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

GB/T 46231.1-2025

**Plastics - General test method for polyurethane raw materials -
Part 1: Determination of hydroxyl number of polyols by NIR
spectroscopy**

塑料 聚氨酯原材料通用测试方法 第1部分：近红外光谱法测定多元醇羟值
(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 1 of GB/T 46231, "General Test Methods for Polyurethane Raw Materials in Plastics". GB/T 46231 has been published.

The following parts were included.

---Part 1: Determination of hydroxyl value of polyols by near-infrared spectroscopy this document is modified to adopt ISO 15063:2011 "Determination of hydroxyl value of polyols by near-infrared spectroscopy for polyurethane production".

Compared with ISO 15063:2011, this document has undergone the following structural adjustments.

---Added versions 3.2, 3.3, and 3.5;

---3.4 corresponds to 3.2 in ISO 15063:2011;

---Appendix A corresponds to Appendix B in ISO 15063:2011;

---Appendix B corresponds to Appendix C in ISO 15063:2011;

---Appendix C corresponds to Appendix D in ISO 15063:2011;

---Appendix D corresponds to Appendix E in ISO 15063:2011;

---Appendix E corresponds to Appendix F in ISO 15063:2011;

---Appendix F corresponds to Appendix G in ISO 15063:2011;

---Appendix G corresponds to Appendix H in ISO 15063:2011;

---Appendix H corresponds to Appendix I in ISO 15063:2011;

---Appendix I corresponds to Appendix A in ISO 15063:2011;

---Appendix J has been added.

The technical differences between this document and ISO 15063:2011, and the reasons therefor, are as follows.

---Added terms and definitions for "hydroxyl value reference value," "hydroxyl value prediction value," and "boxcar distribution" (see 3.2, 3.3, and 3.5) to...

Regarding the understanding of the relevant content in the text;

---ISO 14900 has been replaced with the normatively referenced GB/T 12008.3-2009, and a reference value for the hydroxyl value of polyester polyols has been added.

The determination method is HG/T 2709-2022, and the determination method for the reference value of hydroxyl value of polymer polyols is GB/T 31062-2014.

To better suit the actual situation in China;

---ASTM E1655 has been replaced with the normatively referenced GB/T 29858-2013 to better reflect domestic practices;

---Added clear stipulations regarding the interval between collecting the spectral data of the calibration sample and determining the hydroxyl value of the calibration sample by chemical titration, from "as short as possible" to "the interval between collecting the spectral data of the calibration sample and determining the hydroxyl value of the calibration sample by chemical titration".

The phrase "within a given time" has been changed to "interval not exceeding 24 hours" [see 6.2.c)] for ease of practical operation;

---The absorbance range has been expanded, changing "1.0~1.5" to "not greater than 1.5" (see 6.3.2) to better reflect the actual situation in China;

---When the hydroxyl value (calculated as KOH) is greater than 100 mg/g, the result should be retained to the nearest integer; when the hydroxyl value (calculated as KOH) is less than 100 mg/g, the result should be retained to the nearest integer.

The rule of "retaining results to one decimal place" is now uniformly changed to retaining all results to one decimal place [see 12.c)], in order to maintain data accuracy.

Consistency of accuracy;

---Change "informative" in Appendix D to "normative" to clarify the requirements for selecting calibration samples.

The following editorial changes have been made to this document.

---In order to conform to the national standard system optimization and construction plan, the standard name has been changed to "General Test Methods for Plastic Polyurethane Raw Materials".

Part 1: Determination of Hydroxyl Value of Polyols by Near-Infrared Spectroscopy;

---The prompt mentioning the informative appendix in section 4.1 has been removed;

---b in 7.2 has been removed);

---Added chapter headings to Appendix A, and deleted A.5;

---Added a note to Appendix E.4.2;

---Appendix I replaces the foreign validation data in Annex A of ISO 15063:2011 with domestic validation data;

---Appendix J (Informative) "Reproducibility Precision" has been added to supplement the recommendation of repeatability precision for this method.

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 46231, "General Test Methods for Raw Materials Used in Polyurethane Production," is a series of standards concerning general test methods for raw materials used in polyurethane production.

The standard is proposed to consist of eight parts.

---Part 1: Near-Infrared Spectroscopy for Determination of Hydroxyl Values in Polyols. The purpose is to describe a near-infrared spectroscopy method for determining the hydroxyl value of polyols used in polyurethane production.

Methods for determining the hydroxyl value of various polyol raw materials, such as ester polyols, polyether polyols, polycaprolactone polyols, and polycarbonate polyols.

---Part 2: Determination of Residual Acrylonitrile and Styrene Monomer Content in Polymer Polyols by Gas Chromatography. The aim is to describe the gas chromatography method.

A method for determining the content of acrylonitrile and styrene monomers in polymer polyols used in polyurethane production by phase chromatography.