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Standard Guide for Assessing Biodegradability of Hydraulic Fluids¹

This standard is issued under the fixed designation D6006; 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 guide covers and provides information to assist in planning a laboratory test or series of tests from which may be inferred information about the biodegradability of an unused fully formulated hydraulic fluid in its original form. Biodegradability is one of three characteristics which are assessed when judging the environmental impact of a hydraulic fluid. The other two characteristics are ecotoxicity and bioaccumulation.

1.2 Biodegradability may be considered by type of environmental compartment: aerobic fresh water, aerobic marine, aerobic soil, and anaerobic media. Test methods for aerobic fresh water, aerobic soil and anaerobic media have been developed that are appropriate for the concerns and needs of testing in each compartment.

1.3 This guide addresses releases to the environment that are incidental to the use of a hydraulic fluid but is not intended to cover situations of major, accidental release. The tests discussed in this guide take a minimum of three to four weeks. Therefore, issues relating to the biodegradability of hydraulic fluid are more effectively addressed before the fluid is used, and thus before incidental release may occur. Nothing in this guide should be taken to relieve the user of the responsibility to properly use and dispose of hydraulic fluids.

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.*

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 Recom-*

mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 ASTM Standards:²

D4175 Terminology Relating to Petroleum Products, Liquid Fuels, and Lubricants

D5210 Test Method for Determining the Anaerobic Biodegradation of Plastic Materials in the Presence of Municipal Sewage Sludge (Withdrawn 2016)³

D5291 Test Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Petroleum Products and Lubricants

D5480 Test Method for Engine Oil Volatility by Gas Chromatography (Withdrawn 2003)³

D5864 Test Method for Determining Aerobic Aquatic Biodegradation of Lubricants or Their Components

E1196 Test Method for Determining the Anaerobic Biodegradation Potential of Organic Chemicals (Withdrawn 1998)³

2.2 ISO Standards:⁴

ISO 9439:1990 Technical Corrigendum I, Water Quality—Evaluation in an Aqueous Medium of the Ultimate Biodegradability of Organic Compounds

ISO 4259:1992(E) Petroleum Products—Determination and Application of Precision Data in Relation to Methods of Test

2.3 OECD Standards:

OECD 301B (the Modified Sturm Test) Guidelines for Testing Chemicals⁵

OECD 301F (the Manometric Respirometry Test) Guidelines for Testing of Chemicals⁵

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. 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.

⁴ Available from International Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <https://www.iso.org>.

⁵ Available from Organisation for Economic Co-Operation and Development (OECD), 2, rue André Pascal, F-75775 Paris Cedex 16, France.

¹ This guide is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.12 on Environmental Standards for Lubricants.

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