INTERNATIONAL STANDARD

ISO 5682-4

First edition
2021-10

Equipment for crop protection — Spraying equipment —

Part 4: Test methods for agitation of sprayer tanks

Matériel de protection des cultures — Matériel de pulvérisation —
Partie 4: Méthodes d'essai du système d'agitation des cuves du pulvérisateur

Reference number
ISO 5682-4:2021(E)

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Published in Switzerland

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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).

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 6, *Equipment for crop protection*.

A list of all parts in the ISO 5682 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.

Equipment for crop protection — Spraying equipment —

Part 4:
Test methods for agitation of sprayer tanks

1 Scope

This document specifies the method of testing the agitation system performance in spray tanks of sprayers for application of plant protection products and fertilizers. This document is not applicable for manually operated knapsack sprayers, aircraft, or UASS sprayers.

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 5681, *Equipment for crop protection — Vocabulary*

ISO 5682-1:2017, *Equipment for crop protection — Spraying equipment — Part 1: Test methods for sprayer nozzles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5681 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 https://www.electropedia.org/

3.1
sample concentration
concentration of a sample calculated by the ratio of the mass of the dried sample to the mass of the liquid suspension (dry material + water)

4 Test setup

4.1 Measuring equipment

4.1.1 General

Measuring equipment shall comply with ISO 5682-1:2017, Clause 4.

4.1.2 Scale for evaporator samples

The scales for weighing evaporator dish/jar samples before and after evaporation shall have a minimum range of 0 g to 100 g with a maximum error of 0,001 g.

4.1.3 Scale for test material

The scale used for measuring test material added to the spray tank shall have a maximum error of 0,1 % of the measured value.

4.2 Sampling methods and measuring concentration

4.2.1 General

This subclause defines methods for sampling and measuring concentration of the liquid suspension during preparation and testing.

4.2.2 Sample size

A sample size of 20 ml to 100 ml shall be used. The sample size chosen shall meet the error in 4.2.5. Each sample shall be analysed individually (for example, do not mix samples prior to measuring concentration). Several samples may be taken and the concentration calculated as the average of the individual sample's concentrations.

4.2.3 Tank sampling

Spray tank samples shall be taken at 90 %, 50 %, and 10 % levels of the tank nominal volume (percent in volume fraction). A minimum of two samples shall be taken at each corresponding tank level.

The samples may be obtained from the tank filling hole. The collection method shall protect the sample from contamination during extraction from the spray tank (for example, with a valve, lid, or vacuum lock).

4.2.4 Nozzle sampling

During spraying after re-agitation (5.4), samples shall be taken from the nozzles.

Alternatively, the samples may be taken from the main spray feed line. Equip the feed line with a valve that allows drawing off a small amount of the liquid suspension from the main flow while spraying through the nozzles. The feedline may also be disconnected from the spray boom or nozzles provided that the liquid flow rate is equal to what it would have been spraying through all of the nozzles.

4.2.5 Measuring sample concentrations

Concentration of each sample shall be determined by evaporating the liquid from the sample in an oven until constant weight.

NOTE 1 An oven temperature of 90 °C to 120 °C can aid in reducing evaporation time.

If the sampling container is not the same as the evaporating dish/jar, care shall be taken to ensure the sedimentation part of the sample is included (e.g. shake the sample bottle to re-suspend sedimentation).

Use a scale according to 4.1.2 to determine the mass of each evaporator jar alone and mark them for identification individually. Add the liquid suspension samples to the evaporator jars and determine the mass of each. After drying the samples in the oven, determine the mass of each dried sample jar.

To determine the mass of the liquid suspension samples and dried samples, subtract the evaporator jar mass from each measurement.