Designation: E1908 – 16

Standard Guide for Sample Selection of Debris Waste from a Building Renovation or Lead Abatement Project for Toxicity Characteristic Leaching Procedure (TCLP) Testing for Leachable Lead (Pb)[1]

This standard is issued under the fixed designation E1908; 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 guide describes a method for selecting samples of building components coated with paints suspected of containing lead. The samples are collected from the debris waste stream created during demolition, renovation, lead hazard control, or abatement projects. The samples are subsequently analyzed in the laboratory for lead.

1.1.1 The debris waste stream is assumed to have more than one painted component, for example, metal doors, wood doors, and wood window trim.

1.2 This guide is intended for use when sampling to test for lead only and does not include sampling considerations for other metals or for organic compounds. This guide also does not include consideration of sampling for determination of other possible hazardous characteristics of the waste.

1.3 This guide assumes that the individual component types comprising the debris waste stream are at least partially segregated and that the volume of each type of component in the debris waste stream may be estimated.

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to inch-pound units that are provided for information only and are not considered standard.

1.5 *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:*[2]

D4840 Guide for Sample Chain-of-Custody Procedures

E105 Practice for Probability Sampling of Materials

E2239 Practice for Record Keeping and Record Preservation for Lead Hazard Activities

2.2 *Federal Documents:*[3]

40 CFR 261 Appendix II-Method 1311, Toxicity Characteristic Leaching Procedure (TCLP)

29 CFR 1926.62 OSHA Lead in Construction Standard

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *component (of the waste), n*—each of those different and distinguishable materials that comprise the waste.

3.1.2 *sample (of the waste), n*—a collection of the components of the waste assembled in proportion to their contribution to the total volume of the waste.

3.1.3 *waste, n*—material resulting from conduct of a demolition, renovation, or lead abatement project that is or will be directed for disposal.

3.1.4 *waste stream, n*—the total flow of waste from a demolition, renovation, lead hazard control or abatement project.

NOTE 1—Regulations promulgated by authorities having jurisdiction may define terms in 3.1.1 – 3.1.4 differently than defined above.

4. Summary of Practice

4.1 The entirety of the debris waste stream created by demolition, renovation, lead hazard control or abatement

[1] This guide is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of E06.23 on Lead Hazards Associated with Buildings

Current edition approved March 1, 2016. Published April 2016. Originally approved in 1997. Last previous addition approved in 2010 as E1908 – 10. DOI: 10.1520/E1908-16.

[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.

[3] Available from U.S. Government Publishing Office, 732 N. Capitol St., NW, Washington, DC 20401-0001, http://www.gpo.gov.

projects in and around buildings and related structures is examined visually, and estimates made of the total volume of the waste and of the relative volume proportions of the various components of the waste. A sample of the waste is selected and assembled that contains the various waste components in the same relative volume proportions as these estimates. The sample is then submitted to a laboratory for conduct of the Toxicity Characteristic Leaching Procedure (TCLP) for lead in accordance with 40 CFR 261.

5. Significance and Use

5.1 Waste samples collected using this guide provide representative samples for analysis in a laboratory using the TCLP.

5.2 The TCLP is used to simulate the transfer of lead from buried lead-containing waste into the ground water system upon codisposal of the lead-containing waste and municipal solid waste in unlined solid-waste landfills. The TCLP attempts to simulate rain or ground water leaching, or both. For the procedure to yield a predictor of the subsurface (in-ground) leaching process, a representative sample of the volume of the waste must be selected and submitted for leaching and analysis. The result of the sampling, leaching, and analysis process is used to determine the waste handling and disposal protocols to be followed and to document compliance with applicable laws, regulations, and requirements. The guide addresses the sampling process by defining a component-volume-based method to collect and assemble a representative sample of a solid waste stream that may contain heterogeneous components.

5.3 The collection of a volume-based sample of the waste stream is based on the fact that the TCLP leachate lead concentration limit, like other such TCLP limits, was developed based on the spatial dimensions of landfills.

5.4 Individuals who use this guide are expected to be trained in the proper and safe conduct of sampling of lead-containing wastes, qualified/certified/licensed as required by those authorities having jurisdiction over such activities, and properly utilize tools and safety equipment when conducting these procedures.

5.5 This guide may involve use of various hand and power tools for sampling the components of the waste. It is intended that such tools should be properly and safely used by persons trained and familiar with their performance and use.

5.6 In general terms, building components are drilled, sawed, snipped, and so forth, to collect samples of the various components in proportion to the volume of those components in the entire building. The component samples are assembled, and the resulting assembled sample is analyzed according to the TCLP protocol.

6. Sampling Supplies

6.1 *Hand and Power Tools,* as needed for the sampling and handling of the various components of the waste (for example, drills, saws, metal snips).

6.2 *Personal Protective Equipment (PPE) and Systems,* as appropriate for the safe collection and handling of the waste.

NOTE 2—Those requirements contained in 29 CFR 1926.62, for exposure to lead, may be considered. The presence of other chemical hazards in the waste may necessitate the application of other such standards.

6.3 *Containers,* of construction, size, and number to fully hold the waste sample assembled from the various components. These containers may be available from the laboratory to which the assembled waste sample is to be sent for analysis.

6.4 *Markers, pens, self-adhesive labels,* for use in uniquely identifying samples of waste collected.

6.5 *Chain of Custody Forms,* similar to those described in Guide D4840. These forms may be available from the laboratory to which the assembled waste sample is to be sent for analysis.

7. Procedure

7.1 *Determine the Volume Proportions of the Sample*

7.1.1 Estimate the volume of each pile of painted waste that has been segregated according to component type, for example metal doors, wood doors, and wood window trim.

7.1.2 Calculate the volume proportion of each component type as a percent of the total volume of the waste.

NOTE 3—If the volume estimate was made in units of cubic feet (ft^3), convert to cubic metres (m^3) by multiplying the value in cubic feet (ft^3) by 0.0283 as follows:

$$0.0283 \times (\text{volume in cubic feet}) = (\text{volume in cubic meters})$$

NOTE 4—If the volume estimate was made in units of cubic yards (yd^3), convert to cubic metres (m^3) by multiplying the value in cubic yards (yd^3) by 0.765 as follows:

$$0.765\ (\text{volume in cubic yards}) = (\text{volume in cubic metres})$$

7.2 *Collect a Volume Proportional Sample:*

7.2.1 Collect a randomly drilled, sawed, snipped, and so forth, waste sample having a total mass between 0.25 kg and 1 kg. Follow Practice E105 to assure that the material collected is representative (Note 5).

NOTE 5—After preanalysis processing by the laboratory, this amount of the waste should be enough to yield a minimum of two 100-g TCLP specimens.

7.2.2 The amount collected from each pile shall be taken according to the volume proportion of each pile (Note 6).

NOTE 6—For example, assume that the project involved disposal of painted doors, door frames, windows, window frames or trim molding, or both, from several rooms. Assume further that glass is removed to be recycled. Segregated waste piles might then contain metal doors, wood doors (solid and hollow separately), metal door and window frames (no glass), wood door and window frames (no glass), and wood molding. As in 7.1.1, estimate the volume of the waste in each pile and calculate the volume proportions. See Table 1. As in 7.2.2, use the volume proportions to collect the appropriate amount of material from each pile. In this example, the sample would be 17 % wood by volume from window frames.

TABLE 1 Example of Determining Volume Proportions

Painted Component		Estimated Volume	Volume Proportion
wood doors, solid		0.081 m^3	50 % (= 0.081/0.163)
door frames, wood		0.020 m^3	12 %
windows, wood		0.031 m^3	19 %
window frames, steel		0.003 m^3	2 %
window frames, wood		0.028 m^3	17 %
	total	0.163 m^3	100 %

8. Sample Handling and Analysis

8.1 *Preparation for Shipment:*

8.1.1 Prepare the total amount of waste collected as the sample from each pile for shipment (7.2.2) to a laboratory for analysis (Note 7).

NOTE 7—All the material sent to the laboratory comprises a single sample of the debris waste stream that is broken, cracked, crushed, cut, ground, and so forth, as a whole and is homogenized before a subsample is taken for TCLP analysis.

8.1.1.1 Place the total amount of waste collected as the sample into one or more containers. Assure that each container is securely closed to prevent sample loss or contamination during handling and transportation.

8.2 Label each sample container with a unique identifier.

8.3 Complete the request-for-analysis paperwork as required by the laboratory for analysis of the waste sample. Advise the laboratory of the number and types of containers sent and the means and methods of delivery, and that TCLP for lead is to be performed (Note 8).

NOTE 8—It is prudent to contact the analytical laboratory to determine how laboratory personnel intend to or should process the sample prior to subsampling for conduct of the TCLP.

8.4 Complete a Chain of Custody form such as described in Guide D4840.

8.4.1 Record the sample container identifiers on the Chain of Custody form.

8.5 Package the sample container(s) for shipment and label the over-pack, if one is used, according to applicable transportation laws and regulations.

8.5.1 Enclose the completed Chain of Custody form in the shipment package.

8.6 Ship the packaged waste sample to a laboratory for analysis

9. Record Keeping

9.1 Records shall be maintained in accordance with Practice E2239 and shall include, at a minimum, a copy of the report.

10. Report

10.1 A report shall be prepared and include at a minimum the following:

10.1.1 A description of the project and site from which the waste was sampled including names, addresses, locations, waste-producing processes, and dates.

10.1.2 A list and description of the components sampled from the waste stream.

10.1.3 The estimated volumes of each component waste pile.

10.1.4 The calculated volume proportion of each component comprising the entire waste sample.

10.1.5 A copy of the Completed Chain of Custody Form.

10.1.6 A copy of paperwork that was prepared as a record of the laboratory submission and analysis request.

10.1.7 A copy of any packing list(s) or shipping papers, or both, used in shipment of the waste sample to the laboratory.

11. Keywords

11.1 abatement; lead; TCLP; waste