



Standard Test Method for Preparing Aircraft Cleaning Compounds, Liquid-Type, Temperature-Sensitive, or Solvent-Based, for Storage Stability Testing¹

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1. Scope

1.1 This test method covers the determination of the stability in storage of liquid enzyme-based, terpene-based, and solvent-based chemical cleaning compounds used to clean the exterior surfaces of aircraft.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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. Referenced Documents

2.1 *U.S. Government Document:*
Federal Specification PPP-P-704 Pails, Metal Shipping, Steel 1 through 12 Gallons²

3. Summary of Test Method

3.1 Storage stability is determined by evaluation of the effect of time, temperature, and environmental conditions on the cleaning compound. Samples used for testing are filled containers taken from the manufacturer's controlled production formulation, packaged, and delivered to the purchaser for normal use.

3.2 The sample container shall be subjected to the specified storage environment for a period of 12 months. The test shall be completed prior to 24 months from date of packaging.

4. Significance and Use

4.1 This test method determines the procedure to be used to ensure the long-term storage stability of aircraft cleaning and

maintenance products in order to ensure their ability to meet the shelf-life requirements called up in specifications or contract documents. The subsequent testing requirements are detailed in the specification or contract.

5. Sampling

5.1 The sample for storage stability testing shall be taken from a controlled production formula, packaged lot, or batch delivered in a sealed, filled container to the purchaser for use. This sample is normally a 1-gal can conforming to Federal Specification PPP-P-704. This material shall have previously been tested and passed all other specification requirements for qualification or acceptance. The sample container selected for the test shall be kept sealed and unopened for the duration of the test. The sample container shall be durably and legibly marked with the following minimum information:

Storage Stability Test Sample

Supplier
Formula number
Date of packaging
Cold test period
Hot test period
Batch/Lot No.
Test began
Test ends

6. Procedure

6.1 *Storage Environment*—Place the sample container in a storage area where a temperature of 10 to 27°C (50 to 80°F) is maintained at least 80 % of the total storage test time. Do not subject the storage test sample to temperature over 32°C (90°F) or under -12°C (10°F) during the entire test. Maintain the sample container in a static condition not subject to vibration, rolling, inversion, or other movement. Movement to the necessary temperature-controlled area for cold- and hot-temperature testing is accepted, but accomplish such transfer with minimum (or no) disturbance of container contents.

6.1.1 *Cold-Temperature Storage Environment*—Subject the sample container to a 15-day time interval at $-8 \pm 2^\circ\text{C}$ ($17 \pm 3^\circ\text{F}$). Conduct this cold test interval during the period 90 to 120 days after start of the storage stability test time.

¹ This test method is under the jurisdiction of ASTM Committee F07 on Aerospace and Aircraft and is the direct responsibility of Subcommittee F07.07 on Qualification Testing of Aircraft Cleaning Materials.

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² Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094 Attn: NPODS.

6.1.2 *Hot-Temperature Storage Environment*—Subject the sample container to a 15-day time interval at $32 \pm 2^\circ\text{C}$ ($90 \pm 5^\circ\text{F}$). Conduct this hot test interval after 270 days of elapsed test time but 60 days before the termination of the storage test.

6.1.3 *Completion of Test*—After 12 months storage test time, carefully remove the sample container (if necessary), without agitation, rolling, or inversion, from the storage area and place in a room, in a stable location for 48 ± 1 h at a temperature of 22 to 27°C (71 to 80°F). At the end of 48 h, remove the top of the container and examine the internal surface for corrosion or sediment. Disregard discoloration of the interior surface of the container. Take samples of the

product and test in accordance with the relevant specification or contract requirements.

7. Precision and Bias

7.1 No statement can be made relating to precision and bias since the only nonvariables are the environmental conditions. The pass or fail requirement is determined by the subsequent tests called up by the specification or contract.

8. Keywords

8.1 cold test period; hot test period; solvent-based cleaning compounds; storage stability

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