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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 40384-2021

Plastics - Determination of the transient extensional viscosity of polymer melts

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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 of Standardization Documents"

Drafting.

This document uses the redrafting method to modify and adopt ISO 20965.2005 "Determination of Transient Tensile Viscosity of Plastic Polymer Melt".

Compared with ISO 20965.2005, the main technical differences between this document and ISO 20965.2005, except for editorial changes, and the reasons are as follows.

---Regarding normative reference documents, this document has made adjustments with technical differences to adapt to my country's technical conditions and adjustments.

The situation is collectively reflected in Chapter 2 "Normative Reference Documents", and the specific adjustments are as follows.

* Replace ISO 472 with GB/T 2035, which is equivalent to the international standard (see Chapter 3).

--- Modify the "tensile stress growth coefficient" in 3.4 to "transient tensile viscosity", and only use "transient tensile viscosity" in the full text;

---Improve the requirements of temperature sensor resolution (see 5.3).

This document has also made the following editorial changes.

--- Change the note of ISO 20965.2005 that contains the requirement clause to paragraph, and change some paragraphs to note;

---Revised the definitions of terms in 3.3 and 3.5, and changed the expression method to the form of connotation definition.

1 Scope

This document describes a method for measuring the transient tensile viscosity of a

uniaxially stretched polymer melt under constant strain rate and constant temperature conditions.

This document is applicable to Hencky strain rate between 0.01s-1~1s-1, Hencky strain up to 4, temperature up to 250 degrees C

(See Note 1 and Note 2), the measurement of the transient tensile viscosity of the polymer melt with the measured value between 104Pa.s~107Pa.s (see Note 3).

Note 1.Use Hencky strain and strain rate (see Chapter 3).

Note 2.Strain, strain rate and temperature may exceed these limits.

Note 3.For the smallest measurable transient tensile viscosity, the working limit of the instrument is determined by a variety of factors, including the sample maintaining its

The shape capability and the resolution of the instrument.

2 Normative references

The contents of the following documents constitute the indispensable clauses of this document through normative references in the text. Among them, dated quotations

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

This document.

GB/T 2035 Plastic Terms and Definitions (GB/T 2035-2008, ISO 472.1999, IDT)

3 Terms and definitions

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

Note. The definitions of strain and strain rate in 3.1~3.5 are given by Whorlow[1], and the starting flow of uniaxial stretching under constant Hencky strain rate is defined by flow

The naming committee of the change society is given by [2].

3.1

Hencky strain Henckystrain

The natural logarithm of elongation, see formula (1).

epsilon=ln(l/l0) (1)

Where.

l ---The length of the sample, in meters (m);

l0---The initial length of the sample, in meters (m).

Note 1.epsilon is also called natural strain or true strain.

Note 2.epsilon is a dimensionless physical quantity.

3.2

Hencky strain rate Henckystrainrate

The rate of Hencky strain change with time, see formula (2).

=1/l x l/t (2)