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Plastics — Determination of spray water delivery during spray cycles when using a xenon arc weathering test apparatus

Plastiques — Détermination du débit d'eau pendant les cycles de pulvérisation lors de l'utilisation d'une enceinte de vieillissement à arc au xénon

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Contents

Page

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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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.

Plastics — Determination of spray water delivery during spray cycles when using a xenon arc weathering test apparatus

1 Scope

This document specifies general procedures to determine the quantity of water sprayed on specimens during a spray cycle in a xenon arc weathering test apparatus.

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

ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps*

3 Terms and definitions

No terms and definitions are listed in this document.

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/

4 Principle

Water delivery during accelerated weathering testing is important because materials in most outdoor environments experience long times of wetness. In order to quantify water delivery, a set of collecting devices is placed on a specimen tray or mounted to a specimen rack of a xenon arc weathering test apparatus. The instrument is set to a spray cycle and after a specified time, the collected amount of water is determined.

The quantity of water delivered to specimens is not necessarily the same as water absorbed by specimens. Other factors such as temperature, time of wetness, and specimen affinity for water can affect total water absorption, but delivery of sufficient water is a necessary prerequisite for adequate absorption.

5 Apparatus

5.1 The xenon arc weathering test apparatus shall conform to the requirements of ISO 4892-1 and ISO 4892-2.

5.2 The collecting devices shall be made of inert, water-resistant material and contain an opening that leads to a reservoir.

5.2.1 The construction of the collecting device shall be such that the opening is in the same plane and orientation as the specimens.

5.2.2 The area of the opening of the collecting device is preferably between 40 cm^2 and 140 cm^2 and the volume of the reservoir is preferably large enough to contain water collected during a five-minute spray period.

5.2.3 In order to prevent artificially high water collection values, the collecting devices shall be designed to only allow water delivery from the front, lamp-facing side of the collecting devices. Water spray and water run-off from other specimen areas shall be prevented from being collected.

NOTE In practice, specimen mounting configurations in both flat-array and rotating-rack instruments can result in water run-off from specimens that can affect other specimens. Collections can differ from the actual amount delivered to a specimen surface.

5.3 A mass balance shall be able to measure water collection values to the nearest 0,1 g. More precise balances are also permitted.

6 Procedure

6.1 Determine the opening area of each collecting device to the nearest 0,5 cm^2 and the mass of each dry collecting device to the nearest 0,1 g.

6.2 Place a minimum of 3 collecting devices on the tray of a flat array instrument (e.g. top-left, centre, and bottom-right) or mount at least one collecting device per tier on a rotating rack instrument. Preferred positions to test are given in ISO 105-B02:2014, Figure B.1 and Figure B.2; examples are provided in Annex A.

6.3 Randomization of collecting device position, and performance of repeat collections, are recommended in order to improve statistical validity.

6.4 Run a five minutes test in a xenon arc weathering test apparatus using dark and water spray conditions. Chamber air and black panel thermometer temperatures shall be set to ambient conditions or uncontrolled.

6.5 After 5 min, remove the collecting devices from the weathering test apparatus, taking care not to spill any of the collected water. Immediately dry any excess water from the outer surface of each collecting device and then weigh each collecting device (along with collected water).

6.6 Determine the mass of collected water to the nearest 0,1 g by subtracting the mass of the completely dried collecting device from the measurement in 6.5.