Designation: D4336 – 18

# Standard Practice for Determination of the Output Per Stroke of a Mechanical Pump Dispenser[1]

This standard is issued under the fixed designation D4336; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This practice covers the measurement of the mean quantity-by-weight of liquids dispensed from a mechanical pump dispenser (spray or flow type) with a consumer-type product on each actuation.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*[2]

D3890 Test Method for Number of Strokes to Prime a Mechanical Pump Dispenser

## 3. Significance and Use

3.1 This practice can be used to compare the output per stroke of different pump dispensers for the purpose of establishing dosage and use instructions for products of consumer usage.

3.2 This practice is suitable for establishing specifications for both the pump dispenser and the final package.

## 4. Sampling

4.1 Select an appropriate number of pump dispensers at random for the precision and accuracy desired. A number of ten test specimens are recommended, but a minimum of three is acceptable.

## 5. Test Specimens

5.1 Test specimens shall be clean pump dispensers with dip tubes assembled in the same manner as in production.

## 6. Conditioning

6.1 If possible, condition the test specimens at 23 ± 3° C (73 ± 5.4°F) for not less than 4 h. If the test specimens are not conditioned at the recommended temperature, this should be noted in the test report discussed in 12.1.

6.2 If the test specimens have been newly-made at the time of the test, it is recommended that the test specimens age at 23 ± 3°C (73 ± 5.4°F) for 24 h before beginning the test. If the test specimens are not allowed to age for 24 h, then it should be noted in the test report as discussed in 12.1.



## GRAVIMETRIC METHOD #1

This method is to be used when taring of the package weight is wanted or possible.

## 7. Apparatus

7.1 *Balance,* with direct reading to 0.01 g. Top-loading or analytical style is recommended.

NOTE 1—For applications requiring greater accuracy, a top-loading or analytical style balance with direct reading to 0.001 g is recommended.

7.2 *Container,* an appropriate container for the pump dispenser under test; however, the actual container to be used on the final package is recommended.

## 8. Procedure

8.1 Fill the container with product to the level to be seen in the final package and secure the mechanical pump dispenser to the container.

8.2 If the pump dispenser is equipped with an overcap or locking feature, remove or release to permit the pump dispenser to be in the operable mode.

[1] This practice is under the jurisdiction of ASTM Committee F02 on Primary Barrier Packaging and is the direct responsibility of Subcommittee F02.30 on Mechanical Dispensers.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.