INTERNATIONAL STANDARD

ISO 15886-2

First edition
2021-06

Agricultural irrigation equipment — Sprinklers —

Part 2: Design and operation requirements

Matériel agricole d'irrigation — Asperseurs —

Partie 2: Exigences de conception et de fonctionnement

Reference number
ISO 15886-2:2021(E)

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Published in Switzerland

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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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 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 18, *Irrigation and drainage equipment and systems*.

This first edition of ISO 15886-2 cancels and replaces ISO 7749-1:1995, which has been technically revised.

The main changes compared to the previous are as follows:

— the definitions have been updated;

— the sampling and acceptance tests have been deleted;

— references to ISO 7749-2 have been deleted;

— the distribution tests have been modified and developed in ISO 15886-3;

— a new Annex A "Drop size test" has been added.

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.

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Agricultural irrigation equipment — Sprinklers —

Part 2:
Design and operation requirements

1 Scope

This document specifies the design and operational requirements of irrigation sprinklers and their test methods.

The term sprinkler is used in this document in a broad generic sense and it means to cover a wide variety of products as classified by ISO 15886-1. This document applies to rotating sprinklers.

This document is applicable to sprinklers intended for installation on a pipe lateral and for operation with irrigation water.

2 Normative reference

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 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 15886-1, *Agricultural irrigation equipment — Sprinklers — Part 1: Definition of terms and classification*

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

ISO 15886-4, *Irrigation equipment — Irrigation sprinklers — Part 4: Test methods for durability*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15886-1, ISO 15886-3 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/

3.1
ambient temperature
temperature of the air surrounding a *sprinkler* (3.3)

3.2
clean water
water processed, if necessary, so as to contain suspended particles no larger than 74 µm (200 mesh equivalent) and to contain no dissolved chemicals known to have short-term effects on the sprinkler materials

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3.3
sprinkler
water distribution device of a variety of sizes and types

EXAMPLE Impact sprinklers, fixed-nozzle sprinklers, irrigation guns.

3.4
nozzle
aperture of a sprinkler through which water is discharged

3.5
regulated flow sprinkler
sprinkler (3.3) that maintains a relatively constant *flow rate* (3.6) at varying water pressures at the sprinkler inlet within the limits specified by the manufacturer

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

3.7
nominal flow rate
volume of water discharged per unit of time from a *sprinkler* (3.3) under *test pressure* (3.14)

3.8
inlet connection size
numerical designation used to characterize the *sprinkler* (3.3) which is identical to the size of the connection to the irrigation pipe

3.9
distribution curve
graphical plot of *effective application rate* (3.12) as a function of distance from a *sprinkler* (3.3) along a specified radius

3.10
irrigation lateral
branch supply line in an irrigation system on which distribution devices are mounted directly or by means of fittings, risers or tubes

3.11
sprinkler spacing
conventional designation including the distance between the *sprinklers* (3.3) along an *irrigation lateral* (3.11) and the distance between consecutive irrigation laterals

3.12
effective application rate
application rate equal to or exceeding 0.26 mm/h for *sprinklers* (3.3) with *flow rates* (3.6) exceeding 120 l/h and 0,13 mm/h for sprinklers with flow rates equal to or less than 120 l/h

3.13
range of working pressure
pressures between the minimum working pressure and the maximum working pressure

3.14
test pressure
P_n
pressure at the inlet of a *sprinkler* (3.3) declared by the manufacturer as the pressure to be used for test purposes

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3.15
trajectory angle
angle above the horizontal plane of the water stream discharged from ***a*** sprinkler nozzle operating at *test pressure* (3.14)

4 General requirements

4.1 Materials

Sprinklers shall be made of metal or plastics. Metal sprinklers shall be made from a copper alloy or from other materials whose mechanical properties and resistance to corrosion are similar to those of copper alloys.

Plastics parts of the sprinkler which conduct water and which are exposed to sunlight shall be opaque and shall contain an additive to protect against UV radiation.

On request, the manufacturer shall provide information about the resistance of the sprinkler to chemicals used in agriculture.

4.2 Manufacture and installation

4.2.1 The sprinkler shall not have manufacturing defects which are detrimental to its operation.

4.2.2 The sprinklers shall incorporate features for easy installation. All sprinklers equipped with removable parts shall be easy to assemble manually or by using common tools. If a specific tool is required, it shall be supplied by the manufacturer. The removable parts of one sprinkler, including nozzles, shall be interchangeable with those of other units of the same make and type.

4.2.3 The sprinkler shall be connected to the riser by means that ensure proper strength of the connection according to 6.5 and facilitate manual assembly and removal.

4.2.4 Replaceable nozzles shall be attached to the sprinkler by threads, push-in or any other method that permits rapid and effective replacement under service conditions.

4.3 Connections

The sprinkler connections shall be specified according to the connection type and the corresponding International Standard.

4.3.1 Threaded connection. For sprinklers designed for threaded connection to irrigation laterals, the screw threads shall comply with ISO 7-1. Alternatively, other threads are allowed provided that a suitable adaptor is available with each threaded connection, making it conform with ISO 7-1.

4.3.2 Threaded nozzle. On metal sprinklers with metal nozzles, the threaded nozzle (if applicable) shall be in accordance with ISO 7-1.

4.3.3 On line connection. The manufacturer shall specify the type and size of flexible tube for which the connections are suitable. All complementary information shall be supplied by the manufacturer.

4.4 Performance requirements

The following performance requirements apply to sprinklers having one or more nozzles.

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