

ANSI/ASABE S572.3 (FEB2020)
Spray Nozzle Classification by Droplet Spectra



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Keywords: Chemicals, Drop size, Droplet, Fertilizer, Nozzle, Spray

1 Purpose and Scope

1.1 This Standard defines droplet spectrum categories for the classification of spray nozzles, relative to specified reference fan nozzles discharging spray into static air or so that no stream of air enhances atomization. The purpose of classification is to provide the nozzle user with droplet size information primarily to indicate off-site spray drift potential and secondarily for application efficacy.

1.2 This Standard defines a means for *relative nozzle comparisons only based on droplet size*. Other spray drift and application efficacy factors, such as droplet discharge trajectory, height, and velocity, air bubble inclusion; droplet evaporation; and impaction on target are examples of factors not addressed by the current Standard.

2 General

2.1 Liquid flow rate, liquid pressure, and physical changes to nozzle geometry and operation can affect the nozzle classification. A given nozzle can be classified into one or more droplet size categories, depending on the selection of flow rate, operating pressure, and other operational conditions.

2.2 Generally the Standard is based on spraying water through the reference nozzles and nozzles to be classified. However, spray liquid properties may affect droplet sizes and should be considered by the end user. Besides water, a surfactant-water mixture, with a dynamic surface tension of 40 ± 2 dynes/cm at 10 to 20 ms, such as 9% (wt/wt) isopropanol or 0.1% (v/v) acetylenic diol (e.g. Surfynol™ 104¹) surfactant in water should be sprayed through the nozzles to be classified (1) that are claimed to reduce spray drift, or (2) that utilize pre-orifices or internal turbulence chambers *especially for cases near a threshold between classification categories*. If differing classifications (see 6 Nozzle Classification Procedures for Statistical Basis) are determined for water versus a mixture of water and surfactant, the finer of the two classifications should be reported.

2.3 Presentation of nozzle classification categories to nozzle users should use the standard category terms from 3.3. The presentation may use the symbols or color codes identified in 3.3, provided the corresponding standard category terms are identified in the presentation.

¹ The referenced product is noted as an example and is not to be interpreted as a product endorsement.