PHILIPPINE NATIONAL STANDARD

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ICS 65.060.01

Agricultural machinery – Mist Blower – Specifications

BUREAU OF PRODUCT STANDARDS

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National Foreword

This Philippine Agricultural Engineering Standards PAES 155:2010, Agricultural machinery – Mist Blower – Specifications was approved for adoption as Philippine National Standard by the Bureau of Product Standards upon the recommendation of the Agricultural Machinery Testing and Evaluation Center (AMTEC) and the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development of the Department of Science and Technology (PCARRD-DOST).

Foreword

The formulation of this national standard was initiated by the Agricultural Machinery Testing and Evaluation Center (AMTEC) under the project entitled "Development of Standards for Agricultural Production and Postharvest Machinery" funded by the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development - Department of Science and Technology (PCARRD - DOST).

This standard has been technically prepared in accordance with BPS Directives Part 3:2003 – Rules for the Structure and Drafting of International Standards.

The word "shall" is used to indicate mandatory requirements to conform to the standard.

The word "should" is used to indicate that among several possibilities one is recommended as particularly suitable without mentioning or excluding others.

In the preparation of this standard, the following documents/publications were considered:

New Zealand Qualifications Authority. 2007. Operate a knapsack motorised mist blower for agrichemical application. 4 pp.

OSHA. 1972. Occupational Safety and Health Act (OSHA), Federal Register. Vol 37.No.202. Oct.18, 1972.

Record, L.1969. Needed*:* adequate management equipment. USGA Green Section.

Sidde Gowda, D.K., B. V. Patil and S. Yelshetty. 2007. Performance of different sprayers against gram pod borer, *Helicoverpa armigera (Hubner)* on chickpea. Karnataka J. Agric. Sci., 20(2): (261-264).

World Health Organization. 1990. Equipment for vector control. Third Edition.

Agricultural Machinery – Mist Blower – Specifications

1 Scope

This standard specifies the manufacturing and performance requirements for a mist blower.

2 References

The following normative documents contain provisions, which, through the reference in this text, constitute provisions of this National Standard:

AWS D1.1:2000 Structural Welding Code - Steel

PAES 102: 2000 Agricultural Machinery – Operator's Manual – Content and Presentation

PAES 156:2010 Agricultural Machinery – Mist Blower – Methods of Test

3 Definitions

For the purpose of this standard, the following definitions shall apply:

3.1
cut-off valve
valve used to stop the flow of fluid

3.2
mist
fine drops of liquid, such as water or chemical pesticide, sprayed into the air

3.3
mist blower
equipment that sprays liquid in the form of mist (Fig. 1 and Fig. 2)

3.4
wand
part of the mist blower that connects the nozzle to the blower

4 Classification

4.1 Backpack mist blower

Type of mist blower that is carried by an operator on his back for mobility (Fig. 1).

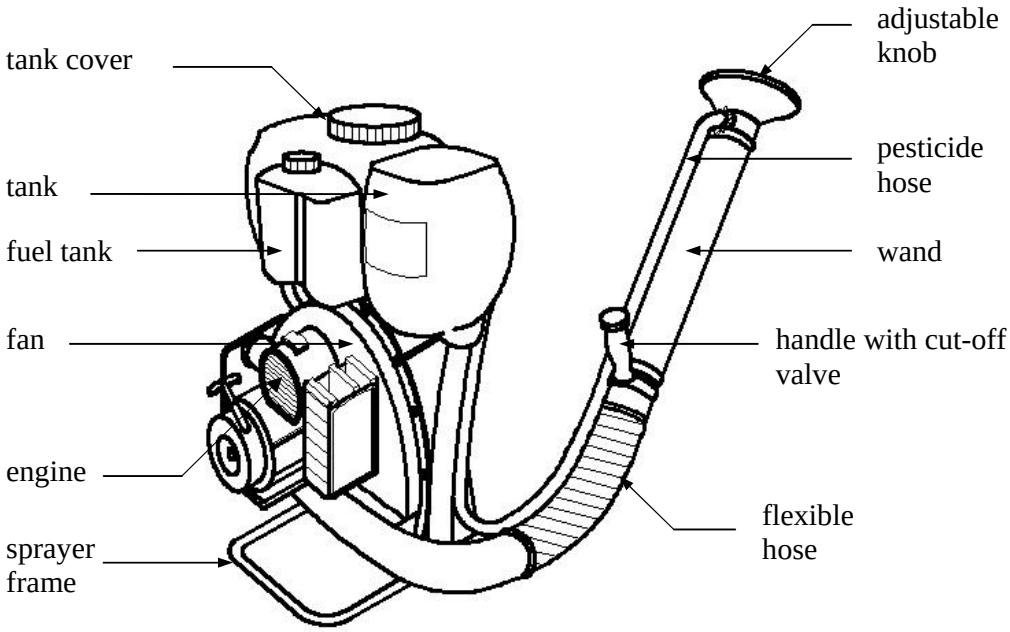

Figure 1. Backpack mist blower

4.2 Mounted mist blower

Type of mist blower that is mounted on a tractor or other vehicle for mobility (Fig. 2).

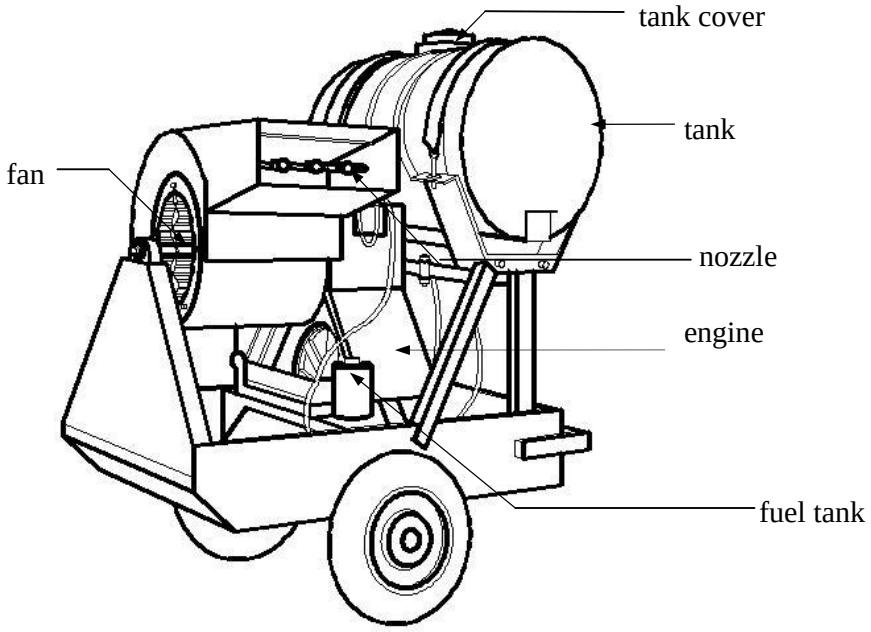

Figure 2. Mounted mist blower

5 Principle of Operation

5.1 The tank shall be filled with liquid chemical prior to starting of the mist blower engine.

5.2 The tank cover shall be secured.

5.3 The valves shall be checked if they are in closed position.

5.4 The mist blower engine shall then be started.

5.5 Upon reaching the desired pressure, the valve shall then be opened to release the mist.

5.6 The nozzle shall be aimed at the target area to be applied.

6 Manufacturing Requirements

6.1 Backpack mist blower

Generally, the backpack mist blower shall consist of tank, hose, nozzle, wand and engine.

6.1.1 The mist blower shall conform to the operator's body, distributing weight evenly, presenting operating controls in a reasonable location and configuration, in such a way that the operator is not exhausted after sustained usage.

6.1.2 The mist blower shall have a net weight of not more than 15 kg.

6.1.3 The wand shall be made of chemical resistant polyvinylchloride or better material. It shall have a length of at least 0.3 m.

6.1.4 An adjustment knob shall be attached to the wand.

6.1.5 The tank shall be made of non-corrosive material (e.g. engineering plastic). It shall have an air-tight and water-tight construction to avoid leakage. It shall have a drain valve for maintenance and cleaning.

6.1.6 The tank cover and the gasket shall be made of chemical resistant polyvinylchloride or better material.

6.1.7 A flexible hose shall be used to attach the nozzle to the engine and tank. It shall be made of chemical resistant polyvinylchloride or better material.

6.1.8 Hose clamps shall be made of non-corrosive material.

6.1.9 The load bearing part of the strap shall be at least 50 mm wide. A load bearing waist strap is desirable.

6.1.10 The strap shall be made of durable and non-absorbent material (e.g. nylon fabric) with at least 1.5 mm thickness and 35 mm width.

6.1.11 Strap pads shall be provided for operator's comfort. It shall have a thickness of at least 10 mm and a width of at least 65 mm.

6.1.12 There shall be provision for adjustment of the strap.

6.1.13 A quick release mechanism shall be provided for emergency purposes

6.1.14 The cut-off valve shall be installed on the handle of the mist blower for instant stopping of the blower. It shall have a variable setting for adjusting droplet sizes.

6.1.15 The fuel tank shall be made of polyethylene or better material. It shall have provision for filtration of foreign materials.

6.1.16 The nozzle shall be made of non-corrosive material.

6.2 Mounted mist blower

The mounted mist blower shall consist of the main frame, tank, blower, and engine.

6.2.1 The main frame shall be made of AISI 1020 or better material with a thickness of at least 6 mm.

6.2.2 The tank shall be made of non-corrosive material (e.g. engineering plastic). It shall have an air-tight and water-tight construction to avoid leakage. It shall have a drain valve for maintenance and cleaning.

6.2.3 The tank cover and gasket shall be made of chemical resistant polyvinylchloride or better material.

6.3 All welded parts shall be in accordance with the criteria set in AWS D1.1:2000.

6.3.1 There shall be no crack on welded area.

6.3.2 There shall be fusion between adjacent layers of weld metal and between weld metal and base metal.

7 Performance Requirements

7.1 The mist blower shall not produce noise higher than the maximum permissible level (Table 1).

Table 1. Permissible noise exposures as required by the Occupational Safety and Health Act (OSHA), Federal Register. Vol 37.No.202. Oct.18, 1972.

Hours of exposure per workday	Permissible noise level (dBA)
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

7.2 There shall be a discharge rate of 0.12 to 0.17 Lpm per nozzle.

7.3 There shall be an air speed of at least 90 m/s.

7.4 The mist blower shall produce evenly sized droplets.

7.5 The mist blower shall not produce run-off.

8 Safety, Workmanship and Finish

8.1 The tank and sprayer frame of the mist blower shall have rounded corners.

8.2 There shall be a gap between the fuel tank and the engine of the mist blower.

8.3 Safety locks shall be provided to avoid accidental opening of the valve.

8.4 Cushions shall be installed for backpack mist blowers for operator's comfort.

8.5 Mufflers shall have a protective cover to protect the operator from burns.

8.6 Fuel lines and other fuel components shall have protective sleeves to help prevent rupture of lines from snagging over incidental damages.

9 Warranty of Construction

9.1 The mist blower's construction shall be rigid and durable without breakdown of its major components within one (1) year from the date of original purchase.

9.2 Warranty shall be provided for parts and services within one (1) year after installation and acceptance by the consumer.

9.3 The engine shall be covered by a separate warranty.

10 Maintenance and Operation

An operator's manual which conforms to PAES 102 shall be provided.

11 Testing

Testing of the mist blower shall be conducted on-site. The mist blower shall be tested for performance in accordance with PAES 156.

12 Marking and Labeling

12.1 The mist blower shall be marked in English with the following information:

12.1.1 Brand name or Registered trademark of the manufacturer (optional)

12.1.2 Model and/or Serial number

12.1.3 Country of manufacture (if imported)/"Made in the Philippines" (if manufactured in the Philippines)

12.1.4 Basic specifications of the mist blower

12.2 Safety/precautionary markings shall be provided. Markings shall be stated in English and shall be printed in red color with a white background.

12.3 The markings shall have a durable bond with the base surface material and shall be water and heat resistant under normal cleaning procedures, it shall not fade, discolor, crack or blister and shall remain legible.

Philippine Agricultural Engineering Standards

AMTEC-UPLB – PCARRD Project: "Development of Standards for Agricultural Production and Postharvest Machinery"

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