Designation: F 1738 – 96 (Reapproved 1999)

Standard Test Method for Determination of Deposition of Aerially Applied Oil Spill Dispersants[1]

This standard is issued under the fixed designation F 1738; 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 test method covers the measurement of the deposition of an aerially applied dispersant on the surface of the ground or water. The test method of obtaining these measurements is described, and the analysis of the results, in terms of dispersant use, is considered. There are a number of techniques that have been developed, and this test method outlines their application. These measurements can be used to confirm or verify the specifications of a given equipment set, its proper functioning, and use.

1.2 This test method is applicable to systems used with helicopters or airplanes.

1.3 This test method is one of four related to dispersant application systems. Guide F 1413 covers design, Practice F 1460 covers calibration, Test Method F 1738 covers deposition, and Guide F 1737 covers the use of the systems. Familiarity with all four standards is recommended.

1.4 There are some exposure and occupational health concerns regarding the methods described. These are not discussed in this test method since they are a function of dispersant formulation. Anyone undertaking such experiments should consult the occupational health experts of the dispersant manufacturer regarding the precautions to be used.

1.5 The values stated in SI units are to be regarded as the standard.

1.6 *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:*

F 1413 Guide for Oil-Spill Dispersant Application Equipment: Boom and Nozzle Systems[2]

F 1460 Practice for Calibrating Oil Spill Dispersant Application Equipment Boom and Nozzle Systems[2]

F 1737 Guide for Use of Oil-Spill Dispersant Application Equipment During Spill Response: Boom and Nozzle Systems[2]

3. Significance and Use

3.1 The deposition of an aerially applied dispersant is defined as the amount of an aerially applied dispersant that contacts the surface; whereas, application dosage (frequently referred to as application rate) is the amount of material that is released per unit area by the delivery system. The units of deposition are litres per hectare or U.S. gallons per acre. The deposition may differ from the application dosage (volume of material per unit area) for many reasons, such as, the effects of wind on the spray and the evaporation of the dispersant after it has been released from the aircraft.

3.2 This test method describes the measurement of the ability of a spray system to deposit a dispersant on oil. It is not intended that this test method be used at the time of a spill. These techniques are intended to determine the equipment performance during the development of new systems and after the repair or significant modification of a system.

3.3 The data obtained from the use of this test method can be directly related to the deposition of dispersant on an oil slick, and thus can serve to determine both the dispersant deposition and the droplet size.

3.4 Dispersant deposition and droplet size data can be used as a technical basis for the optimization of dispersant application equipment and its use.

4. Apparatus and Materials

4.1 The basic concept is to provide a collection surface on which the aerially applied material is deposited. The amount of material and the deposition pattern and its droplet size can be measured using this surface. Several systems and methods have been developed, and each has its own advantages and disadvantages.

4.2 These measurements require a large, flat open area (such as a field or an airport) which is suitable for low-level flying and maneuvering. The location should be away from human habitations or environmentally sensitive areas in order to minimize problems due to noise and drifting spray.

4.3 These field programs should be conducted under low-wind conditions in order to minimize drift. Near-surface turbulence due to thermal gradients or atmospheric instability

[1] This test method is under the jurisdiction of ASTM Committee F-20 on Hazardous Substances and Oil Spill Response and is the direct responsibility of Subcommittee F20.13 on Treatment.

Current edition approved Oct. 10, 1996. Published December 1996.

[2] *Annual Book of ASTM Standards*, Vol 11.04.

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