Designation: E 2275 – 03$^{\epsilon 1}$

Standard Practice for Evaluating Water-Miscible Metalworking Fluid Bioresistance and Antimicrobial Pesticide Performance[1]

This standard is issued under the fixed designation E 2275; 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.

ϵ[1] NOTE—Footnote 1 was editorially revised in November 2003.

1. Scope

1.1 This practice addresses the evaluation of the relative inherent bioresistance of water-miscible metalworking fluids, the bioresistance attributable to augmentation with antimicrobial pesticides or both. It replaces Methods D 3946 and E 686.

1.2 In this practice relative bioresistance is determined by challenging metalworking fluids with a biological inoculum that may either be characterized (comprised of one or more known biological cultures) or uncharacterized (comprised of biologically contaminated metalworking fluid or one or more unidentified isolates from deteriorated metalworking fluid). Challenged fluid bioresistance is defined in terms of resistance to biomass increase, viable cell recovery increase, chemical property change, physical property change or some combination thereof.

1.3 This practice is applicable to antimicrobial agents that are incorporated into either the metalworking fluid concentrate or end-use dilution. It is also applicable to metalworking fluids that are formulated using non-microbicidal, inherently bioresistant components.

1.4 *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:*

D 888 Test Methods for Dissolved Oxygen in Water[2]

D 1067 Test Methods for Acidity or Alkalinity of Water[2]

D 1193 Specification for Reagent Grade Water[2]

D 3342 Method for Dispersion Stability of New (Unused) Rolling Oil Dispersions in Water[3]

D 3519 Test Method for Foam in Aqueous Media (Blender Test)[3]

D 3601 Test Method for Foam in Aqueous Media (Bottle Test)[3]

D 4012 Test Method for Adenosine Triphosphate (ATP) Content of Microorganisms in Water[4]

D 4627 Method for Iron Chip Corrosion for Water-Dilutable Metalworking Fluids[3]

D 5465 Practice for Determining Microbial Colony Counts from Waters Analyzed by Plating Methods[4]

E 70 Test Method for pH of Aqueous Solutions with the Glass Electrode[5]

E 1326 Guide for Evaluating Nonconventional Microbiological tests Used for Enumerating Bacteria[6]

E 2169 Practice for Selecting Antimicrobial Pesticides for use in Water-miscible Metalworking Fluids[7]

2.2 *Other Standards:*

4.027 Synthetic Hard Water[8]

9215A.6a Heterotrophic Plate Count Media, Plate Count Agar[9]

9216 Direct Total Microbial Count[9]

Microbiological Test <71>[10]

2.3 *Government Standard:*

40 CFR 156 Labeling Requirements for Pesticides and Devices

3. Terminology

3.1 *Definitions:*

[1] This practice is under the jurisdiction of ASTM Committee E35 on Pesticides and Alternative Control Agents and is the direct responsibility of Subcommittee E35.15 on Antimicrobial Agents.

Current edition approved April 10, 2003. Published May 2003.

[2] *Annual Book of ASTM Standards*, Vol 11.01.

[3] *Annual Book of ASTM Standards*, Vol 05.02.

[4] *Annual Book of ASTM Standards*, Vol 11.02.

[5] *Annual Book of ASTM Standards*, Vol 15.05.

[6] *Annual Book of ASTM Standards*, Vol 11.05.

[7] *Annual Book of ASTM Standards*, Vol 11.03.

[8] *AOAC International Methods of Analysis*, AOAC International, Gaithersburg, MD.

[9] Available from American Public Health Association (APHA) *Standard Methods for the Examination of Water and Wastewater* 800 I Street, NW Washington, DC 20001.

[10] Available from U.S. Pharmacopeia/National Formulary (USP/NF), 12601 Twinbrook Parkway Rockville, MD 20852.

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States.