



Designation: D6046 – 18

Standard Classification of Hydraulic Fluids for Environmental Impact¹

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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

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 This classification includes environmental persistence and acute ecotoxicity as aspects of environmental impact. Although environmental persistence is discussed first, this classification does not imply that considerations of environmental persistence should take precedence over concerns for ecotoxicity.

1.3.1 Environmental persistence describes long term impact of hydraulic fluids to the environment. Environmental persistence is preferably measured by ultimate biodegradation but can also be measured by other means.

1.3.2 Acute toxicity describes the immediate toxic impact of hydraulic fluids to the environment. Acute toxicity is preferably measured by the three trophic levels of aquatic organisms (Algae, Crustacea, and Fish).

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

1.9 *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

[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](#)

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](#) on Hydraulic Fluids.

Current edition approved Oct. 1, 2018. Published October 2018. Originally approved in 1996. Last previous edition approved in 2017 as D6046 – 17. DOI: 10.1520/D6046-18.

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 (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>. All standards referenced are from the OECD Guidelines for Testing of Chemicals.

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