ASTM Designation: D 3075 – 94

Standard Test Method for
Overrun of Food Aerosol Products[1]

This standard is issued under the fixed designation D 3075; 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 test method covers the determination of overrun of food aerosol products, such as whipped cream.

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 whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Terminology

2.1 *Definition*:

2.1.1 *overrun*—the relation between the liquid volume of the cream mix, and that of the dispensed aerated product.

3. Apparatus

3.1 *Measuring Cup*, with a wide opening and straight sides, that permits filling with a minimum of air pockets.

3.2 *Drinking Cups*, 4-oz (118-cm^3), two.

4. Conditioning

4.1 Close, gas, and shake the filled container. Store the container at 40°F (4.4°C) for a minimum of 24 h prior to testing. Some creams or toppings may require longer storage to reach equilibrium pressures and full overrun.

NOTE 1—The volume and density of the liquid mix (that is, the cream plus flavoring, sugar, etc.) is determined before filling the aerosol container.

5. Procedure

5.1 *Dispensed Volume*:

5.1.1 Dispense the container at 40°F (4.4°C). Before dispensing, shake the container vigorously by hand for 5 s.

5.1.2 Holding the container in the proper position, dispense approximately 6 oz (150 cm^3) of the whipped product into the measuring cup. Dispense the cream in a manner that avoids air pockets.

5.1.3 Shake the container again, and dispense another 6 oz (150 cm^3) of the product.

5.1.4 Repeat 5.1.3 until the contents have been dispensed.

5.1.5 To correct for product retained in the container, weigh the contents remaining after complete dispensing, convert to volume, and subtract from the original liquid volume.

5.1.6 Calculate the percent overrun, O, as follows:

$$O = [(D - L)/L] \times 100 \tag{1}$$

where:
D = volume of dispensed cream, and
L = volume of liquid cream mix.

5.2 *Mass Basis*—This alternative method permits comparison of overrun on various portions of the dispensed product. The overrun tends to decrease as the various portions are dispensed (for example, a whipped cream that dispensed from 500 to 550 % on the first portion may average approximately 400 % for all portions).

5.2.1 Fill one of the 4-oz (118-cm^3) drinking cups with the liquid cream and weigh it. Record the mass.

5.2.2 Fill the other 4-oz (118-cm^3) drinking cup with cream dispensed from the shaken aerated container. Weigh the cup and record the mass.

5.2.3 Calculate the percent overrun, O', as follows:

$$O' = [(L' - D')/D'] \times 100 \tag{2}$$

where:
D' = mass of volume of dispensed cream, and
L' = mass of liquid cream mix.

6. Report

6.1 The report shall include the following:

6.1.1 Product being tested,

6.1.2 Procedure used (Dispensed Volume or Mass Basis), and

6.1.3 Percent overrun, expressed to the nearest 10 %.

7. Precision and Bias

7.1 *Precision*—This test method is being reviewed for development of a precision statement based upon intralaboratory test data. Volunteers from various CSMA Aerosol Division, Test and Standard Methods subcommittee membership will provide the precision statement based upon their within-laboratory data.

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[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. This test method was originally developed by the Chemical Specialties Manufacturers Assn.

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