



Standard Practice for Evaluating Water-Miscible Metalworking Fluid Bioresistance and Antimicrobial Pesticide Performance¹

This standard is issued under the fixed designation E2275; 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 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 D3946 and E686.

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

1.5 *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

D1129 Terminology Relating to Water

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

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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.

D888 Test Methods for Dissolved Oxygen in Water
D1067 Test Methods for Acidity or Alkalinity of Water
D1193 Specification for Reagent Water
D3342 Test Method for Dispersion Stability of New (Unused) Rolling Oil Dispersions in Water
D3519 Test Method for Foam in Aqueous Media (Blender Test) (Withdrawn 2013)³
D3601 Test Method for Foam In Aqueous Media (Bottle Test) (Withdrawn 2013)³
D4627 Test Method for Iron Chip Corrosion for Water-Miscible Metalworking Fluids
D5465 Practice for Determining Microbial Colony Counts from Waters Analyzed by Plating Methods
E70 Test Method for pH of Aqueous Solutions With the Glass Electrode
E1326 Guide for Evaluating Non-culture Microbiological Tests Used for Enumerating Bacteria
E2169 Practice for Selecting Antimicrobial Pesticides for Use in Water-Miscible Metalworking Fluids
E2523 Terminology for Metalworking Fluids and Operations
E2563 Practice for Enumeration of Non-Tuberculosis *Mycobacteria* in Aqueous Metalworking Fluids by Plate Count Method
E2564 Practice for Enumeration of *Mycobacteria* in Metalworking Fluids by Direct Microscopic Counting (DMC) Method
E2657 Test Method for Determination of Endotoxin Concentrations in Water-Miscible Metalworking Fluids
E2694 Test Method for Measurement of Adenosine Triphosphate in Water-Miscible Metalworking Fluids
E2756 Terminology Relating to Antimicrobial and Antiviral Agents
E2889 Practice for Control of Respiratory Hazards in the Metal Removal Fluid Environment

2.2 Other Standards:

AOAC 960.9 Germicidal and Detergent Sanitizing Action Disinfectants⁴

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ AOAC *International Methods of Analysis*, AOAC International, Gaithersburg, MD.