



# Standard Test Method for Insoluble Contamination of Hydraulic Fluids by Gravimetric Analysis<sup>1</sup>

This standard is issued under the fixed designation D 4898; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the Department of Defense.*

<sup>ε1</sup> NOTE—Editorial corrections were made throughout in April 2000.

## 1. Scope

1.1 This test method covers the determination of insoluble contamination in hydraulic fluids by gravimetric analyses. The contamination determined includes both particulate and gel-like matter, organic and inorganic, which is retained on a membrane filter disk of pore diameter as required by applicable specifications (usually 0.45  $\mu\text{m}$  or 0.80  $\mu\text{m}$ ).

1.2 To indicate the nature and distribution of the particulate contamination, the gravimetric method should be supplemented by occasional particle counts of typical samples in accordance with Test Method F 312.

1.3 The values stated in SI units are to be regarded as the 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.* For a specific warning statement, see 6.1.

## 2. Referenced Documents

### 2.1 ASTM Standards:

A 555/A 555M Specification for General Requirements for Stainless Steel Wire and Wire Rods<sup>2</sup>

D 1836 Specification for Commercial Hexanes<sup>3</sup>

D 2021 Specification for Neutral Detergent, 40 Percent Alkylbenzene Sulfonate Type<sup>4</sup>

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D02 on Petroleum and Petroleum Products and is the direct responsibility of Subcommittee D02.N0.02 on Industrial Applications.

Current edition approved May 25, 1990. Published July 1990. Originally published as D 2387 – 65 T. ASTM Test Method F 313 – 70 was redesignated D 4898 – 73 (1983)<sup>ε1</sup> in 1988. Last previous edition D 4898 – 78 (1983)<sup>ε1</sup>.

<sup>2</sup> Annual Book of ASTM Standards, Vol 01.03.

<sup>3</sup> Annual Book of ASTM Standards, Vol 06.04.

<sup>4</sup> Annual Book of ASTM Standards, Vol 15.04.

E 319 Practice for the Evaluation of Single-Pan Mechanical Balances<sup>5</sup>

F 302 Practice for Field Sampling of Aerospace Fluids in Containers<sup>6</sup>

F 303 Practices for Sampling Aerospace Fluids from Components<sup>6</sup>

F 312 Methods for Microscopical Sizing and Counting Particles from Aerospace Fluids on Membrane Filters<sup>7</sup>

F 314 Test Methods for Identification of Metallic and Fibrous Contaminants in Aerospace Fluids<sup>7</sup>

### 2.2 Military Standard:

MIL-C-81302 C Cleaning Compound Solvent Trichlorotrifluoroethane<sup>8</sup>

## 3. Summary of Test Method

3.1 The insoluble contamination is determined by passing a given quantity of a fluid sample through a membrane filter disk and measuring the resultant increase in the weight of the filter. The fluid sample is drawn through the filter by a vacuum and the insoluble contamination is collected on the surface of the filter. In addition, the filter disk is microscopically scanned for excessively large particles, fibers, or other unusual conditions.

## 4. Significance and Use

4.1 This test method indicates and measures the amount of insoluble contamination of hydraulic fluids. Minimizing the levels of insoluble contamination of hydraulic fluids is essential for the satisfactory performance and long life of the equipment. Insoluble contamination can not only plug filters but can damage functional system components resulting in wear and eventual system failure.

<sup>5</sup> Annual Book of ASTM Standards, Vol 14.04.

<sup>6</sup> Annual Book of ASTM Standards, Vol 15.03.

<sup>7</sup> Annual Book of ASTM Standards, Vol 14.02.

<sup>8</sup> Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.