



Designation: D7464 – 20

Standard Practice for Manual Sampling of Liquid Fuels, Associated Materials and Fuel System Components for Microbiological Testing¹

This standard is issued under the fixed designation D7464; 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.

INTRODUCTION

There are several important characteristics that distinguish microbiological parameters from other parameters for which manually collected fuel samples are tested.

Microbes, when present in fuels or fuel systems are invariably present as contaminants. Similarly to particulates, microbes are discrete entities rather than dissolved solutes in fuel, however, unlike inanimate particles; microbes can proliferate or die during the interval between sampling and testing.

An important consequence of this is that microbes introduced into the sample from sources other than the sample itself, can proliferate and potentially eclipse the population indigenous to the sample.

Although microbes can be transported in fuel, they require free-water in order to grow and proliferate. Consequently, microbes tend to form colonies that are embedded in hydrophilic matrices. These matrices are most likely to form at system interfaces, including: fuel-water, fuel-structure, bottom-water-structure and air and fuel-vapor to structure. Microbes growing within these colonies produce chemicals (metabolites and biomolecular detritus) that are deteriorogenic (can degrade fuel and fuel system components) and diffuse into fuel.

These factors combine to require unique practices specific to the collection of samples that are intended for microbiological testing.

1. Scope*

1.1 This practice covers aspects of sample device preparation and sample handling that prevent samples from becoming contaminated with microorganisms not originally contained within the sample.

1.2 This practice also covers sample handling considerations that reflect the perishability of samples collected for microbiological testing.

1.3 This practice supplements Practice [D4057](#) by providing guidance specific to the manual sampling of fuels when samples are to be tested for microbial contamination.

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 appro-*

priate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.

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](#)

[D910 Specification for Leaded Aviation Gasolines](#)

[D975 Specification for Diesel Fuel](#)

[D1129 Terminology Relating to Water](#)

[D1193 Specification for Reagent Water](#)

[D1655 Specification for Aviation Turbine Fuels](#)

[D2069 Specification for Marine Fuels](#) (Withdrawn 2003)³

¹ This practice 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.

³ The last approved version of this historical standard is referenced on www.astm.org.

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