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Standard Guide for Sampling Oil/Water Mixtures for Oil Spill Recovery Equipment[1]

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ε[1] NOTE—Section 11 was added editorially in March 1995.

1. Scope

1.1 This guide is intended for sampling flowing or stationary oil/water mixtures. It is intended for use with oil spill recovery devices either in testing or in documentation of field performance.

1.2 *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 1744 Test Method for Water in Liquid Petroleum Products by Karl Fischer Reagent[2]

D 1796 Test Method for Water and Sediment in Fuel Oils by the Centrifuge Method (Laboratory Procedure)[2]

F 625 Practice for Describing Environmental Conditions Relevant to Spill Control Systems for Use on Water[3]

3. Significance and Use

3.1 This guide provides techniques for obtaining representative samples of oil and water mixtures. This information is necessary in the calculation of oil recovery efficiency and oil recovery rates for oil collection devices.

3.2 *Sampling Stationary Mixtures*—When recovered oil/water mixtures are contained within a holding tank and the relative oil content of the recovered fluid is needed, the sampling technique is somewhat dependent on the container. Two techniques are outlined in this guide. If the container has a flat bottom with straight sides perpendicular to the base (or nearly so), either stationary technique can be implemented, with the stratified sampling method preferred. If the container is irregular in either the horizontal or vertical cross section, the mixing method is preferred.

3.3 *Sampling Flowing Mixtures*—To sample flowing mixtures containing both oil and water, turbulence is induced, to create a homogenous mixture while sampling. The oil content in the sample taken from the flowing stream can then be used to quantify the performance rating criterion (see Procedure Section of Test Method D 1796).

4. Number of Samples

4.1 Take a minimum of four samples under each set of conditions to average results and store the samples separately. In less ideal sampling conditions, take additional samples.

5. Containers

5.1 A dry, water-washed glass sample container.

6. Labeling

6.1 Mark the sample container with the source, type of oil, date and time of sampling, the name of the person taking the sample, and a sample number. Require water and oil-resistant labeling. If several receiving containers are to be sampled, they must be identified and the samples marked for later coordination.

7. Preservation and Storage

7.1 The samples do not require special treatment to preserve their integrity other than ensuring that they remain sealed until analyzed. Note date and time of analysis for each sample.

8. Procedure

8.1 *Baseline Data*—The test fluids may be crude, refined, or synthetic oils. Record type, specific gravity, viscosity, and temperature of each oil together with the environmental conditions (see Practice F 625), air temperature, and slick thickness beyond the influence of the recovery equipment for each test point.

8.2 *Sampling from a Container*—This procedure is intended for taking a representative sample of collected fluids held in a container. When sampling containers, it is advisable to remove as much of the aqueous phase as possible prior to sampling. If this is possible, measure and record the volume of water removed, which will contain dissolved hydrocarbons, for later calculation of the relative oil/water composition. The precision

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[2] *Annual Book of ASTM Standards*, Vol 05.01.

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