



Designation: D 6535 – 00

Standard Test Method for Determining the Dip Tube Length of a Mechanical Pump Dispenser¹

This standard is issued under the fixed designation D 6535; 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 technique for a dip tube of a mechanical pump dispenser.

1.2 The values stated in both inch pound and SI units are to be regarded separately as the standard.

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. Significance and Use

2.1 This test method is to be used to determine the length of a dip tube of a mechanical pump dispenser that extends to the bottom-corner of a container.

2.2 This test method is to be used to determine the length of a dip tube of a mechanical pump dispenser that extends to the bottom-center of a container.

3. Apparatus

3.1 *Thin Metal Ruler*, with minimum gradients of one millimeter and/or 1/16 in. along with a zero index at the end of the ruler.

3.2 *Calipers*.

4. Procedure

TEST METHOD “A”—DIP TUBE LENGTH DETERMINATION TO THE BOTTOM-CORNER OF THE CONTAINER

NOTE 1—This test method is used when the dip tube of a mechanical pump dispenser must extend to the bottom-corner of a container.

4.1 Place the zero-index end of the ruler into the container as shown in Fig. 1.

4.2 Turn the ruler so that the side of the ruler reaches as far into the bottom-corner of the container as possible.

NOTE 2—If the cross-sectional area of the container is not round, position the ruler into the farthest bottom-corner of the container.

¹ This test method is under the jurisdiction of ASTM Committee D-10 on Packaging and is the direct responsibility of Subcommittee D10.32 on Consumer Packages.

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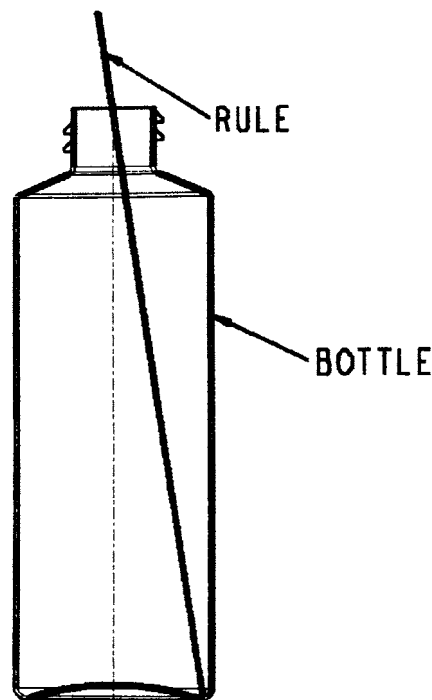


FIG. 1 To Bottom-Corner

4.3 Adjust the ruler so that it is positioned through the center axis of the container opening.

4.4 Measure the dip tube length to within 1 mm or 1/16 in. If the measurement value is between the whole millimetre or 1/16th gradient, use the larger value (that is, if measurement is 118.5 mm, use 119 mm; or if measurement is 4-21/32 in., use 4-11/16 in.).

4.5 If the dip tube measurement is in millimetres, subtract 1 mm from the measured value. If the dip tube measurement is in inches, subtract 1/16 in. from the measured value.

4.6 Record the net value (original value minus 1 mm or 1/16 in.).

4.7 To verify the new dip tube specification, prepare a sample mechanical pump dispenser with the newly-specified dip tube length.

4.8 Secure the mechanical pump dispenser to the container.

4.9 Verify that the end of the dip tube is not closed-off by the bottom or side of the container.

4.10 To specify the exposed dip tube length, measure the length of the exposed body as per dimension “Y” of Fig. 2 and subtract from the overall length as specified in 4.6.

NOTE 3—If the container is not transparent, a section of the bottom of the container may need to be removed so that the position of the end of the dip tube may be viewed.

TEST METHOD “B”—DIP TUBE LENGTH DETERMINATION TO THE BOTTOM-CENTER OF THE CONTAINER

NOTE 4—This test method is used when the dip tube of a mechanical pump dispenser must extend to the bottom-center of a container.

4.11 Place the zero-index end of the ruler into the container as shown in Fig. 3.

4.12 Adjust the ruler so that it is positioned through the center axis of the container opening with the end of the ruler at the bottom of the container.

4.13 Measure the dip tube length to within 1 mm or $\frac{1}{16}$ in. through the plane generated by the top of the container opening. If the measurement value is between the whole millimeter or $\frac{1}{16}$ th gradient, use the smaller value (that is, if measurement is 118.5 mm, use 118 mm; or if measurement is $4\frac{21}{32}$ in., use $4\frac{10}{16}$ in.).

4.14 If the dip tube measurement is in millimetres, subtract 1 mm from the measured value. If the dip tube measurement is in inches, subtract $\frac{1}{16}$ in. from the measured value.

4.15 Record the net value (original value minus 1 mm or $\frac{1}{16}$ in.).

4.16 To verify the new dip tube specification, prepare a sample mechanical pump dispenser with the newly-specified dip tube length.

4.17 Secure the mechanical pump dispenser to the container.

4.18 Verify that the end of the dip tube is not closed-off by the bottom or side of the container.

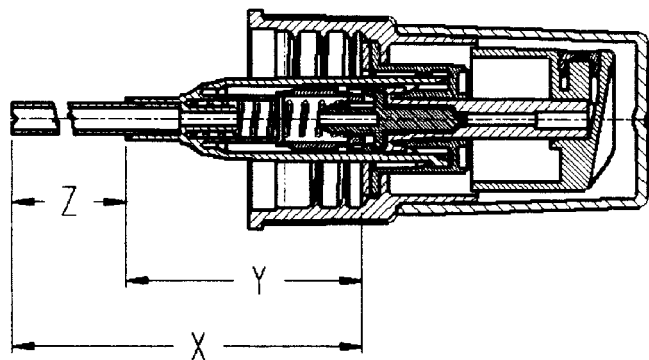


FIG. 2 Overall Dip Tube Length “X” Versus Exposed Dip Tube Length “Z”

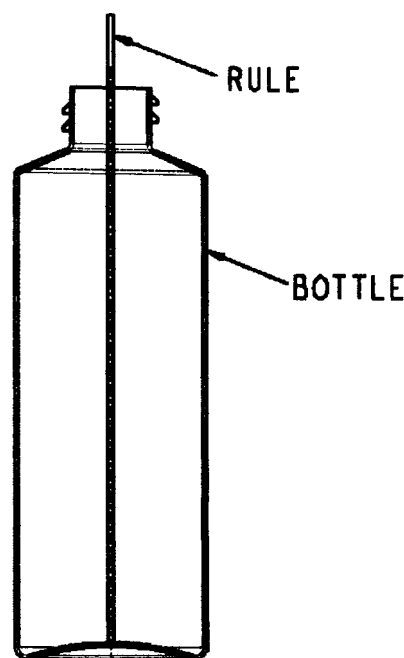


FIG. 3 To Bottom-Center

4.19 To specify the exposed dip tube length, measure the length of the exposed body as per dimension “Y” of Fig. 2 and subtract from the overall length as specified in 4.6.

NOTE 5—If the container is not transparent, a section of the bottom of the container may need to be removed so that the position of the end of the dip tube may be viewed.

5. Report

5.1 Report the following information:

- 5.1.1 Type of mechanical pump dispenser,
- 5.1.2 Dip tube length determined, and
- 5.1.3 Method used.

6. Precision and Bias

6.1 *Precision*—The precision of this test method is highly dependent on the size of the container. An examination of the results of dip tube length determination from ___ technicians in one lab found that for ten dip tubes measured under Test Method “A”, the range of dip tube length specified was from ___ in. long. Data is currently being gathered.

6.2 *Bias*—This test method has no bias because an accepted reference or referee value is not available.

7. Keywords

7.1 dip tube determination; dispenser; mechanical pump dispenser