



Designation: F 331 – 00

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

This standard is issued under the fixed designation F 331; 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 Practices F 303 and Practice F 305. In cases in which analysis of particulate contamination is also required, before subjecting the extract to the following method, it should be processed in accordance with Practice F 311 (Note 1). Particle count analysis should then be performed in accordance with Methods F 312. Identification of particulate material, if required, may be performed by Test Method F 314.

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 *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:

- D 1193 Specification for Reagent Water²
- D 2021 Specification for Neutral Detergent, 40 Percent Akylbenzene Sulfonate Type³
- F 303 Practices for Sampling Aerospace Fluids from Components⁴
- F 305 Method of Sampling Particulates from Reservoir-Type Pressure-Sensing Instruments by Fluid Flushing⁵

¹ This test method is under the jurisdiction of ASTM Committee E-21 on Space Simulation and Applications of Space Technology and is the direct responsibility of Subcommittee E21.05 on Contamination.

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² Annual Book of ASTM Standards, Vol 11.01.

³ Withdrawn. See 1999 Annual Book of ASTM Standards, Vol 15.04.

⁴ Annual Book of ASTM Standards, Vol 15.03.

⁵ Withdrawn. See 1988 Annual Book of ASTM Standards, Vol 15.03.

F 311 Practice for Processing Aerospace Liquid Samples for Particulate Contamination Analysis Using Membrane Filters⁶

F 312 Methods for Microscopical Sizing and Counting Particles from Aerospace Fluids on Membrane Filters⁶

F 314 Test Methods for Identification of Metallic and Fibrous Contaminants in Aerospace Fluids⁷

2.2 *Military Standard:*⁸

MIL-STD-1246 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 9.1.

4.3 *Evaporator*, flash, batch-type.

4.4 *Graduated Cylinder*.

4.5 *Tongs*, 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.

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

⁶ Annual Book of ASTM Standards, Vol 14.02.

⁷ Withdrawn. See 1988 Annual Book of ASTM Standards, Vol 14.02.

⁸ Available from Standardization Document Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.