This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: D8070 – 20

Standard Test Method for Screening of Fuels and Fuel Associated Aqueous Specimens for Microbial Contamination by Lateral Flow Immunoassay[1]

This standard is issued under the fixed designation D8070; 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 describes a procedure that can be used in the field or in a laboratory to detect antigens indicative of microbial contamination in liquid fuels, including those blended with synthesized hydrocarbons or biofuels, with kinematic viscosities (at 40 °C) of ≤24 mm^2s^{-1} (for example, Specifications D396, D975, and D1655) and in fuel-associated water.

1.1.1 This test method has been validated by an ILS for a range of middle distillate fuels meeting Specification D1655, EN590, Specification D975, and ISO 8217:2012.

1.2 This test method semi-quantitatively assesses the concentration of specific antigens generated by aerobic microorganisms during active growth in fuels.

1.2.1 A proprietary formulation of antibodies and antibody mixtures is used to detect three types of microbial antigen contamination: antigens generally found in aerobic bacteria, antigens generally present in common fungi (yeast and molds), and an antigen that is characteristic of *Hormoconis resinae* (the fungus most commonly associated with fuel biodeterioration).

1.2.2 Although the antibodies and antibody mixtures are characteristic of diverse types of bacteria and fungi, it is unlikely that they are universal. Recognizing that for every microbe that has been isolated and characterized, it is likely that there are a billion that have not. Consequently, as is the case with all microbiological test methods, this test method does not purport to detect 100 % of the microbes present in a fuel or fuel-associated water sample.

1.3 For each of the three sets of antigen detected (*H. resinae*, common fungi, and aerobic bacteria), the test detects whether the antigen concentration present is within set ranges representing negligible, moderate, or heavy microbial contamination.

1.3.1 For fuel specimens, the antigen concentration ranges detected are <150 µg/L (negligible), 150 µg/L to 750 µg/L (moderate), and >750 µg/L (heavy).

1.3.2 For specimens of water associated with fuel, the antigen concentration ranges detected are <33 µg/mL (negligible), 33 µg/mL to 166 µg/mL (moderate), and >166 µg/mL (heavy).

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

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* For a specific hazard statement, see Section 8.

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D396 Specification for Fuel Oils
D975 Specification for Diesel Fuel
D1129 Terminology Relating to Water
D1655 Specification for Aviation Turbine Fuels
D4175 Terminology Relating to Petroleum Products, Liquid Fuels, and Lubricants
D4176 Test Method for Free Water and Particulate Contamination in Distillate Fuels (Visual Inspection Procedures)
D6469 Guide for Microbial Contamination in Fuels and Fuel Systems

[1] This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.14 on Stability, Cleanliness and Compatibility of Liquid Fuels.

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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.

*A Summary of Changes section appears at the end of this standard

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