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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 20183.1-2024

Replacing GB/T 20183.1-2006

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

植物保护机械 喷雾设备 第1部分：喷雾机喷头试验方法
(English Translation)

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting:

This document is part 1 of GB/T 20183 "Mechanical spray equipment for plant protection": GB/T 20183 has published the following part:

- Part 1: Test methods for spray nozzles;
- Part 2: Test method for evaluating the horizontal lateral distribution of hydraulic sprayers;
- Part 3: Test method for evaluating the performance of the system for regulating the amount of liquid applied per unit area:

This document replaces GB/T 20183.1-2006 "Mechanical spray equipment for plant protection - Part 1: Test methods for sprayer nozzles":

Compared with GB/T 20183.1-2006, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) The terms and definitions have been changed (see Chapter 3, Chapter 3 of the:2006 edition);
- b) The requirements for measuring devices have been changed (see Chapter 4, 5:1 of the:2006 edition);
- c) The diagram of the distributed test bench has been modified (see 4.2, 5:2 of the:2006 edition);
- d) Deleted the requirements for surface tension (see 4.3 of the:2006 edition);
- e) The requirements for test liquids have been changed (see 5.2, Chapter 4 of the:2006 edition);
- f) Added the requirements for nozzle flow setting (see 5.4);

- g) Added requirements for nozzle spray volume consistency test bench (see 6.2:1);
- h) Changed the requirements for nozzle flow rate setting, measurement and results in nozzle spray consistency (see 6.2:3, 6:2:4, 6:2:5, :2006 Edition) 7:1:3, 7:1:4);
- i) The change of nozzle flow rate with pressure adjustment has been changed (see 6.3, 7:2 of the:2006 edition);
- j) The test method for "single nozzle installation" has been changed (see 6.4:1:1, 7:3:3 of the:2006 edition);
- k) Added the test method for "multiple nozzle installation" (see 6.4:1:2, 6:4:8:2);
- l) Changed the requirements for nozzle flow setting in the mist flow distribution on the horizontal mist liquid distribution test bench (see 6.4:4, :2006 edition) 7:3:2);
- m) The requirements for nozzle direction and nozzle height have been changed (see 6.4:5, 6:4:6, and 7:3:3 of the:2006 edition);
- n) Changed the requirements for measuring the mist flow distribution on the horizontal mist liquid distribution test bench (see 6.4:7, 7:3:4 of the:2006 edition);
- o) Changed the requirements for the results of the fog flow distribution on the horizontal fog liquid distribution test bench (see 6.4:8, 7:3:5 of the:2006 edition);
- p) Changed the requirements for test liquids for changes in nozzle flow and spray distribution due to wear (see 6.5:2, :2006 Version 7:4:1);
- q) Changed the nozzle flow setting requirements for changes in nozzle flow and mist distribution due to wear (see 6.5:3, :2006 Version 7:4:2);
- r) The requirements for spray angle have been changed (see 6.6, 7:5 of the:2006 edition);
- s) The measurement of droplet size has been deleted (see 7.6 of the:2006 edition);
- t) The technical specifications of alumina have been changed (see Appendix D, Appendix A of the:2006 edition):

This document is equivalent to ISO 5682-1:2017 "Mechanical spray equipment for plant protection - Part 1: Test methods for sprayer nozzles":

Introduction

GB/T 20183 "Mechanical spray equipment for plant protection" is intended to describe the test methods for mechanical spray equipment for plant protection: It is planned to consist of four parts:

Grouped into:

--- Part 1: Test method for spray nozzles for sprayers: The purpose is to describe the test

method for the spray accuracy of hydraulic nozzles for sprayers:

--- Part 2: Test methods for evaluating the horizontal lateral distribution of hydraulic sprayers: The purpose is to describe three test methods to evaluate the horizontal lateral distribution of hydraulic sprayers:

Horizontal distribution of the amount of pesticide applied by the same type of sprayers:

--- Part 3: Test method for evaluating the performance of the system for regulating the amount of liquid applied per unit area: The purpose is to describe the amount of liquid applied per unit area:

Test conditions, test methods and calculation methods for quantity regulation systems:

--- Part 4: Test method for stirring the liquid tank: The purpose is to describe the performance of the stirring system in the liquid tank of plant protection machinery:

Methods:

Mechanical spray equipment for plant protection Part 1: Test methods for sprayer nozzles

1 Scope

This document describes the test procedures and methods for assessing the spray accuracy (except droplet characteristics) of hydraulic nozzles for sprayers:

This document applies to the production and inspection of hydraulic nozzles for agricultural sprayers used for plant protection and fertilization:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document:

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document:

ISO 8486-2:2007 Testing and marking of abrasive grain composition for bonded abrasives Part 2: Fine powders from F230 to F2000 (to F2000) Note: GB/T 2481.2-2020 Testing and marking of abrasive grain size composition for bonded abrasives Part 2: Micropowders (ISO 8486-2:2007, MOD)

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 5681 apply:

4: Measuring device

4.1 General requirements the measuring range of instruments and equipment shall comply with the test measurement range requirements, and the test report shall record the instruments used:

4.2 Horizontal fog liquid distribution test bench

4.2.1 General requirements 4.2 describes the details of the horizontal fog liquid distribution test bench: Appendix B contains detailed structural information but is not intended to be a complete description of the instrument structure:

Non-laboratory conditions should be noted in the report:

4.2.2 Characteristics of mist collecting troughs the characteristics of the mist collecting trough are as follows:

- a) When measuring a single nozzle, the distance between the tops of adjacent slot walls (E in Figure 4) should be 25 mm or 50 mm:
- b) Measure the uniformity of horizontal spray flow distribution of multiple nozzles or the entire nozzle of the spray boom: The distance between the tops of adjacent slot walls (Figure 4) E) May be 25mm, 50mm or 100mm: