TECHNICAL SPECIFICATION

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Plastics — Test method for exposing polyolefins outdoors combining natural weathering and artificial irradiation

Plastiques — Procédé d'exposition de polyolefines en plein air combinant une irradiation naturelle et artificielle

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Foreword

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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 documents 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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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 6, *Ageing, chemical and environmental resistance*.

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.

Introduction

The performance of polyolefin plastics and products exposed outdoors is reduced by various environmental factors such as UV radiation, heat, humidity, acid rain, etc. Therefore, the estimation of the lifetime is an important consideration in designing against performance degradation of materials and products for the outdoor use. Although the outdoor exposure test method provides degradation caused by the actual environmental factors, it carries a disadvantage of requiring a prolonged testing period. Outdoor weathering supported with artificial radiation are also available. In all cases, these methods are often not effective in regions with a low amount of direct radiation. In response to the questionnaire conducted, over 150 experts by an expert committee on weathering, the majority of respondents agreed on the need of a method for outdoor weathering supported with artificial radiation that would be appropriate for the regional climate, especially for the cloudy regions. That is, a document to be developed which comprise the advantage of outdoor exposure that would generate actual environmental exposure and the advantage of shortening the exposure time by utilizing the artificial irradiation. This test method is developed to provide outdoor weathering supported with artificial irradiation by continuously and sequentially exposing specimens to natural weathering during daytime and artificial radiation at night time.

The International Organization for Standardization (ISO) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents concerning apparatus described in Annex B.

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Plastics — Test method for exposing polyolefins outdoors combining natural weathering and artificial irradiation

1 Scope

This document specifies methods for exposing specimen to alternating outdoor weathering supported with artificial radiation. This method utilizes, as much as possible, the natural outdoor exposure which are then assisted by the artificial radiation during night time and in cloudy conditions.

This document is applicable to polyolefin materials as well as to products and portions of products.

The artificial and natural outdoor exposures and their practices applicable to this document are described in ISO 4892-1, ISO 4892-3 and ISO 877-1, ISO 877-2 and ISO 877-3, respectively.

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 877-1, *Plastics — Methods of exposure to solar radiation — Part 1: General guidance*

ISO 877-2:2009, *Plastics — Methods of exposure to solar radiation — Part 2: Direct weathering and exposure behind window glass*

ISO 877-3, *Plastics — Methods of exposure to solar radiation — Part 3: Intensified weathering using concentrated solar radiation*

ISO 4582, *Plastics — Determination of changes in colour and variations in properties after exposure to glass-filtered solar radiation, natural weathering or laboratory radiation sources*

ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance*

ISO 4892-3, *Plastics — Methods of exposure to laboratory light sources — Part 3: Fluorescent UV lamps*

ISO 9370, *Plastics — Instrumental determination of radiant exposure in weathering tests — General guidance and basic test method*

IEC 60068-2-5, *Environmental testing — Part2-5: Tests — Test S: Simulated solar radiation at ground level and guidance for solar radiation testing and weathering*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 877-3 and the following apply.

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

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

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