ANSI/ASABE S641 MAY2018
Droplet Size Classification of Aerial Application Nozzles

American Society of
Agricultural and Biological Engineers

STANDARD

ASABE is a professional and technical organization, of members worldwide, who are dedicated to advancement of engineering applicable to agricultural, food, and biological systems. ASABE Standards are consensus documents developed and adopted by the American Society of Agricultural and Biological Engineers to meet standardization needs within the scope of the Society; principally agricultural field equipment, farmstead equipment, structures, soil and water resource management, turf and landscape equipment, forest engineering, food and process engineering, electric power applications, plant and animal environment, and waste management.

NOTE: ASABE Standards, Engineering Practices, and Data are informational and advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. The ASABE assumes no responsibility for results attributable to the application of ASABE Standards, Engineering Practices, and Data. Conformity does not ensure compliance with applicable ordinances, laws and regulations. Prospective users are responsible for protecting themselves against liability for infringement of patents.

ASABE Standards, Engineering Practices, and Data initially approved prior to the society name change in July of 2005 are designated as "ASAE", regardless of the revision approval date. Newly developed Standards, Engineering Practices and Data approved after July of 2005 are designated as "ASABE".

Standards designated as "ANSI" are American National Standards as are all ISO adoptions published by ASABE. Adoption as an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by ASABE.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

CAUTION NOTICE: ASABE and ANSI standards may be revised or withdrawn at any time. Additionally, procedures of ASABE require that action be taken periodically to reaffirm, revise, or withdraw each standard.

ASABE, 2950 Niles Road, St. Joseph, MI 49085-9659, USA, phone 269-429-0300, fax 269-429-3852, hq@asabe.org

ANSI/ASABE S641 MAY2018
Approved May 2018 as an American National Standard

Droplet Size Classification of Aerial Application Nozzles

Developed by the MS-23/6 Application Sys & US TAG ISO TC23/SC6 Committee. Approved as an ASABE standard May2018; approved by ANSI May 2018.

Keywords: Droplet size classification, Aerial sprays, Reference nozzles

1 Purpose and scope

1.1 This Standard defines droplet size categories for the classification of aerial application spray atomizers, relative to specified reference flat fan nozzles discharging into a high-speed air stream, which enhances atomization simulating aerial application conditions. The purpose of classification is to provide the nozzle user with droplet size information for use in making application decisions to meet pesticide product label and other regulatory requirements related to pesticide spraying by aircraft.

1.2 This Standard defines a means for relative nozzle comparisons only based on droplet size. Other spray factors related to drift or efficacy such as droplet velocities, droplet densities, discharge height, evaporation and target impaction are not addressed by this Standard.

1.3 This Standard is based on ASAE/ANSI S572, but accommodates narrower, high speed wind tunnels used to reflect aerial application factors. Primarily, this relates to the requirement for an active air stream/high-speed wind tunnel (rather than "static air or so that no stream of air enhances atomization") and the selection of reference nozzles. Differences in measurement setups, methods and systems may impact numerical results from lab to lab, like ASAE/ANSI S572. The reference nozzles provide relative classification references that can be evaluated under airspeeds associated with aerial application conditions that cause secondary breakup. The drop size reference curves provided by this standard are equivalent to those in ASAE/ANSI S572, but allow for evaluation in aerial application airspeeds.

2 References

The following referenced documents are indispensable for the application 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.

ANSI/ASAE S572, Spray Nozzle Classification by Droplet Spectra

ASAE S327, Terminology and Definitions for Application of Crop or Forestry Production and Protection Agents

ASTM E1260, Standard Test Method for Determining Liquid Drop Size Characteristics in a Spray Using Optical Non-Imaging Light-Scattering Instruments

ASTM E1296, Standard Terminology Related to Liquid Particle Statistics

ASTM E2872, Standard Guide for Determining Cross-Section Averaged Characteristics of a Spray Using Laser-Diffraction Instruments in a Wind Tunnel Apparatus