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Plastics — Methods of exposure to determine the wavelength dependent degradation using spectrally dispersed radiation

Plastiques — Méthodes d'exposition pour déterminer la dégradation dépendante de la longueur d'onde en utilisant un rayonnement dispersé spectralement

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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 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

Plastics are used outdoors and indoors where they are exposed to solar radiation, to solar radiation filtered by window glass and to artificial radiation sources for long periods. Therefore, information on the wavelength dependent degradation of a polymer property (e.g. optical and mechanical) within the ultraviolet and visible solar spectrum is important. The results of this test determine the spectral sensitivity of a property change over the range of the ultraviolet and the visible solar spectrum.

Plastics — Methods of exposure to determine the wavelength dependent degradation using spectrally dispersed radiation

1 Scope

This document specifies methods of determining the spectral response of all kind of plastics materials to ultraviolet and visible radiation by an irradiation test with spectrally dispersed irradiation.

NOTE Typical specimens that are evaluated include: films, liquids, plaques, pellets, powders, sheets and discs.

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 291, *Plastics — Standard atmospheres for conditioning and testing*

ISO 472, *Plastics — Vocabulary*

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*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472 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/

3.1
short-pass filter
filter that transmits wavelengths shorter than the cut-off wavelength while rejecting longer wavelengths, and characterized by a sharp transition from maximum to minimum transmittance

[SOURCE: ISO 9370:2017, 3.31]

3.2
long-pass filter
filter that transmits wavelengths longer than the cut-on wavelength while rejecting shorter wavelengths, and characterized by a sharp transition from minimum to maximum transmittance

[SOURCE: ISO 9370:2017, 3.21]

3.3
file specimens
portion of the material to be tested which is stored under conditions in which it is stable and which is used for comparison between the exposed and unexposed states

[SOURCE: ISO 4892-1:2016, 3.2]