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Plastics — Polyols for use in the production of polyurethanes — Determination of hydroxyl number

Plastiques — Polyols pour la production de polyuréthanne — Détermination de l'indice d'hydroxyle

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 12, *Thermosetting materials*.

This third edition cancels and replaces the second edition (ISO 14900:2017), which has been technically revised.

The main changes are as follows:

— the title has been changed to plural form to read: "Plastics — Polyols for use in the production of polyurethanes — Determination of hydroxyl number";

— in 7.13, hotplate has been added as heating device;

— in 8.1.3, an oil bath has been added, in addition to a hot plate, as a heating device;

— in 8.3.1 and 9.3.1, precision and bias information have been updated;

— in 9.1.3, the information on hydrolysis of excess phthalic anhydride, and the water addition process have been added.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

International Standards which deal with the determination of hydroxyl values of unsaturated-polyester resins (ISO 2554), non-ionic surface active agents (ISO 4326, ISO 4327), binders for paints and varnishes [ISO 4629 (all parts)] and industrial polyglycols (ISO 6796) have been published. The two methods in this document are improved versions of imidazole-catalyzed procedures specifically tailored to the determination of the hydroxyl number of many types of polyol, including those used in the production of polyurethanes. Method A is especially suited to the determination of the hydroxyl number of polyether polyols that may have steric hindrance, or are otherwise difficult to determine by phthalation. Method B is a general method based on phthalation and is applicable to a wide range of polyol types. Both of these methods are similar to procedures found in ASTM D4274.

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Plastics — Polyols for use in the production of polyurethanes — Determination of hydroxyl number

WARNING — Persons using this document should be familiar with normal laboratory practice. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to determine any national regulatory conditions prior to use.

1 Scope

This document specifies two methods for the measurement of the hydroxyl number of polyols used as polyurethane raw materials.

The hydroxyl content of polyols are determined to properly formulate polyurethane systems. Method A is primarily applicable to readily esterified polyether polyols. It is also intended for polyols which have significant steric hindrance, such as those based on sugars. Method B is intended for polyether polyols, polymer polyols and amine-initiated polyols, but can give low results for sterically hindered polyols. Other polyols can be analysed by these methods if precautions are taken to verify applicability. These methods can be used for research and for quality control and specification purposes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 385, *Laboratory glassware — Burettes*

ISO 648, *Laboratory glassware — Single-volume pipettes*

ISO 760, *Determination of water — Karl Fischer method (General method)*

ISO 835, *Laboratory glassware — Graduated pipettes*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 4788, *Laboratory glassware — Graduated measuring cylinders*

ISO 6353-1, *Reagents for chemical analysis — Part 1: General test methods*

ISO 6353-2, *Reagents for chemical analysis — Part 2: Specifications — First series*

ISO 6353-3, *Reagents for chemical analysis — Part 3: Specifications — Second series*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

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