Designation: D6046 – 02 (Reapproved 2012)

Standard Classification of Hydraulic Fluids for Environmental Impact[1]

This standard is issued under the fixed designation D6046; 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 classification covers all unused fully formulated hydraulic fluids in their original form.

1.2 This classification establishes categories for the impact of hydraulic fluids on different environmental compartments as shown in Table 1. Fluids are assigned designations within these categories; for example PwL, Pwe, and so forth, based on performance in specified tests.

1.3 In the current version of this classification the aspects of environmental impact included are environmental persistence of which biodegradability is one component and acute ecotoxicity. Although environmental persistence is discussed first, this classification does not imply that considerations of environmental persistence should take precedence over concerns for ecotoxicity.

1.4 Another important aspect of environmental impact is bioaccumulation. This aspect is not addressed in the present classification because adequate test methods do not yet exist to measure bioaccumulation of hydraulic fluids.

1.5 The present classification addresses the fresh water and soil environmental compartments. At this time marine and anaerobic environmental compartments are not included, although they are pertinent for many uses of hydraulic fluids. Hydraulic fluids are expected to have no significant impact on the atmosphere; therefore that compartment is not addressed.

1.6 This classification addresses releases to the environment which are incidental to the use of a hydraulic fluid. The classification is not intended to address environmental impact in situations of major, accidental release. Nothing in this classification should be taken to relieve the user of the responsibility to properly use and dispose of hydraulic fluids.

1.7 This classification does not cover any performance properties of a hydraulic fluid which relate to its performance in a hydraulic system.

1.8 *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:*[2]

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

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

D6006 Guide for Assessing Biodegradability of Hydraulic Fluids

D6081 Practice for Aquatic Toxicity Testing of Lubricants: Sample Preparation and Results Interpretation

E943 Terminology Relating to Biological Effects and Environmental Fate

E1440 Guide for Acute Toxicity Test with the Rotifer Brachionus

2.2 *ISO Standards:*[3]

International Standard ISO Test 9439:1990 Technical Corrigendum 1, Water Quality—Evaluation in An Aqueous Medium of the "Ultimate" Biodegradability of Organic Compounds—Method by Analysis of Released Carbon Dioxide

2.3 *OECD Standards:*[4]

OECD 301B CO_2 Evolution Test (the Modified Sturm Test)

OECD 301C Modified MITI Test (I)

OECD 301F Manometric Respirometry Test

OECD 201 Alga, Growth Inhibition Test

OECD 202 Daphnia sp., Acute Immobilisation Test and Reproduction Test

[1] This classification is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.N0.03 on ECO - Evaluated Fluids.

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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] Available from American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036. All standards referenced are from the OECD Guidelines for Testing of Chemicals.

[4] Available from Organization for Economic Cooperation and Development (OECD), 2, Rue Andre Pascal, S-75775, Paris CEDEX 16, France. May also be found in U.S. Federal Register, Vol 50, No. 188, September 27, 1965, paragraph 796.3260.

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