



Designation: E1729 – 24

Standard Practice for Field Collection of Dried Paint Samples for Subsequent Lead Determination¹

This standard is issued under the fixed designation E1729; 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 collection of samples of dried paint and other coatings from buildings and related structures.

1.2 This practice is used to collect samples for subsequent determination of lead on an area basis (milligrams of lead per area sampled) or concentration basis (milligrams of lead per gram of dried paint collected or mass percent of lead in the paint sample collected).

1.3 This practice does not address the sampling design criteria (that is, a sampling plan that includes the number and location of samples) that are used for risk assessment and other lead hazard activities. See Guide E2115 or Practices E2271/E2271M or E3074/E3074M.

1.4 This practice contains notes that are explanatory and are not part of the mandatory requirements of this practice.

1.5 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

1.6 *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.* A specific warning statement is given in 7.4.1.1.

1.7 *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.*

¹ This practice is under the jurisdiction of ASTM Committee D22 on Air Quality and is the direct responsibility of Subcommittee D22.12 on Sampling and Analysis of Lead for Exposure and Risk Assessment.

Current edition approved April 1, 2024. Published April 2024. Originally approved in 1994. Last previous edition approved in 2020 as E1729 – 20. DOI: 10.1520/E1729-24.

2. Referenced Documents

2.1 ASTM Standards:²

D1356 Terminology Relating to Sampling and Analysis of Atmospheres

D4840 Guide for Sample Chain-of-Custody Procedures

D7659 Guide for Strategies for Surface Sampling of Metals and Metalloids for Worker Protection

E1605 Terminology Relating to Lead in Buildings

E1645 Practice for Preparation of Dried Paint Samples by Hotplate or Microwave Digestion for Subsequent Lead Analysis

E1979 Practice for Ultrasonic Extraction of Paint, Dust, Soil, and Air Samples for Subsequent Determination of Lead

E2115 Guide for Conducting Lead Hazard Assessments of Dwellings and of Other Child-Occupied Facilities

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

E2271/E2271M Practice for Clearance Examinations Following Lead Hazard Reduction Activities in Multifamily Dwellings

E3074/E3074M Practice for Clearance Examinations Following Lead Hazard Reduction Activities in Single Family Dwellings, in Individual Units of Multifamily Dwellings, and in Other Child-Occupied Facilities

E3193 Test Method for Measurement of Lead (Pb) by Flame Atomic Absorption Spectrophotometry (FAAS)

E3203 Test Method for Determination of Lead in Dried Paint, Soil, and Wipe Samples by Inductively Coupled Plasma-Optical Emission Spectroscopy (ICP-OES)

3. Terminology

3.1 *Definitions*—For definitions of terms not appearing here, see Terminologies D1356 and E1605.

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.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *paint collection tray, n*—any clean, dry, lead-free container for use in catching paint scrapings.

3.2.1.1 *Discussion*—This practice describes the use of letter-size white paper for making a funnel type collection tray. However, other types of collection trays can or may be utilized.

4. Summary of Practice

4.1 Dried paint samples are collected from areas of known dimensions using heat gun, cold-scraping, or coring methods.

5. Significance and Use

5.1 Although this practice is intended for the collection of dried paint samples in and around buildings and related structures for the subsequent determination of lead content, this practice may also be used to collect paint samples from other structures for lead analysis.³

5.2 The variability associated with the sampling of dried paint is generally considered to be far higher than the variability associated with the analyses of the paint specimens. Therefore, it is essential that sample collection be properly controlled to produce representative and meaningful samples.

5.3 These samples are collected in a manner that will permit subsequent digestion using sample preparation techniques such as Practices E1645 or E1979 and determination of lead using laboratory analysis techniques such as inductively coupled plasma atomic emission spectrometry (ICP-AES) (see Test Method E3203) or flame atomic absorption spectrometry (FAAS) (see Test Method E3193).

6. Materials and Equipment

6.1 *Resealable Rigid Walled Containers*, for use as paint collection containers.

6.1.1 Screw-top, 50 mL plastic centrifuge tubes are an example of a suitable, resealable, rigid-walled container.

6.1.2 Resealable plastic bags are not suitable for holding and transporting dried paint samples due to potential losses of paint chips during laboratory handling for test specimen preparation.

6.2 *Steel or Plastic Measuring Ruler*—Use metric-only rulers with millimetre and centimetre divisions (see Note 1).

NOTE 1—Since the unit used to report the amount of lead in dried paint samples is generally milligram per square centimetre, use of non-metric measuring tools at the sampling site where paint collection is being performed is not recommended.

6.3 *Sampling Templates (Optional)*—Minimum inside dimensions of 2.5 cm by 2.5 cm (1 in.²), reusable aluminum or steel template of accurately known dimensions (see Notes 1 and 2).

NOTE 2—It is recommended that templates are thin (less than 3 mm) and are capable of lying flat on a flat surface.

6.4 *Cloths*, for use in cleaning sampling equipment and the surface from which a sample is to be collected.

6.5 *White Paper (Letter-Size) for Making Paper Funnels*, for use in making paint collection trays to capture dried paint scrapings.

6.6 *Masking and Duct Tape*.

6.7 *Indelible (Permanent) Marking Pen*.

6.8 *Personal Safety Gear*—Items such as safety glasses or goggles, half-mask respirators fitted with organic vapor/HEPA filters, and a fire extinguisher (see Note 3).

NOTE 3—Use of respirators and a fire extinguisher is recommended for collection of dried paint using the heat-gun method.

6.9 *Cutting and Scraping Tools*:

6.9.1 Sharp-edged razor knife,

6.9.2 Single-edged safety razor blades,

6.9.3 Pocket-knife with locking blade,

6.9.4 Rigid blade paint scrapper with extra blades,

6.9.5 Flexible putty knife,

6.9.6 Chisels, a variety of wood and cold chisels,

6.9.7 Hammer, and

6.9.8 Sharp-edged coring tool, minimum diameter of 2.5 cm, with a bottle brush for cleaning.

6.10 *Electrical Heat Gun with Extension Cords and Power Source*.

6.11 *Flashlight or Other Lighting Equipment Providing White Light (Recommended)*.

6.12 *Plastic Gloves*, powderless.

6.13 *Trash Bags*.

6.14 *Water*, clean, for use in cleaning sampling equipment and the surface from which a sample is to be collected.

7. Procedure

7.1 *General Comments*:

7.1.1 The ease of collecting dried paint samples is dependent on the condition of the paint and the type of substrate. Sample collection is more difficult on some substrates than others. In general, collection of dried paint from brick, concrete, and wood is more difficult than sampling from plaster, drywall, and metal.

7.1.2 Cutting tools used for collecting dried paint from one sampling location may not be effective at other locations. Thus, on-site access to a variety of paint collection tools is required to collect samples from a range of different substrates.

7.1.3 Paint surfaces within and adjacent to sampling locations should be cleaned with a damp cloth to remove dirt and dust prior to collecting a sample.

7.1.4 Sample collection requires four major steps: (1) marking the collection area, (2) setting up a paint collection tray, (3) removing the paint, and (4) transferring the collected sample to the paint collection container. Each of these steps is described as follows.

7.2 *Marking the Collection Area*—If a coring tool removal procedure is to be used, go to 7.3.

7.2.1 *Template-Assisted Marking Procedure*—Clean a template and a razor knife or equivalent cutting tool with a damp cloth. Carefully place the clean sampling template on the paint surface at the sampling location. While manually holding the

³ *Guidelines for the Evaluation and Control of Lead-Based Hazards in Housing*, U.S. Department of HUD, Washington, DC, June 1995.