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

GB/T 46061-2025

**Rubber compounding ingredients - Determination of process
oils glass transition temperature by DSC**

橡胶配合剂 差示扫描量热法 (DSC) 测定加工油玻璃化转变温度
(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 adopts ISO 28343:2010, "Differential scanning calorimetry (DSC) for the determination of glass transition in rubber compounding oils," as equivalent to this standard.

temperature".

The following minimal editorial changes have been made to this document.

---To align with existing standards, the standard name has been changed to "Differential Scanning Calorimetry (DSC) for Determination of Processed Oil Glass in Rubber Compounding Agents".

"Transformation temperature".

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 Standardization of Rubber and Rubber Products (SAC/TC35).

1 Scope

This document describes a method for determining the glass transition temperature (T_g) of processing oils used in rubber formulations using differential scanning calorimetry (DSC).

The method.

Note: The same oil can also be used as a filler oil for synthetic rubber.

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.

ISO 1382 Rubber Vocabulary Note. GB/T 9881-2008 Rubber Terminology (ISO 1382:2008, MOD) ISO 3170 Manual sampling of petroleum liquids Note. GB/T 4756-2015 Manual Sampling Method for Petroleum Liquids (ISO 3170:2004, MOD) ISO 11357-1:2023 Differential scanning calorimetry (DSC) for plastics - Part 1: General principles [Plastics - Differential] Note. GB/T 19466.1-2004 Differential Scanning Calorimetry (DSC) for Plastics - Part 1: General (ISO 11357-1:1997, IDT)

3 Terms and Definitions

The terms and definitions defined in ISO 1382 and ISO 11357-1, as well as the following terms and definitions, apply to this document.

The temperature at approximately the midpoint of the temperature range in which the glass transition occurs.

Note: For the purposes of this document, the glass transition temperature is defined as the inflection point of the DSC curve. The inflection point corresponds to the calculated maximum value of the first derivative curve.

4 Reagents and Materials

4.1

Dry helium gas with a purity >99.999%, or in accordance with the differential scanning calorimeter manufacturer's instructions.

4.2

If helium is unavailable, use dry nitrogen (purity >99.999% or in accordance with the differential scanning calorimeter manufacturer's instructions).

5 Instruments

5.1

Differential scanning calorimeter. Equipped with a liquid nitrogen cooling system, capable of reaching a temperature of approximately -150°C.

Two types of instruments may be used.