Designation: D4333 – 05

Standard Test Method for the Compatibility of Mechanical Pump Dispenser Components[1]

This standard is issued under the fixed designation D4333; 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 testing of the components of mechanical pump dispensers (spray or flow types) for compatibility with products.

1.2 *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 ±2°C (±3.6°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 ± 3°C (73.4± 5.4°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 ± 3°C (113 ± 5.4°F) and an ambient room temperature of 23 ± 3°C (73.4 ± 5.4°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 immersed in the same container provided sufficient product is available for the total surface area exposed. Cover the container.

NOTE 1—When the components being tested are of the same type but of different material, it is recommended that separate glass containers are used for each material for the purpose of eliminating unplanned material interactions and for ease of identification.

6.1.4 After 7 days, remove all glass containers of test specimens from the 45°C environment, and allow the test specimens to equilibrate to room temperature (23°C) for a minimum of 4 h.

[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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