



Standard Terminology Relating to Mechanical Pump Dispensers¹

This standard is issued under the fixed designation D6655; 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 The terms found in this terminology relate to the nomenclature used in the packaging industry.

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

2. Terminology

accumulative pump, *n*—a mechanical pump dispenser that accumulates internal pressure by means of a valving-system that maintains a high velocity flow of the product no matter what the actuation velocity that results in a consistent fine mist spray.

atomization, *n*—the separation process of liquid into small particles.

clogging, *v*—the restriction of normal product flow. Most commonly due to product drying in a product flow passage area of the mechanical break-up system.

exit orifice, *n*—the final passage found in the insert that the liquid flows through before exiting the dispensing system where the size of the orifice diameter can determine the size of the spray particles and spray pattern.

fine mist pump, *n*—a mechanical pump dispenser that atomizes liquid into a fine mist. An accumulative pump is the most common type of fine mist pump.

force to actuate (FTA), *n*—the peak force that corresponds to the pressure on the finger that a consumer feels upon fully actuating the mechanical pump dispenser.

functional compatibility, *n*—effect of physical or chemical interaction between a consumer product and a specific pump mechanism where problems typically include deformation

and degradation of components that result in a lower performance of the mechanical pump dispenser.

hot spot, *n*—the area of a spray where the product concentration is high which can be visibly seen on a spray pattern as a concentrated stain on the alcohol-sensitive paper.

mechanical break-up unit (MBU), *n*— a design structure found in the insert that forces product to flow in a swirling method for producing specific spray characteristics.

mechanical pump dispenser, *n*—a small, finger- or hand-actuated, mechanical device used to dispense (spray, stream, or flow) product from a container that may be, generally, held in one's hand.

output per stroke (OPS), *n*—the amount of product dispensed with one complete actuation when measured in terms of weight (grams) or volume (microliter, milliliters, or cc's).

priming, *v*—the initial process of evacuating air from the mechanical pump dispenser and replacing it with product so that the dispensing process may begin.

retention of prime, *n*—ability of a pump to retain its prime and dispense a full dose without re-priming after a period of non-use.

spitting, *v*—dispensing of a low dose of product when both product and air are dispensed resulting in the pump generating a distinctive spitting noise.

spray particles/droplets, *n*—the spherically-shaped liquid objects that are the result of the atomization process created by a dispensing system with the size of these particles or droplets usually expressed in microns.

spray pattern, *n*—pattern, preferably round, dispensed onto a flat surface when this surface is positioned so that it will intercept a spray at a 90 degree angle at a specific distance.

standard sprayer, *n*—generally, a finger-actuated, higher-output (greater than 500 mcl) pump that delivers a coarser spray than a fine mist sprayer.

streaming, *v*—dispensing of a product in the form of a jet or a stream.

stroke length, *n*—the total distance of travel for the mechanical pump dispenser from where the mechanism of a pump sits at rest to where it is fully depressed.

¹ This terminology 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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strokes to prime (STP), *n*—the total number of complete actuations needed to obtain a full discharge of product on the initial use of package.

PARTS OF A FINGER-ACTUATED MECHANICAL PUMP DISPENSER

Note 1—See Figs. 1 and 2.

actuator, button, or spray head, *n*—the fingerpad that the consumer depresses to dispense product.

ball or spherical valve, *n*—depending on the design of the pump, it may be used as the upper or lower valve, or both.

body, housing, or accumulator, *n*—the primary chamber for creating the positive and negative pressure during the pumping action.

closure or screw cap, *n*—a fitment that attaches the pump to the container.

dip tube, *n*—a tube which provides passage of the product from the container to the pump system.

hood or dust cap, *n*—a protective cap placed over the actuator to guard against inadvertent dispensing.

insert or orifice cup, *n*—the mechanical break-up component that forces product to flow in a swirl pattern out of the exit orifice in order to produce a fine mist.

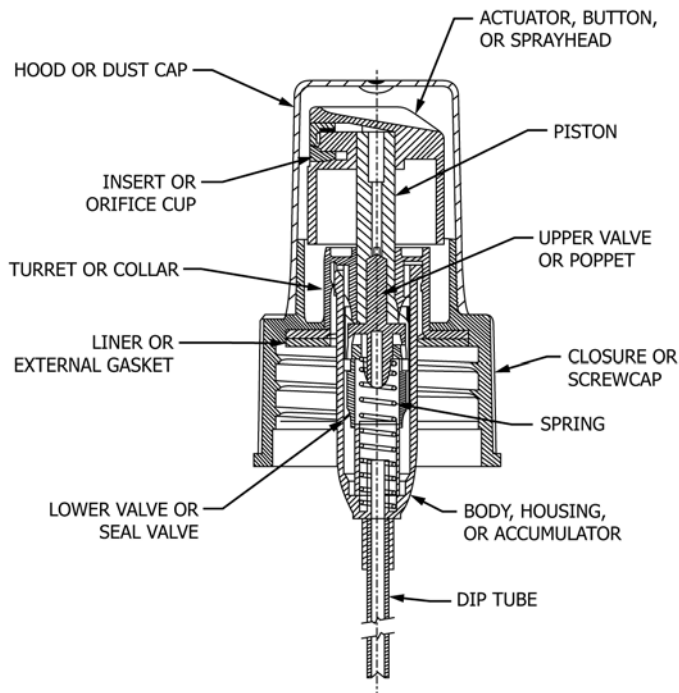


FIG. 1 Fine Mist Pump Dispenser

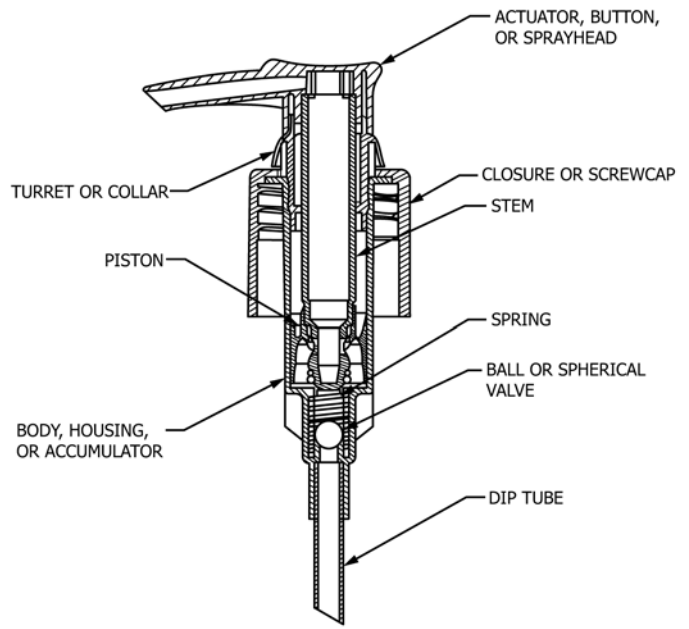


FIG. 2 Lotion Pump Dispenser

liner or external gasket, *n*—a ring-shaped sealing component made of a deformable material used to make a pressure-tight joint between the pump and container.

lower valve or seal valve, *n*—a valve that restricts the flow of product down the dip tube during the pressurization stage and promotes the flow of product from the container into the body during the filling stage.

piston, *n*—a sliding component that helps pressurize the product during actuation along with transfer of the product from the body to the exit orifice in the actuator.

spring, *n*—used primarily to return the piston mechanism for filling the body; however, the spring may also control the opening pressure of the upper valve.

stem, *n*—for some pump designs, a means to connect the actuator to the piston.

turret or collar, *n*—a fitment that secures the body to the closure.

upper valve or poppet, *n*—a valve that controls the flow of product out the exit orifice during the pressurization stage of the liquid and restricts the flow of product so that negative pressure may be created during the filling stage.

3. Keywords

3.1 mechanical pump dispenser terminology

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