Designation: D6081 – 98 (Reapproved 2014)

Standard Practice for Aquatic Toxicity Testing of Lubricants: Sample Preparation and Results Interpretation[1]

This standard is issued under the fixed designation D6081; 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 practice covers procedures to be used in the preparation of lubricants or their components for toxicity testing in aquatic systems and in the interpretation of the results of such tests.

1.2 This practice is suitable for use on fully-formulated lubricants or their components that are not completely soluble at the intended test treat rates. It is also suitable for use with additives, if the additive is tested after being blended into a carrier fluid at the approximate concentration as in the intended fully formulated lubricant. The carrier fluid shall meet the above solubility criterion, be known to be minimally toxic in the toxicity test in which the material will be tested, and be known to have a chemical composition similar to the rest of the intended fully formulated lubricant.

1.3 Samples prepared in accordance with this practice may be used in acute or chronic aquatic toxicity tests conducted in fresh water or salt water with fish, large invertebrates, or algae. This practice does not address preparation of samples for plant toxicity testing other than algae.

1.4 Standard acute and chronic aquatic toxicity procedures are more appropriate for lubricants with compositions that are completely soluble at the intended test treat rates (**1**, **2**, **3**, **4**, **5**).[2]

1.5 This practice is intended for use with lubricants or lubricant components of any volatility.

1.6 This practice does not address any questions regarding the effects of any lubricant or lubricant component on human health.

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

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:*[3]

D1129 Terminology Relating to Water

D1193 Specification for Reagent Water

E729 Guide for Conducting Acute Toxicity Tests on Test Materials with Fishes, Macroinvertebrates, and Amphibians

E943 Terminology Relating to Biological Effects and Environmental Fate

3. Terminology

3.1 *Definitions:*

3.1.1 *acute toxicity test, n*—a comparative toxicity test in which a representative subpopulation of organisms is exposed to different treat rates of a test material and is observed for a short period, usually not constituting a substantial portion of their life span.

3.1.2 *chronic toxicity test, n*—a comparative toxicity test in which a representative subpopulation of organisms is exposed to different treat rates of a test material and is observed for a period of time that constitutes a major portion of their life span.

3.1.3 *ecotoxicity, n*—propensity of a test material to produce adverse behavioral, biochemical, or physiological effects in non-human organisms or populations.

3.1.4 *effect load XX (ELXX), n*—a statistically or graphically estimated loading rate of test material that is expected to cause one or more specified effects in XX % of a representative subpopulation of organisms under specified conditions.

3.1.4.1 *Discussion*—This terminology should be used instead of the standard ECXX when the test material is not completely soluble at the test treat rates.

[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 D02.12 on Environmental Standards for Lubricants.

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[2] The boldface numbers in parentheses refer to the list of references at the end of this standard.

[3] 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.

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