



Designation: D 6654 – 01

Standard Test Method for Basic Storage Stability of a Mechanical Pump Dispenser¹

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1. Scope

1.1 This test method covers the determination of the basic storage stability of a mechanical pump dispenser with a consumer-type product.

1.2 This test method covers an evaluation of the weight lost during storage of mechanical pump dispensers (spray or flow types) with a consumer-type product.

1.3 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- D 2063 Test Methods for Measurement of Torque Retention for Packages with Continuous Thread Closures²
- D 3890 Test Method for Number of Strokes to Prime a Mechanical Pump Dispenser²
- D 4332 Practice for Conditioning Containers, Packages, or Packaging Components for Testing²
- D 4336 Test Methods for Determination of Output per Stroke of a Mechanical Dispenser²
- E 122 Practice for Choice of Sample Size to Estimate a Measure of Quality of a Lot or Process³

3. Significance and Use

3.1 Determining the storage of a mechanical pump dispenser for consumer usage. Products of consumer usage are of the personal care, household, insecticides, food, automotive, and institutional nature. Pharmaceutical and cosmetic products including perfume are not covered under this practice.

4. Apparatus

4.1 *Containers*, that will allow the mechanical pump dispenser to be affixed to them (see Note 1) and also be capable

of containing product for a period of time at various environmental conditions (see Note 2). A minimum of twelve is recommended.

NOTE 1—If possible, the actual container to be marketed should be used.

NOTE 2—The number of containers is arbitrary and can be changed according to need.

4.2 *Mechanical Pumps Dispensers*, a minimum of twelve units or a minimum of six units per environmental variable selected from 4.5.

4.3 *Product*, a sufficient amount to fill the number of containers in accordance with 4.1.

4.4 *Stereo/Zoom Microscope*, capable of magnification up through 30 \times , and preferably with a camera attached for permanent record keeping.

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

4.6 *Environments*, where the mechanical pump dispenser and product will be kept during the test period.

4.6.1 *Ambient Area*, maintained at $23 \pm 3^{\circ}\text{C}$ ($73 \pm 5.4^{\circ}\text{F}$).

4.6.2 *Oven (45°C)*, maintained at $45 \pm 3^{\circ}\text{C}$ ($113 \pm 5.4^{\circ}\text{F}$).

4.6.3 *Cycle Chamber*, optional, alternating 5 to 50°C (41 to 122°F) every 24 h.

4.7 *Oven-Safe Tray*, with absorbent paper towels laid in the tray.

4.8 *Food Coloring*, optional.

5. Precautions

5.1 Appropriate handling considerations should be given to flammable, toxic, caustic, or other potentially hazardous material used. When testing at any temperature, safety should be the number one consideration and special attention should be used on the flash points of the products tested.

6. Sampling

6.1 Based upon the desired precision, sampling shall be performed in accordance with Practice E 122.

6.2 In the absence of any special sampling plan, performance shall be based on not less than the number of representative specimens exposed to any of the environmental conditions as specified in Section 9.

¹ This test method is under the jurisdiction of ASTM Committee D10 on Packaging and is the direct responsibility of Subcommittee D10.33 on Mechanical Dispensers.

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² *Annual Book of ASTM Standards*, Vol 15.09.

³ *Annual Book of ASTM Standards*, Vol 14.02.