



Designation: D4333/D4333M – 05 (Reapproved 2010)^{ε1}

Standard Test Method for the Compatibility of Mechanical Pump Dispenser Components¹

This standard is issued under the fixed designation D4333/D4333M; 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.

^{ε1} NOTE—Units information was corrected editorially in March 2011.

1. Scope

1.1 This test method covers testing of the components of mechanical pump dispensers (spray or flow types) for compatibility with products.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 *This standard may involve hazardous materials, operations, and equipment. 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 consult and 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 identifies the compatibility of the mechanical pump dispenser components with consumer-type products.

3. Apparatus

3.1 *Balance*, accurate to 1 mg.

3.2 *Micrometers*, or calipers or other appropriate instruments, capable of measuring dimensions of test specimens to 0.025 mm [0.001 in.].

3.3 *Glass Containers*, with covers, suitable for immersing test specimens in test products.

3.4 *Oven*, with chamber capable of maintaining temperature within $\pm 2^\circ\text{C}$ [$\pm 3.6^\circ\text{F}$] of the specified test temperatures.

4. Test Specimen

4.1 At least three individual components should be used for each part tested with each product involved at each test condition.

4.2 At least three individual components are used as controls at each test condition.

4.3 Individual unassembled components shall be clean and previously unused.

5. Conditioning

5.1 Condition test specimens at $23 \pm 3^\circ\text{C}$ [$73.4 \pm 5.4^\circ\text{F}$] for at least 4 h prior to testing. If test specimen conditioning is not possible, the environmental conditioning of the test specimens tested should be included in the report as discussed in 7.1.

5.2 Test conditions shall be an elevated temperature of $45 \pm 3^\circ\text{C}$ [$113 \pm 5.4^\circ\text{F}$] and an ambient room temperature of $23 \pm 3^\circ\text{C}$ [$73.4 \pm 5.4^\circ\text{F}$]. If a different temperature is used, this should be noted in the test report discussed in 7.1.

6. Procedure

6.1 Dimensional and Weight Changes:

6.1.1 Prior to immersion into the product, weigh the part and record as W1 (see 7). Measure the thickness or overall length of the part to the nearest 0.025 mm [0.001 in.] of each component depending on which of these dimensions are most important (for example, thickness for a gasket or liner, and overall length for a molded component). Optionally, measure a diameter of the part to its nearest 0.025 mm [0.001 in.]. Report the data as initial dimension D1 (see 7). This data is reported as a mean value of the dimension for the components measured for that particular part.

6.1.2 Maintain at least three test specimens as visual comparison controls. Do not immerse these control test specimens in any solution and store at each test condition. Label the storage container of these test specimens as control.

6.1.3 Place the test specimens in appropriate containers for the solutions being used and allow the test specimens to be totally immersed in fresh test product for 7 days in each test condition. Several test specimens of a given material may be

¹ This test method is under the jurisdiction of ASTM Committee F02 on Flexible Barrier Packaging and is the direct responsibility of Subcommittee F02.30 on Mechanical Pump Dispensers.

Current edition approved Oct. 1, 2010. Published March 2011. Originally approved in 1984. Last previous edition approved in 2005 as D4333 – 05. DOI: 10.1520/D4333_D4333M-05R10E01.