



SLOVENSKI STANDARD

SIST ISO 5682-1:2015

01-april-2015

Nadomešča:
SIST ISO 5682-1:1995

Oprema za zaščito poljščin - Oprema za škropljenje - 1. del: Preskusne metode za preskušanja šob

Equipment for crop protection - Spraying equipment - Part 1: Test methods for sprayer nozzles

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Matériel de protection des cultures - Équipement de pulvérisation - Partie 1: Méthodes d'essai des buses de pulvérisation [SIST ISO 5682-1:2015](https://standards.iteh.ai/catalog/standards/sist/fb18bd95-222d-4bfl-9beb-2268a17e6407/sist-iso-5682-1-2015)

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Ta slovenski standard je istoveten z: ISO 5682-1:1996

ICS:

65.060.40 Oprema za nego rastlin Plant care equipment

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en,fr

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INTERNATIONAL STANDARD

ISO
5682-1

Second edition
1996-12-15

Equipment for crop protection — Spraying equipment —

Part 1: **STANDARD PREVIEW**

(Test methods for sprayer nozzles)

[SIST ISO 5682-1:2015](https://standards.iteh.ai/catalog/standards/sist/fb18bd95-222d-4b6f-9beb-2268a17e6407/sist-iso-5682-1-2015)

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Matériel de protection des cultures — Équipement de pulvérisation —
Partie 1: Méthodes d'essai des buses de pulvérisation



Reference number
ISO 5682-1:1996(E)

ISO 5682-1:1996(E)

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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International Standard ISO 5682-1 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 6, *Equipment for crop protection*.

<https://standards.iteh.ai/catalog/standards/sist/186d93-222d-4611-9bec-2268a17c0407/sist-iso-5682-1-2015>
 This second edition cancels and replaces the first edition (ISO 5682-1:1981), which has been technically revised.

ISO 5682 consists of the following parts, under the general title *Equipment for crop protection — Spraying equipment*:

- *Part 1 : Test methods for sprayer nozzles*
- *Part 2 : Test methods for hydraulic sprayers*
- *Part 3 : Test method for volume/hectare adjustment systems of agricultural hydraulic pressure sprayers*

Annex A forms an integral part of this part of ISO 5682. Annex B is for information only.

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Equipment for crop protection — Spraying equipment —

Part 1:

Test methods for sprayer nozzles

1 Scope

This part of ISO 5682 specifies methods for estimating the accuracy of hydraulic sprayer nozzles for hydraulic spraying.

It applies only to hydraulic energy nozzles of mounted, towed and self-propelled agricultural sprayers used for crop protection and fertilization.

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2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 5682. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 5682 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5681:1992, *Equipment for crop protection — Vocabulary*.

3 Definitions

For the purposes of this part of ISO 5682, the definitions given in ISO 5681 apply.

4 Test liquids

4.1 Clean water, free from solids in suspension.

4.2 Clean water with 20 g/l of micro grains of aluminium oxide (according to annex A), renewed after 50 passages.

4.3 Clean water with the addition, if necessary, of a soluble colouring agent, such as dark coloured aniline dye or a similar product. The surface tension of the mixture shall be (35 ± 5) mN/m at 20 °C and the agent and concentration necessary for achieving this shall be stated in the test report.

5 Apparatus

5.1 Equipment

5.1.1 Pressure gauge, with an accuracy of ± 1 % at the effective working pressure.

5.1.2 Rubber or plastics hose for each nozzle.

5.1.3 Collecting vessel for each nozzle.

5.1.4 Measuring tube with dimensions compatible with the requirements of 7.1.3, or **balance**, for measuring the quantity of liquid collected.

5.1.5 Watch, with an accuracy of $\pm 0,5$ s.

5.1.6 Scale, with an accuracy of ± 1 mm.

5.1.7 Angle meter, with an accuracy of $\pm 0,5^\circ$.

5.1.8 Device enabling the nozzles to be moved at a given speed.

5.1.9 Petri dishes, of diameter 50 mm.

5.1.10 Microscope, with a measuring accuracy of 10 μm .

5.1.11 Photographic device with electronic flash.

5.1.12 Liquid or solid suitable for collecting the drops.

5.2 Distribution bench, equipped with a device allowing collection of the liquid when the test pressure is stabilized and the sprayer nozzles are supplied normally (see figure 1 for an example). Components of the bench shall conform to the requirements given in 5.2.1 and 5.2.2.

5.2.1 Groove characteristics

The walls of the grooves shall be vertical.

The upper edges of the walls shall form a plane with, in the longitudinal direction (perpendicular to the grooves), a tolerance of ± 1 % (10 mm/1 m) on the horizontal and, in the lateral direction (parallel with the grooves), a tolerance of ± 2 % (see figure 2).

The maximum thickness of the groove walls shall be 4 mm.

The distance between two consecutive ridges shall be $(50 \pm 0,5)$ mm.

The minimum height of the vertical walls of the grooves shall be at least equal to twice the width of the grooves.

In the case of a distribution bench composed of grooves spaced at 25 mm intervals, these conditions apply by comparing two adjacent grooves with one 50 mm groove.

The total width of the distribution bench shall not be affected by the sum of the tolerances permitted for the upper part of each ridge.

Dimensions in millimetres

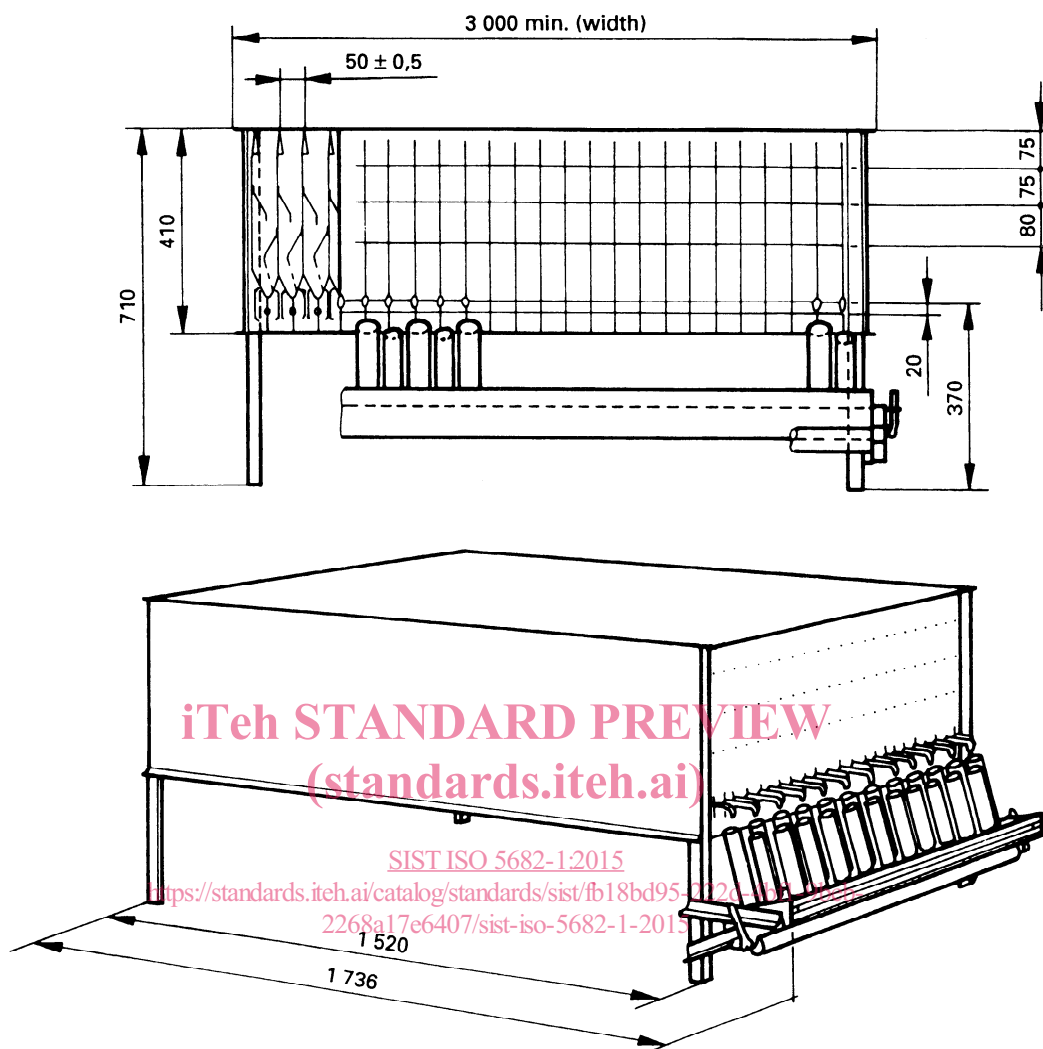


Figure 1 — Example of a distribution bench

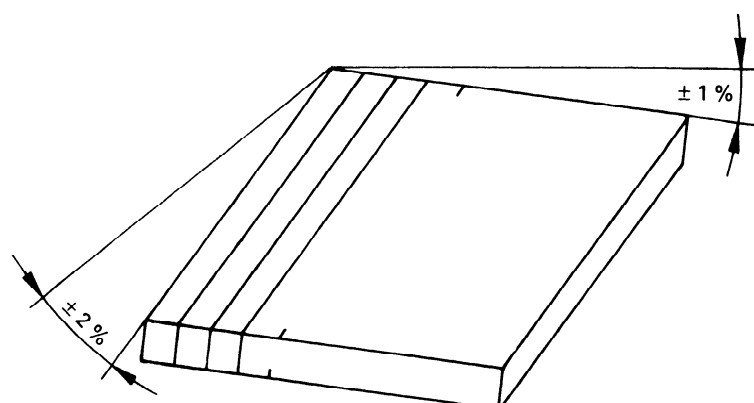


Figure 2 — Groove characteristics

5.2.2 Upper part of the walls

The upper part of the walls is formed by a symmetrical chamfered edge which may be rounded off and shall have the following characteristics:

- a) the height of the chamfered edge shall be at least equal to three times the thickness of the wall;
- b) the thickness of the chamfered edge at its upper part shall be not greater than 1 mm;
- c) the rounding-off radius shall be not greater than 0,5 mm;
- d) no point of the ridges shall be more than 2 mm above or below the mean plane of the ridges.

6 General test conditions

All the operational data and test parameters shall be stated in the test report, of which an example is given in annex B.

6.1 Temperature and relative humidity

The temperature of the test liquid and the air temperature of the test premises shall be between 10 °C and 25 °C during the test. The relative humidity of the test premises shall be normally not less than 50 %. The temperature and the relative humidity shall be stated in the test report.

6.2 Pressures

During the test period, the pressure shall not vary by more than $\pm 2,5\%$ of the test pressure. The test pressures shall be stated in the test report.

The pressure shall be taken downstream of the anti-drip device, the measurement being taken without the nozzle filter.

7 Determination of the characteristics of the sprayer nozzles

For each test, the general test conditions shall be in conformity with those specified in clause 6.

7.1 Uniformity of discharge rate of the nozzles

7.1.1 Sampling

Take 20 complete nozzles of the same type at random. State the sampling conditions in the test report and note, in particular, the size of the stock, the place of sampling, etc. In addition, state in the test report the complete designation of the nozzles, including the discs and tips for the cone spray nozzles.

The sample shall be taken by a person authorised by the test centre. This person shall also take a second sample, in the same conditions, which will be kept in the test centre in case of control.

The two samples shall be taken out of a lot of at least 200 nozzles.

7.1.2 Test liquid

Use the test liquid described in 4.1.

7.1.3 Measurements

Measure, for each complete nozzle, the volume discharged at the test pressure of 0,3 MPa (3 bar) with an error of less than 1 %. The measuring time, measured with a watch (5.1.5) and with an error of less than 1 s, shall be greater than or equal to 60 s.

7.1.4 Results

The results shall be presented in the test report in the form of a graph or table in which the discharge rate of each nozzle is expressed as a percentage of the mean discharge rate of 20 complete nozzles.

7.2 Variations in discharge rate according to pressure

Perform this test with a nozzle for which the discharge rate is closest to the mean value determined in 7.1.

7.2.1 Test liquid

Use the test liquid described in 4.1.

7.2.2 Pressure

Perform the tests at the maximum and minimum pressures indicated by the manufacturer and at least two intermediate pressures. The differences between two consecutive pressures shall be less than or equal to 0,5 MPa (5 bar).

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7.2.3 Measurements

Measure the discharge rate, in litres per minute, at each of the pressures indicated in 7.2.2, with an error of less than 1 %. The measuring time, measured with a watch (5.1.5) and with an error of less than 1 s, shall be greater than or equal to 60 s.

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7.2.4 Results

The results shall be presented in the test report in the form of either a graph in which the discharge rate is indicated on the y-axis and the pressure on the x-axis, or a table.

7.3 Distribution of the spray

Perform this test with a nozzle for which the discharge rate is closest to the mean value determined in 7.1.

7.3.1 Test liquid

Use the test liquid described in 4.1.

7.3.2 Pressure

Perform the test at the maximum and minimum pressures stated by the manufacturer and at least two intermediate pressures.

7.3.3 Position of the nozzle

During the test, the nozzle shall be positioned vertically above a ridge of the distribution bench and in its normal working attitude in order to direct its spray onto the bench. If the manufacturer indicated one particular position, the test shall be made in this position.