



Designation: D 4342 – 84 (Reapproved 1998)

Standard Practice for Collecting of Benthic Macroinvertebrates with Ponar Grab Sampler¹

This standard is issued under the fixed designation D 4342; 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 a qualitative or quantitative sample of macroinvertebrates inhabiting a wide range of bottom substrate types, for example, coarse sand, fine gravel, clay, mud, marl, and similar substrates.

1.2 This device is used in freshwater lakes, rivers, estuaries, reservoirs, oceans, and similar habitats.

1.3 For the advantages and limitations of 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 Document

2.1 *ASTM Standards:*

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

3. Summary of Practice

3.1 The Ponar grab sampler has paired jaws that must penetrate beneath the surface of the substrate without disturbing the water surface boundary layer of the substrate, close when positioned properly on the bottom, and retain discrete samples of sediment while it is brought to the surface for processing.

3.2 The standard Ponar takes a sample area of 523 cm².

3.3 A small version, the petite Ponar grab, takes a sample area of 232 cm² and can be used in habitats where there may be an unusual abundance of macroinvertebrates, thus eliminating the need to subsample.

4. Significance and Use

4.1 The Ponar 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 Ponar grab sampler for mechanical defects prior to use.

5.2 This device cannot be used in fast flowing streams, and in habitats with large cobble or rubble stone substrates.

5.3 Exercise caution at all times when handling the grab.

5.4 When not in use, a safety pin lock attached to the lever bar prevents closing of the sampler until the pin is removed.

5.5 The weight of the standard Ponar grab makes it necessary to use a winch and cable or portable crane for retrieving the sample, and ideally the samples should be taken from a stationary boat or platform. The smaller version, petite Ponar grab, is designed for hand-line operation.

5.6 The petite Ponar grab is enhanced by the use of a winch and cable.

6. Procedures

6.1 Attach the Ponar grab to the cable and remove the safety pin with enough tension between the grab and cable so that the grip mechanism will release only when the sampler is on the bottom.

6.2 The device must have a controlled lowering speed and shall be lowered slowly because free-fall may airplane the device, causing the device to land improperly or causing a pressure wave and blowout of the surface layer of sediment when the grab reaches the bottom.

6.3 Once the grab reaches the bottom, its weight will cause it to penetrate the substrate, and the slack-off on the cable allows the locking lever to release, therefore, permitting the movement that allows the horizontal locking bar to drop out of the locking notch and allows the jaws to close as the device is raised.

6.4 Now the tension on the cable is resumed. As the grab is raised slowly, the lever system closes the jaws.

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

6.6 Once on board, empty into either a suitable container or

¹ This practice is under the jurisdiction of ASTM Committee E47 on Biological Effects and Environmental Fate and is the direct responsibility of Subcommittee E47.03 on Sediment Assessment and Toxicology.

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