



Designation: F862 – 11

# Standard Practice for pH and Chloride-ion Concentration of Aerospace Hydraulic Fluids<sup>1</sup>

This standard is issued under the fixed designation F862; 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.

## 1. Scope

1.1 This practice covers the measurement of the pH and chloride ion of water extraction of aerospace hydraulic fluids.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

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:*<sup>2</sup>

[D512 Test Methods for Chloride Ion in Water](#)

[D1193 Specification for Reagent Water](#)

[E70 Test Method for pH of Aqueous Solutions With the Glass Electrode](#)

## 3. Summary of Method

3.1 The aerospace hydraulic fluid sample is shaken with water, and the pH and the quantity of chloride ion are determined from the water layer.

3.1.1 The pH is measured using a glass electrode and pH meter.

3.1.2 The quantity of the chloride ion is determined using a chloride selective ion electrode and a selective ion meter.

## 4. Significance and Use

4.1 On application of the hydraulic fluid within the mechanical fluidic system, the fluid may become contaminated

<sup>1</sup> This practice 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.

Current edition approved Dec. 1, 2011. Published January 2012. Originally approved in 1984. Last previous edition approved in 2002 as F862 – 93 (2002) which was withdrawn January 2011 and reinstated in December 2011. DOI: 10.1520/F0862-11.

<sup>2</sup> 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.

with acid and chloride ion. Mechanical shearing of the hydraulic fluid in the presence of the minute quantity of water and residual amount of organic solvents, used in cleaning, may initiate formation of acid and chloride ion. Measurements are desired to control and maintain the cleanliness and non-corrosiveness of the fluidic system.

## 5. Apparatus

5.1 *Combination pH Selective Ion Meter,*

5.2 *Glass Electrode*—The pH response shall be  $\pm 0.05$  pH.

5.3 *Reference Electrode*—A calomel, silver/silver chloride, or other reference electrode of constant potential.

5.4 *Chloride Selective Ion Electrode.*

5.5 *Double Junction Reference Electrode,* sleeve-type

5.6 *Separatory Funnel,* 250 mL.

## 6. Reagents

6.1 *Water,* reagent grade, Type IV, in accordance with Specification [D1193](#).

6.2 *Reference Buffer Solutions,* SRM/RM 185, 186, and 187—Materials supplied by the National Institute of Standards and Technology with pH values.

## 7. Standardization of pH Meter

7.1 Standardize the pH meter in accordance with Test Method [E70](#).

### PART A—pH MEASUREMENT

## 8. Procedure

8.1 Add a 50-mL sample of hydraulic fluid and 50 mL of reagent water to a 250-mL separatory funnel.

8.2 Mix thoroughly. Allow for the water and oil layers to separate completely.

8.3 Drain the water layer from the funnel into a 100-mL beaker.

8.4 Standardize the pH-meter assembly with two reference buffer solutions as described in section 7.1. Wash the electrodes with three changes of water. Equip the beaker with a small