



Standard Practice for Collection of Surface Dust by Air Sampling Pump Vacuum Technique for Subsequent Lead Determination¹

This standard is issued under the fixed designation E 1973; 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 vacuum collection of surface dusts onto filters using portable air sampling pumps. Samples collected in this manner allow for the subsequent digestion and determination of lead content by using atomic spectrometric (or equivalent) methods. The primary intended application is sampling from soft surfaces.

1.2 This practice allows for the determination of lead on a loading basis (microgram of lead per area sampled). Lead may also be determined on a concentration basis (microgram of lead per gram of dust collected) where pre-weighed filters or filter cassettes are used.

1.3 *Limitations*—Due to a number of physical factors inherent in the vacuum sampling method, analytical results for vacuum dust samples are not likely to reflect the total dust contained within the sampling area prior to sample collection. This practice generally will have a collection bias toward smaller, less dense dust particles; however, the practice will generate leaded dust data that are consistent and comparable between operators performing vacuum collection using this practice at a variety of locales and sites.²

1.4 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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:

D 1356 Terminology Relating to Sampling and Analysis of Atmospheres³

¹ This practice is under the jurisdiction of ASTM Committee E-6 on Performance of Buildings and is the direct responsibility of Subcommittee E06.23 on Lead Paint Abatement.

Current edition approved Oct. 10, 1999. Published January 2000. Originally published as E 1973-98. Last previous edition E 1973-98.

² Reynolds, S. J., et al., "Laboratory Comparison of Vacuum, OSHA," and "HUD Sampling Methods for Lead in Household Dust." Am. Ind. Hyg. Assoc., J. 58:439-446 (1997).

³ *Annual Book of ASTM Standards*, Vol 11.03.

D 3195 Practice for Rotameter Calibration³

E 1553 Practice for the Collection of Airborne Particulate Lead During Abatement and Construction Activities⁴

E 1728 Practice for Field Collection of Settled Dust Samples Using Wipe Sampling Methods for Lead Determination by Atomic Spectrometry Techniques^{4,5}

3. Terminology

3.1 *Definitions*—For definitions of terms relating to sampling and analysis of dust by means of the air sampling pump vacuum technique, refer to Terminology D 1356.

3.2 Description of Terms Specific to This Standard:

3.2.1 *air sampling pump, n*—a portable air pump that is used to draw air through a filter holder/nozzle assembly for vacuum collection of surface dust. An example would include a personal sampling pump.

3.2.2 *batch, n*—a group of field or quality control samples that are collected in a similar environment and are processed together using the same reagents and equipment.

3.2.3 *collection nozzle, n*—a piece of stainless steel or acrylic hard plastic tubing molded on one end (inlet) to form a narrow opening. The outlet end of the collection nozzle shall fit snugly to flexible tubing, which connects it to a filter holder. Alternatively, a collection nozzle may consist simply of a piece of flexible tubing that is cut at a 45° angle at the inlet end.

3.2.4 *field blank, n*—a sample that is handled in exactly the same way that field samples are collected, except that no air is drawn through it.

3.2.5 *filter holder, n*—a plastic holder that supports the filter medium upon which dust is collected. It is also often referred to as a filter cassette.

3.2.6 *sampling device (sampling assembly)*—a collection nozzle, filter holder, and air sampling pump assembly used to collect surface dust on a filter. The collection nozzle (with tubing connector, if applicable) is attached to the inlet end of the filter holder. The filter holder houses the filter, through which air is drawn by using the air sampling pump. The filter holder is attached to the pump by flexible tubing.

⁴ *Annual Book of ASTM Standards*, Vol 04.11.

⁵ *ASTM Standards on Lead-Based Paint Abatement in Buildings*, ASTM, Conshohocken, PA, 1994.