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Standard Terminology Relating to Biodegradability and Ecotoxicity of Lubricants[1]

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1. Scope

1.1 This terminology covers definitions relating to biodegradability and ecotoxicity of lubricants.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

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

D6139 Test Method for Determining the Aerobic Aquatic Biodegradation of Lubricants or Their Components Using the Gledhill Shake Flask

3. Terminology

activated sludge, *n*—the precipitated solid matter, consisting mainly of bacteria and other aquatic microrganisms, that is produced at a domestic wastewater treatment plant; activated sludge is used primarily in secondary sewage treatment to microbially oxidize dissolved organic matter in the effluent. **D6139**

acute ecotoxicity, *n*—the propensity of a test material to produce adverse behavioral, biochemical, or physiological effects in non-human organisms or populations in a short period, usually not constituting a substantial portion of the life span.

acute ecotoxicity test, *n*—a comparative ecotoxicity 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.

aerobic, *adj*—(*1*) taking place in the presence of oxygen; (*2*) living or active in the presence of oxygen. **D6139**

biodegradation, *n*—the process of chemical break-down or transformation of a substance caused by organisms or their enzymes. **D5864**

biomass, *n*—biological material including any material other than fossil fuels which is or was a living organism or component or product of a living organism.

DISCUSSION—In biology and environmental science, biomass is typically expressed as density of biological material per unit sample volume, area, or mass (g biomass / g (or / mL or / cm^2) sample); when used for products derived from organisms biomass is typically expressed in terms of mass (kg, MT, etc.) or volume (L, m^3, bbl, etc.).

DISCUSSION—Products of living organisms include those materials produced directly by living organisms as metabolites (for example, ethanol, various carbohydrates and fatty acids), materials manufactured by processing living organisms (for example, pellets manufactured by shredding and pelletizing plant material) and materials produced by processing living organisms, their components or metabolites (for example, transesterified oil; also called biodiesel).

blank, *n*—*in biodegradability testing*, a test system containing all system components with the exception of the test material.

chronic ecotoxicity test, *n*—a comparative ecotoxicity 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 which constitutes a major portion of their life span.

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

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.

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

environmental compartment, *n*—a subdivision of the environment based on physical or chemical properties, or both.

DISCUSSION—Examples of environmental compartments are aerobic fresh water, aerobic marine, aerobic soil, and anaerobic media. The results of test procedures may be applied to environmental compartments, but the test systems do not constitute an environmental compartment.

[1] This terminology is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of D02.12 on Environmental Standards for Lubricants.

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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.