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Irrigation equipment — Irrigation sprinklers —

Part 4: Test methods for durability

Matériel d'irrigation — Sprinklers d'irrigation —

Partie 4: Méthodes d'essai concernant la durabilité

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Contents

Page

Foreword ..... **iv**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **1**

4 Installation of sprinklers under test **3**

5 Measurements **3**
5.1 Accuracy of measurements 3
5.2 Pressure measurement 4

6 Test conditions **4**

7 Tests to be performed before durability test **4**
7.1 Resistance to hydrostatic pressure at ambient temperature 4
7.1.1 General 4
7.1.2 Metal sprinklers 4
7.1.3 Plastic sprinklers 5
7.1.4 Requirements 5
7.2 Water tightness 5
7.3 Flow rate as a function of inlet pressure 5
7.3.1 General 5
7.3.2 Test method 5
7.3.3 Non-regulated sprinklers 5
7.3.4 Regulated sprinklers 6
7.4 Trajectory height 6
7.5 Radius of throw and water distribution curve 6
7.6 Uniformity of rotation (for rotating sprinklers intended to rotate in a uniform manner) 8

8 Operating time of durability test **8**

9 Examination of sprinkler after durability test **8**
9.1 General 8
9.2 Construction of sprinkler and its parts 8
9.3 Resistance to hydrostatic pressure at ambient temperature 8
9.4 Flow rate as a function of inlet pressure 8
9.5 Trajectory height 9
9.6 Radius of throw water and distribution curve 9
9.7 Uniformity of rotation 9
9.8 Distribution characteristics 9

Bibliography **10**

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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This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 18, *Irrigation and drainage equipment and systems*.

A list of all parts in the ISO 15886 series can be found on the ISO website.

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.

Irrigation equipment — Irrigation sprinklers —

Part 4: Test methods for durability

1 Scope

This document specifies the conditions and methods for testing the durability of rotating sprinklers for irrigation.

The term sprinkler is used here in a broad generic sense and is meant to cover a wide variety of products as classified in ISO 15886-1, which applies to all irrigation sprinkler classifications having both static parts and moving parts during operation, as defined by the manufacturer.

For any given sprinkler, a wide range of nozzle configurations, operating conditions, and adjustments generates at least a theoretical need for a correspondingly large number of tests. Testing agencies and manufacturers can use interpolation techniques to reduce the number of actual test runs, provided accuracy standards are still being met.

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 15886-3:2012, *Agricultural irrigation equipment — Sprinklers — Part 3: Characterization of distribution and test methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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
ambient temperature
temperature of the air surrounding a sprinkler

3.2
area of coverage
area within the wetted boundary from a sprinkler operated within the range of effective application rates specified in the manufacturer's literature

3.3
clean water
water processed, if necessary, so as to contain suspended particles no larger than 74 microns (200 mesh) equivalent and to contain no dissolved chemicals known to have short-term effects on sprinklers materials

3.4
distribution curve
graphical plot of water application depth as a function of distance from a sprinkler along a specified radius

3.5
distribution uniformity
DU
coefficient using the lowest 25 % of water application depths to characterize the uniformity of field-measured or simulated water application from a grid of sprinklers

3.6
flow rate
volume of water passing through a device per unit of time

3.7
full grid collector arrays
collectors located at the intersections of a two-dimensional geometric grid pattern sufficient in number to give a desired statistical basis for determining water *distribution uniformity* (3.5)

3.8
inlet connection size
nominal pipe size designation for commercial purposes or for manufacturer's declaration defined by reference to a recognized standard

3.9
maximum working pressure
P_{max}
highest water pressure at the inlet to a sprinkler recommended by the manufacturer to ensure proper operation

3.10
minimum working pressure
P_{min}
lowest pressure at the inlet to a sprinkler recommended by the manufacturer to ensure proper operation

3.11
nozzle
aperture of a sprinkler through which the water is discharged

3.12
nozzle pressure
pressure measured immediately upstream from a *nozzle* (3.11) or as inferred by a Pitot tube measurement at the nozzle orifice

3.13
nozzle size
numerical size designation used for commercial purposes with no specific relationship to the actual dimensions of a nozzle

3.14
part-circle sprinkler
sprinkler with an adjustable feature that enables it to irrigate a sector of a circular area, either with or without an attachment which enables it to be adjusted to irrigate another sector or the entire circular area

3.15
regulated sprinkler
sprinkler that maintains a relatively constant flow rate at varying water pressures at the sprinkler inlet within the limits specified by the manufacturer