01mm ~ 0.04mm (5.3.1);
- Increase mold and plastic pellet sample (5.3.2);
- Increased conditioning (5.3.4);
- Increased precision (5.5).

The standard proposed by China Petroleum and Chemical Industry Association.

This standard by the National Standardization Technical Committee of plastic (SAC/TC15) centralized.

1 Scope

This standard specifies the method of melting behavior of crystalline polymers by Capillary and polarizing microscopy method.

Method A (capillary method) is applicable to all crystalline polymers and their compounding matter.

Method B (polarized light microscopy) applicable to the birefringent crystalline phase of the polymer. Because birefringence effects of polymer crystalline regions, the Does not apply to contain pigments and/or filled with a blend of additives.

Note 1: A method can also evaluate the softening temperature of the non-crystalline solid.

Note 2: The melting temperature measured by different methods usually a few degrees (K) difference.

Note 3: Another method GB/T 19466.3-2004 "plastic differential scanning calorimetry (DSC) - Part 3. melting and crystallization temperature and enthalpy Determination, "also applies to the determination of crystalline polymers melting behavior.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 2918-1998 standard plastic sample conditioning and environmental tests (idt ISO 291:1997)

3 Terms and Definitions

The following terms and definitions apply to this standard.

Crystalline phase and amorphous phase-containing polymer.

When heated, the crystalline or partly crystalline polymer crystallization characteristics or shape disappearance temperature range.

4.1 Principle

The sample was heated at a controlled rate, measuring the temperature began to significantly change the shape and the crystal phase completely disappeared.

Temperature changes shape as the melting temperature of the sample, the temperature range between the two, is the melting range.

Note: according to the standard or the parties concerned about the consultation, the present method can also be used for non-crystalline material.

4.2 the device (see Figure 1) 4.2.1 melting equipment consists of the following components.

- a) a cylindrical metal block, the upper part is hollow and forms a small cavity.
- b) a metal plug, with two or more holes, allowing a thermometer and a piece of metal or a plurality of capillaries loaded.
- c) means for heating the metal block of the system, e.g., encapsulated in a metal block resistance wire.
- d) if the use of electric heating, should regulate power input varistor box.

GB/T 16582-2008/ISO 3146:2000