



Designation: F331 – 13

Standard Test Method for Nonvolatile Residue of Solvent Extract from Aerospace Components (Using Flash Evaporator)¹

This standard is issued under the fixed designation F331; 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 nonvolatile matter, that is, residue on evaporation, in solvent extract from aerospace components, using a rotary flash evaporator.

1.2 The procedure for extraction from components is described in practices such as Practice F303. Before subjecting the extract to the following method, it should be processed to remove the insoluble particulate in accordance with Practice F311 (Note 1). Particle count analysis of the removed particulate may then be performed in accordance with Test Method F312. If particulate is not removed from the extract prior to performing this method, this should be noted on the test report.

NOTE 1—Membrane filters with a maximum extractable content of 0.5 weight % should be used on samples to be processed by this test method. Conventional membranes contain 5 to 10 % extractables. For obtaining very low background levels, consideration should be given to using membranes without grid marks.

1.3 The values stated in SI units are to be regarded as standard.

1.4 *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 *ASTM Standards*:²

D1193 Specification for Reagent Water

F303 Practices for Sampling for Particles in Aerospace Fluids and Components

F311 Practice for Processing Aerospace Liquid Samples for Particulate Contamination Analysis Using Membrane Filters

¹ This test method is under the jurisdiction of ASTM Committee E21 on Space Simulation and Applications of Space Technology and is the direct responsibility of Subcommittee E21.05 on Contamination.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

F312 Test Methods for Microscopical Sizing and Counting Particles from Aerospace Fluids on Membrane Filters

2.2 *IEST Standard*:³

IEST-STD-1246D Product Cleanliness Levels and Contamination Control Program

3. Summary of Test Method

3.1 A sample of fluid or the filtrate (Note 1) from a sample of extract from components is evaporated as necessary to approximately 20 mL in a flash evaporator. The residue is then transferred to a foil dish and the evaporation completed by heating to a constant weight.

4. Apparatus

4.1 *Oven*, gravity convection provided with suitable thermometer and a temperature range suitable for the solvent being evaporated.

4.2 *Analytical Balance*, single pan or magnetically damped double pan.

NOTE 2—Sensitivity shall be suitable to obtain the required precision noted in 10.1.

4.3 *Evaporator*, flash, batch-type.

4.4 *Graduated Cylinder*.

4.5 *Tongs or forceps*, laboratory, for manipulating weighing foil dishes.

4.6 *Desiccator*, balance, to be placed in balance case.

4.7 *Desiccator*, cooling with plate.

4.8 *Weighing Vessels*, aluminum foil weighing dishes. These may be purchased pre-formed dishes or may be constructed from clean aluminum foil.

4.9 *Pressure Source*, capable of providing 85 KPa (25-in. Hg) for short interval.

4.10 *Distillation Apparatus*, laboratory, all glass (required where solvents with sufficiently low residue are not available). Do not use grease or oil to lubricate glass joints.

³ Available from Standardization Document Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.