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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Practice for Collecting Benthic Macroinvertebrates with Ekman Grab Sampler¹

This standard is issued under the fixed designation D 4343; 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 covers the procedures for obtaining qualitative or quantitative samples of macroinvertebrates inhabiting soft sediments.

1.2 This device is used in freshwater lakes, reservoirs, and usually small bodies of water.

1.3 For the advantages and limitations of selecting grab sampling devices, see Guide D 4387.

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.* For specific hazards, see Section 5.

2. Referenced Documents

2.1 ASTM Standards:

D 4387 Guide for Selecting Grab Sampling Devices for Collecting Benthic Macroinvertebrates²

3. Summary of Practice

3.1 The Ekman grab sampler is a box-shaped device with two scoop-like jaws that must penetrate the intended substrate without disturbing the water surface boundary of the substrate, close when positioned properly on the bottom, and retain a discrete sample of sediment while it is brought to the surface for processing.

3.2 Each half of the grab is covered with hinged doors to prevent washout upon sample lowering and retrieval.

4. Significance and Use

4.1 The Ekman grab sampler is used to collect qualitative

and quantitative samples from different aquatic habitats containing benthic macroinvertebrates living on or in various types of substrates.

4.2 The organisms in the sample are used to define macroinvertebrate community characteristics in water quality studies and ecological assessments.

5. Hazards

5.1 Inspect the device for mechanical defects prior to its use.

5.2 This sampler is inefficient in deep waters, under adverse weather conditions, and in waters of moderate to strong currents or wave action.

5.3 Exercise caution at all times once the grab is loaded or cocked because a safety lock is not part of the standard design.

5.4 Operate the sampler from a boat with a winch and cable.

6. Procedures

6.1 The sampler is cocked by raising each jaw upward into the cocked position using the attached cable and securing the cable to the catch pin located at the top of the sampler.

6.2 Once cocked, lift the sampler overboard and lower slowly but steadily to the bottom.

6.3 Once on the bottom, indicated by a slack line, the messenger is sent down the line tripping the catch mechanism, causing the spring loaded jaws to close the bottom of the sampler, containing the sediment.

6.4 Raise the sample at a slow but steady rate to prevent sample loss or washout.

6.5 Once the sample is on board, empty the sample into either a suitable container or a sieving device directly for processing.

6.6 Thoroughly wash or hose the device with water so that the entire sample is processed before a replicate sample is taken.

¹ This practice is under the jurisdiction of ASTM Committee E-47 on Biological Effects and Environmental Fate and is the direct responsibility of Subcommittee E47.08 on Biological Field Testing.

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² *Annual Book of ASTM Standards*, Vol 11.05.