



Standard Practice for Ultrasonic Extraction of Paint, Dust, Soil, and Air Samples for Subsequent Determination of Lead¹

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1. Scope

1.1 This practice covers an ultrasonic extraction procedure for the extraction of lead from environmental samples of interest in lead abatement and renovation (or related) work, for analytical purposes.

1.2 Environmental matrices of concern include dry paint films, settled dusts, soils, and air particulates.

1.3 Samples subjected to ultrasonic extraction are prepared for subsequent determination of lead by laboratory analytical methods.

1.4 This practice includes, where applicable, descriptions of procedures for sample homogenization and weighing prior to ultrasonic extraction.

1.5 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.6 *This practice 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 practice to establish appropriate safety and health practices and determine the applicability of regulatory limitation prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

[D1193 Specification for Reagent Water](#)

[D5438 Practice for Collection of Floor Dust for Chemical Analysis](#)

[D6785 Test Method for Determination of Lead in Workplace Air Using Flame or Graphite Furnace Atomic Absorption Spectrometry](#)

[D7144 Practice for Collection of Surface Dust by Micro-](#)

[vacuum Sampling for Subsequent Metals Determination](#)

[E631 Terminology of Building Constructions](#)

[E1605 Terminology Relating to Lead in Buildings](#)

[E1613 Test Method for Determination of Lead by Inductively Coupled Plasma Atomic Emission Spectrometry \(ICP-AES\), Flame Atomic Absorption Spectrometry \(FAAS\), or Graphite Furnace Atomic Absorption Spectrometry \(GFAAS\) Techniques](#)

[E1726 Practice for Preparation of Soil Samples by Hotplate Digestion for Subsequent Lead Analysis](#)

[E1727 Practice for Field Collection of Soil Samples for Subsequent Lead Determination](#)

[E1728 Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination](#)

[E1729 Practice for Field Collection of Dried Paint Samples for Subsequent Lead Determination](#)

[E1775 Guide for Evaluating Performance of On-Site Extraction and Field-Portable Electrochemical or Spectrophotometric Analysis for Lead](#)

[E1792 Specification for Wipe Sampling Materials for Lead in Surface Dust](#)

3. Terminology

3.1 *Definitions:* For definitions of terms relating to this practice that do not appear in this section, refer to Terminologies [E631](#) and [E1605](#).

3.1.1 *extraction*—the dissolution of target analytes from a solid matrix into a liquid form.

3.1.1.1 *Discussion*—During sample digestion or extraction, target analytes are extracted (solubilized) into solution to enable subsequent determination by analytical techniques (for example, see Test Method [E1613](#)).

3.1.2 *ultrasonic extraction*—the use of ultrasonic energy and acidic or basic solution to extract targeted analytes from samples.

3.1.2.1 *Discussion*—The extract solution is subsequently analyzed for the determination of targeted analytes.

4. Summary of Practice

4.1 Samples of paint, settled dust (wipe or vacuum), soil, or airborne particles, obtained by ASTM sample collection methods (see Practice [E1729](#); Practice [E1728](#), Practice [D5438](#) and

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

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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.