Designation: D5658 – 20

Standard Practice for Sampling Unconsolidated Waste from Trucks[1]

This standard is issued under the fixed designation D5658; 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 several methods for collecting waste samples from trucks. These methods are adapted specifically for sampling unconsolidated solid wastes in bulk loads using several types of sampling equipment.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* See Section 6 for specific precautionary statements.

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D4687 Guide for General Planning of Waste Sampling
D4700 Guide for Soil Sampling from the Vadose Zone
D5088 Practice for Decontamination of Field Equipment Used at Waste Sites
D5283 Practice for Generation of Environmental Data Related to Waste Management Activities: Quality Assurance and Quality Control Planning and Implementation
D5451 Practice for Sampling Using a Trier Sampler
D5633 Practice for Sampling with a Scoop
D5681 Terminology for Waste and Waste Management

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of terms used in this practice, refer to Terminology D5681.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *authoritative sampling*—a sample selected without regard to randomization.

3.2.2 *screening analysis*—a preliminary qualitative or semi-quantitative test that is designed to efficiently give the user specific information about a waste that will aid in determining waste identification, process compatibility, and safety in handling.

3.2.3 *waste profile*—specific information about the waste including its properties and composition, chemical constituents, waste codes, transportation information, etc.

4. Summary of Practice

4.1 The truck and its contents are inspected and appropriate sampling equipment is selected. A clean sampling device is then used to scoop, core, or auger into the waste material. The sample or samples are collected and transferred to a sample container. The sampling device is then cleaned and decontaminated or disposed of.

5. Significance and Use

5.1 This practice is intended for use in the waste management industries to collect samples of unconsolidated waste from trucks. The sampling procedures described are general and should be used in conjunction with a site-specific work plan.

5.2 The purpose of collecting waste samples directly from a truck (rather than the waste source) is often to verify (usually with screening analyses) that the waste contained in the truck is the same or similar material from a waste source that has been previously characterized and approved for treatment or disposal, or both. Additionally, it may be a safer or logistically easier to sample the waste from a truck over the waste source.

6. Safety Precautions

6.1 Safety precautions must always be observed when sampling waste. The work plan must include a Worker Health and Safety section, because there are potential hazards associated with working around trucks as well as their potentially hazardous contents.

[1] This practice is under the jurisdiction of ASTM Committee D34 on Waste Management and is the direct responsibility of Subcommittee D34.01.02 on Sampling Techniques.

Current edition approved Dec. 1, 2020. Published December 2020. Originally approved in 1995. Last previous edition approved in 2013 as D5658 – 13. DOI: 10.1520/D5658-20.

[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.

6.2 Truck sampling should be conducted from a properly designed platform to allow the sampler to safely access the truck bed with a minimum of difficulty.

7. Sampling Design

7.1 Truck sampling can be conducted for many different purposes. It is important that the purpose be integrated into the sample design. If the purpose of sampling is to characterize the waste, the sample should be collected from the waste source during the loading or unloading of the truck, if possible. This allows access to all portions of the material in the truck. If the purpose is to determine if the material in the truck conforms to a waste profile (that is, waste material that has previously been characterized) and/or certain waste profiling (such as EPA's Land Disposal Restrictions), then a less rigorous sampling approach can be used. Because of the difficulties of sampling the material in the truck *in situ*, (authoritative) grab samples are usually collected from the top portion of the material and subjected to screening type analysis. This method will quickly demonstrate that the sampled material (top portion) does or does not match the waste profile.

7.2 A work plan should be prepared describing the sampling locations, number of samples, depth of sampling, and type of sampling equipment (see Practice D5283 and Guide D4687).

NOTE 1—Because of limited access to the truck bed for sampling, the samples collected are usually near-surface samples. There is a possibility that the material in the middle or on the bottom of the bed is different.

8. Pre-Sampling

8.1 *Basic Pre-Sampling Practices:*

8.1.1 Review all paperwork.

8.1.2 Access the truck by way of the sampling platform so that the waste can be visually inspected to confirm agreement with the paperwork and identify any obvious discrepancies (such as free liquids, etc.).

8.2 *Sampling Equipment:*

8.2.1 *Selection:*

8.2.1.1 Select the sampling equipment and sample containers appropriate for the waste in the truck, in accordance with the work plan or site-specific procedure. See Guide D4687 for information on sample container selection.

8.2.1.2 The sampling equipment, sample preparation equipment, sample containers, etc., must be clean, dry, appropriately sized for planned analysis, and inert to the material being sampled. Before use, all equipment including sample containers shall be inspected to ensure they are clear of obvious dirt and contamination and are in good working condition. Visible contamination shall be removed, and the equipment shall be decontaminated with the appropriate rinse materials. Prior to use, all cleaned equipment should be protected from contamination.

8.2.2 *Materials of Construction:*

8.2.2.1 Sampling devices are usually made of stainless steel, brass, aluminum, or plastic.

8.2.2.2 Sample containers should be made of plastic, glass, or other nonreactive materials (see Guide D4687).

8.3 *Generic Equipment List*—The following is a general identification of equipment required for sampling unconsolidated waste from trucks.

8.3.1 *Scoop,* with extension handle.

8.3.2 *Trier.*

8.3.3 *Auger.*

8.3.4 *Concentric tube thief,* single slot, split tube, Missouri trier.

8.3.5 *Thin-walled tube.*

8.3.6 *Barrel auger.*

8.3.7 *Sample collection sheet.*

8.3.8 *Sample containers,* with lids and liners.

8.3.9 *Chain-of-custody forms.*

8.3.10 *Paperwork and site forms.*

8.3.11 *Sample labels.*

8.3.12 *Cloths or wipes.*

9. Sampling

9.1 *Basic Sampling Practices:*

9.1.1 Access the truck by way of the sampling platform and collect the required number of samples using techniques in accordance with 9.2 – 9.7.

9.1.2 Place the collected material in a sample container.

9.1.3 Close the sample container.

9.1.4 Wipe the outside of the sample container. Dispose of the wipe cloth properly.

9.1.5 Note on site forms all relevant conditions and physical characteristics associated with the collection of the sample.

9.1.6 Fill out all required paperwork for each sample, as required by the work plan.

9.1.7 Complete and attach the label to the side of the sample container after the sample has been collected.

9.2 *Sampling with a Concentric Tube Thief:*

9.2.1 *General Description*—This device consists of two tubes, one fitting snugly inside the other (see Fig. 1). The bottom end of the outer tube is fitted with a point. Oblong holes are cut through both tubes. The holes are opened or closed by rotating the inner tube. Concentric tube samplers are commercially available up to 6 ft (1.8 m) long and several inches (centimeters) in diameter.

9.2.2 Concentric tube samples have a limited application for sampling trucks. Materials that are not free-flowing such as those that are hard packed, moist, or finely powdered will not enter this type of sampler under normal field conditions. Sampling of materials containing granules or particles exceeding one third of the slot width should not be attempted because bridging may occur.

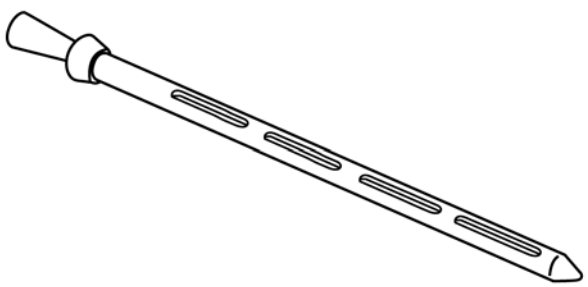

FIG. 1 Concentric Tube Thief

9.2.3 Insert the tube into the material and push with uniform force to the bottom of the truck or until refusal. Rotate the concentric tubes to the open position, thereby allowing the sample to flow into the inner tube. Wiggle the sampler several times and rotate the tubes to the closed position. Withdraw the sampler. Place the sampling device immediately over a sample collection sheet and release the sample by rotating the concentric tubes to the open position. A sample can be removed from the thief, if needed, with a spatula or similar instrument (reamer) and placed in the sample container. Some concentric tube thieves have an open top that allows for pouring of the sample out the end of the sampler into the sample container.

9.3 *Sampling with a Thin-Walled Tube Sampler:*

9.3.1 *General Description*—Tube samplers may vary in length, diameter, and material of construction (see Fig. 2). The material to be sampled must be of a physical consistency (cohesive solid material) to be cored and retrieved with the tube. Materials with particles larger than one third of the inner diameter of the tube should not be sampled with that particular device. The length of the tube will depend on the desired sampling depth (see Guide D4700). The tube is attached to a length of solid or tubular rod. The upper end of this rod is threaded to accept a handle or extension rods. This sampler can be used to collect samples of unconsolidated clay-like materials.

9.3.2 The tube sampler is pushed into the material to be sampled by applying downward force on the unit's handle. Once the sampler has reached the bottom of the sampling interval, it is twisted to break the continuity at the tip. The sampler is pulled from the material and the sample is extruded into the sample container. Samples are extruded by forcing a rod through the tube.

9.4 *Sampling with a Trier Sampler:*

9.4.1 *General Description*—The trier is a metal or plastic tube from which one third to one half of the wall of the tube has been removed to form a slot along its entire length (see Fig. 3). This device can be up to 4 ft long (1.2 m) and should have a sharp, angled point at its lower end. The material to be sampled must have a physical consistency like a soil or similar fine-grained cohesive material. Sampling procedures can be found in Practice D5451.

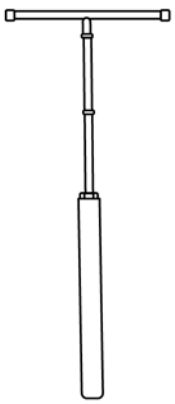

FIG. 2 Thin-Walled Tube

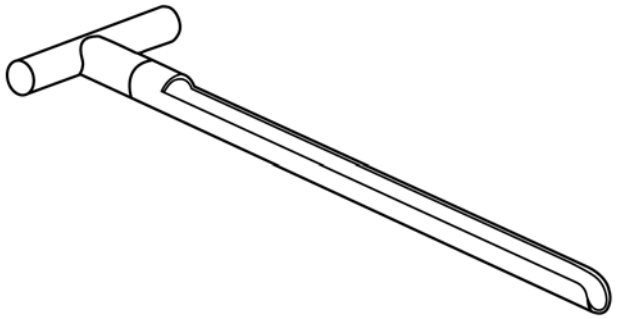

FIG. 3 Trier

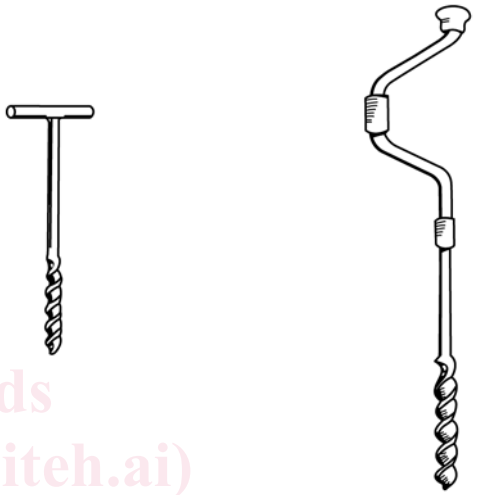

FIG. 4 Auger

9.4.2 The trier is pushed vertically into the material and rotated one or two times to cut a core. The core is pulled out of the hole and removed from the trier with a spatula or similar instrument and placed in the sample container.

9.5 *Sampling with an Auger:*

9.5.1 *General Description*—The screw or ship auger is essentially a small diameter (for example, 1.5 in. (3.8 cm)) wood auger from which the cutting side flanges and tip have been removed. The auger is welded onto a length of solid or tubular rod. The upper end of this rod is threaded to accept a handle or extension rods (see Fig. 4 and Guide D4700).

9.5.2 An auger can be used for collecting a disturbed sample of unconsolidated material from the truck. The auger is rotated manually or with a power source into the waste material. The operator may have to apply downward force to embed the auger; afterwards, the auger screws itself into the material. The auger is advanced to its full length, then pulled and removed. Material from the deepest interval is retained on the auger flights. The sample is collected from this extracted portion. Augers can be used to sample hard or compacted solid wastes or soil. Augers, like triers, are equipped with crossbars, facilitating the penetration of the waste.

9.6 *Sampling with a Barrel Auger:*

9.6.1 *General Discussion*—Dimensions and construction of a barrel auger will vary. A barrel auger typically consists of a stainless steel or carbide steel auger tip (orchard bit), a stainless