



Standard Terminology Relating to Lead in Buildings¹

This standard is issued under the fixed designation E 1605; 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 approval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This terminology standard includes definitions for the following:

1.1.1 Terms that are commonly used in the field of management of lead hazards in facilities;

1.1.2 Architectural terms, particularly those associated with older wood-frame buildings; and,

1.1.3 Specialized terms that may be encountered by users in reports and notices that are generated during lead hazard management activities.

1.2 This terminology standard is supplementary to Terminology E 631.

1.3 Definitions adopted or derived from other documents include the following:

1.3.1 Some of the definitions in this Standard are adopted as exact copies from other sources. The source is briefly identified at the right margin following the definition and fully identified in Section 2.

1.3.2 Some of the definitions in this terminology standard are adapted from other sources. Changes in these definitions were made only to clarify the meaning, to incorporate related terms that also are defined in this terminology standard, or to ensure that the revised definition is consistent with those for related terms. The source is briefly identified with the words “adapted” at the right margin following the definition, and is fully identified in Section 2.

1.4 Terms within the definitions that are shown in boldface are defined in this terminology standard.

1.5 This terminology standard excludes the following:

1.5.1 Terms with a common dictionary meaning, except in cases where there is a specialized definition within the field of lead hazard management.

1.5.2 Terms that are used only in individual ASTM standards in which they are defined adequately, whether formally or by the context in which they appear.

¹ This terminology 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.

Current edition approved June 10, 2002. Published September 2002. Originally published as E 1605 – 94. Last previous edition E 1605 – 01b.

2. Referenced Documents

2.1 ASTM Standards:

C 859 Terminology Relating to Nuclear Materials²

D 16 Terminology for Paint, Related Coatings, Materials, and Applications³

D 123 Terminology Relating to Textiles⁴

D 661 Test Method for Evaluating Degree of Cracking of Exterior Paints³

D 772 Test Method for Evaluating Degree of Flaking (Scaling) of Exterior Paints³

D 2864 Terminology Relating to Electrical Insulating Liquids and Gases⁵

D 4214 Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films³

E 7 Terminology Relating to Metallography⁶

E 131 Terminology Relating to Molecular Spectroscopy⁷

E 135 Terminology Relating to Analytical Chemistry for Metals, Ores, and Related Materials⁸

E 344 Terminology Relating to Thermometry and Hydrometry⁹

E 380 Practice for Use of the International System of Units (SI) (the Modernized Metric System)¹⁰

E 456 Terminology Relating to Quality and Statistics¹¹

E 631 Terminology of Building Constructions¹²

E 856 Definitions of Terms and Abbreviations Relating to Physical and Chemical Characteristics of Refuse-Derived Fuel¹³

E 1227 Terminology Relating to Chemical Analysis of Metals¹⁴

² *Annual Book of ASTM Standards*, Vol 12.01.

³ *Annual Book of ASTM Standards*, Vol 06.01.

⁴ *Annual Book of ASTM Standards*, Vol 07.01.

⁵ *Annual Book of ASTM Standards*, Vol 10.03.

⁶ *Annual Book of ASTM Standards*, Vol 03.01.

⁷ *Annual Book of ASTM Standards*, Vol 03.06.

⁸ *Annual Book of ASTM Standards*, Vol 03.05.

⁹ *Annual Book of ASTM Standards*, Vol 14.03.

¹⁰ Discontinued 1997; Replaced by IEEE/ASTM SI-10.

¹¹ *Annual Book of ASTM Standards*, Vol 14.02.

¹² *Annual Book of ASTM Standards*, Vol 04.11.

¹³ *Annual Book of ASTM Standards*, Vol 11.04.

¹⁴ Discontinued; see 1991 *Annual Book of ASTM Standards*, Vol 03.05. Replaced by Terminology E 135.

- E 1553 Practice for Collection of Airborne Particulate Lead During Abatement and Construction Activities¹⁵
- E 1613 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) Techniques¹²
- E 1644 Practice for Hot Plate Digestion of Dust Wipe Samples for the Determination of Lead¹²
- E 1914 Practice For Use of Terms Relating To the Development and Evaluation of Methods For Chemical Analysis
- E 1728 Practice for Field Collection of Settled Dust Samples Using Wipe Sampling Methods for Lead Determination by Atomic Spectrometry Techniques¹²
- E 2052 Guide for Evaluation, Management, and Control of Lead Hazards in Facilities¹⁶
- F 221 Terminology Relating to Carbon Paper and Inked Ribbon Products and Images Made Therefrom¹⁷
- 2.2 *Code of Federal Regulations*¹⁸:
- 40 CFR 261 Identification and Listing of Hazardous Waste
- 40 CFR 745.223 Lead-Based Paint Poisoning Prevention in Certain Residential Structures-Definitions

3. Significance and Use

3.1 The purpose of this terminology standard is to help users understand and apply the large number of specialized terms used in connection with the management of lead hazards by providing a single, comprehensive, and consistent terminology.

3.1.1 This terminology standard includes some terms that may be encountered, but whose use is discouraged. They are included for clarification and in order to provide the user with preferred existing alternate terms.

3.1.2 Architectural terms for individual building components are included to promote consistency of usage and to help ensure that sampling locations are recorded with sufficient accuracy to allow independent confirmation of lead measurements, if necessary.

3.2 A discussion is attached to certain definitions to help make the definition clear or to show how the term and its definition are related to other terms.

3.3 Terms and definitions in this terminology standard are based upon laws, regulations, and practices in the United States.

3.3.1 Some of the definitions in this terminology standard are adopted verbatim or are adapted from definitions that are formally stated or implied in laws and regulations. They are not intended to replace the latter definitions. The user is responsible for understanding legal definitions and for ensuring that the legal obligations that are encompassed by them are fully satisfied.

3.3.2 Users in other countries should refer to applicable national, regional, and local laws, regulations, and practices.

4. Terminology

abrasion resistance (coatings)—ability of a coating to resist being worn away and to maintain its original appearance, integrity, and structure when subjected to rubbing, scraping, or wear.

accessible surface—interior or exterior surface (usually up to 5 ft (1.5 m) from floor or ground) that is accessible for young child to mouth or chew. See also **chewable surface**.

accreditation, n—Official authorization, approval, or recognition accorded an individual or organization based upon specific qualifications. **(E 631)**

accuracy, n—the closeness of the agreement between the result of a measurement and a true value of the quantity that is being measured. (Adapted from draft ISO VIM, International Vocabulary of Basic and General Terms)

action level, n—a level of a contaminant in a medium at or above which activities to control the level are initiated.

DISCUSSION—The action level may be a maximum allowable level, as in the definition of lead-containing paint. In other cases, it is defined as below a maximum allowable level, and used as a warning to prevent the latter from being exceeded. An example is the action level in the OSHA lead standard.

administrative controls—Administrative measures that are used to control occupational exposures to hazards.

DISCUSSION—The most commonly-used administrative controls are job assignments and job rotations that are designed to limit the duration of worker exposure. Another administrative control is purchase control to ensure the use of materials and equipment which produce the least amount of hazard.

administrative removal—(*of workers*), temporary removal of workers from a job site prior to blood-lead levels reaching values requiring medical removal.

analyte, n—chemical or element that is the subject of the testing or measurement in a sampling and analytical procedure, e.g. lead in paint.

anodic stripping voltammetry—an electroanalytical technique in which a metal (such as lead) in a solution is deposited (by reduction) on an electrode, then stripped from it (by oxidation). The peak electrical current is measured during stripping, and is proportional to the original metal concentration.

DISCUSSION—Commercial equipment is available to perform this method in the field as well as in fixed laboratories.

Apparent Lead Concentration (ALC)—The x-ray fluorescence (XRF) reading or average of more than one reading on a painted surface, not corrected for the substrate.

DISCUSSION—This value was used in a now-obsolete method of correcting XRF readings for substrate effect, and has been replaced by use of the Performance Characteristic Sheet.

atomic absorption—absorption of radiant energy by ground-state atoms.

DISCUSSION—Substances when dispersed as an atomic vapor will absorb characteristic radiations identical to those that the same substances can emit. This property is the basis for analysis by atomic absorption spectroscopy. **(D 2864)**

¹⁵ *Annual Book of ASTM Standards*, Vol 11.03.

¹⁶ *Annual Book of ASTM Standards*, Vol 04.12.

¹⁷ *Annual Book of ASTM Standards*, Vol 15.09.

¹⁸ Available from Office of the Federal Register, National Archives Records Administration, Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20401.

baluster (picket), *n*—one of a series of closely-spaced upright members that support the handrail in a railing system. (E 631)

baseboard, *n*—a molding covering the juncture of a wall and the adjoining floor.

batch—a group of field or quality control samples that are processed together using the same reagents and equipment. (E 1553)

bias, *n*—systematic error of the indication of a measuring instrument. (E 456)

biological monitoring—analysis of a person's blood or urine, or both, to determine the level of lead contamination in the body.

blank sample—unexposed specimen of the *medium* used in testing, such as a wipe or a filter, which is analyzed with other samples to determine whether samples are either (1) contaminated before collection (for example, in the field, or at the testing site), or are (2) contaminated after collection (for example, during transportation to the laboratory or in the laboratory), or both. Also called a *media blank*, or a *dummy specimen*.

blood-lead level (blood level)—concentration of lead in the blood, $1 \mu\text{mole/L} = 20.72 \mu\text{g/mL}$.

DISCUSSION—Blood lead levels are associated with the risk and severity of toxic effects.

calibration curve—graphical or mathematical representation of a relation between a measured parameter and a property of the standard for the substance under consideration. (C 859)

calibration standard—solutions of known **analyte** concentration used to calibrate instruments. (E 1613)

certification—the process of testing and evaluating against certain specifications the competence of a person, organization, or other entity in performing a function or service, usually for a specified period of time. (HUD Guidelines)

certified reference material (CRM)—a reference material accompanied by a certificate, one or more of whose property values are certified by a procedure that establishes its traceability to an accurate realization of the unit in which the property values are expressed. (E 1644)

chalking, *n*—formation on a pigmented coating of a friable powder evolved from the film itself at or just beneath the surface. (D 4214)

characteristics—see **hazardous waste characteristics**.

checking (coatings), *n*—phenomenon manifested in paint films by slight breaks in the film that do not penetrate to the underlying surface.

DISCUSSION—The break should be called a crack if the underlying surface is visible. Where precision is necessary in evaluating a paint film, checking may be described as visible (as seen by the naked eye) or as microscopic (as observed under a magnification of ten diameters).

chewable surface—surface easily accessible to children (usually up to five feet from the floor or ground), and likely to be chewed-on, such as window sills, balusters, and handrails. See **accessible surface**.

child-occupied facility—a facility constructed prior to 1978 that is visited regularly by the same child, six years of age or

under, at least two different days within any week, for at least three hours per visit, six hours per week, and 60 hours per year. (40 CFR 745.223, adapted)

chipping resistance (coatings)—ability of a coating or layers of coatings to resist removal, usually in small pieces, resulting from impact by hard objects or from wear during service. (D 16)

cleanup, *n*—wet-sweeping, HEPA-vacuuming, and washing down of surfaces within the work area at the end of each day. Compare **final cleanup**.

coating, *n*—a liquid or semiliquid, including but not limited to paint, varnish, or shellac, that dries or cures to form a protective or decorative finish after being applied as a thin layer. (C 168)

Code of Federal Regulations (CFR)—basic component of the *Federal Register* publication system. The CFR is a codification of the regulations of the various Federal agencies.

common area, *n*—a portion of a building that is generally accessible to all occupants. Such an area may include, but is not limited to, hallways, stairways, laundry and recreational rooms, playgrounds, community centers, garages, and boundary fences. (40 CFR 745.223)

component (of the waste)—each of those different and distinguishable materials that comprise the waste. Also may be defined by locally-applied law or regulation. (E 1908)

component replacement (building)—an abatement method in which painted components with leaded paint are removed with minimal disturbance of the paint, and replaced with new components.

concentration, *n*—quantity of substance in a unit quantity of sample.

DISCUSSION—Lead in environmental media is expressed in SI units of mass concentration, for example, μg (micrograms) lead/g material, or in terms of loading, for example, μg lead/cm² of area (micrograms per square centimetre). Although the non-SI unit of *micrograms per square foot* is found in regulatory clearance testing of lead dust, its use is deprecated. (To convert from μg lead/ft² to μg lead/cm², divide by 929.11.)

containment, *n*—a physical barrier used to limit the spread of leaded dust and debris from a designated work area.

continuing calibration blank—a solution containing no analyte which is used to verify blank response and freedom from carryover. (E 1613)

continuing calibration verification—a solution (or set of solutions) of known analyte concentration used to verify freedom from excessive instrumental drift; the concentration is to cover the range of a linear calibration curve. (adapted from E 1613)

coring—method of collecting soil or paint samples that ensures that materials at each depth are collected proportionately, usually with a hollow cylindrical extraction device. (E 1727)

cracking (coatings), *n*—phenomenon manifested in paint films by a break extending through to the surface painted.

DISCUSSION—Where this is difficult to determine, the break should be called a crack only if the underlying surface is visible. The use of a magnification of 10 diameters is recommended in cases where it is difficult to differentiate between cracking and checking. (D 661)

data collection objective—a statement explaining the reasons that certain data is needed, the questions it is expected to answer, and the decisions that will be made on the basis of the data, that is used in developing sampling and analytical plans.

delamination, n—(1) the separation of one coating from another coat within a coating system, or from the substrate. (D 4538) (2) the separation of layers in a laminated material such as plywood because of failure of the adhesive. (D 907)

deleading—deprecated term. Use **lead-based paint hazard abatement**.

detection limit—the lowest level of an analyte that can be detected by an instrument or an analytical method.

DISCUSSION—There are different kinds of detection limits and it is important to know which one is being discussed.

instrumental detection limit—the lowest concentration at which the instrumentation can distinguish analyte content from the background generated by a minimal matrix. (E 1613)

DISCUSSION—The IDL is the limit of performance of the analytical instrument and is given in units of mass per unit volume.

method detection limit—the minimum concentration of an analyte that, in a given matrix and with a specific method, has a 99 % probability of being identified, qualitatively or quantitatively measured, and reported to be greater than zero concentration. (E 1613)

DISCUSSION—(1) The method detection limit is different for each matrix, and is given in units that are specific to the matrix. (2) The method detection limit is always greater than or equal to the instrument detection limit.

deteriorated paint—paint or other coating that is cracking, flaking, chipping, peeling, or otherwise damaged or delaminating from the substrate of a building component.

digestate—an acidified aqueous solution produced by digestion.

digestion—a high temperature sample preparation process that solubilizes targeted analytes that may be present in the sample, and results in an acidified aqueous solution called the digestate. (E 1913)

DISCUSSION—Digestion normally entails the use of a hot plate or microwave oven for subjecting the acidified sample solution to high temperatures. Digestion is a type of **extraction**.

direct-reading XRF— see **XRF direct-reading analyzer**.

discipline, n—one of the specific types or categories of lead-based paint activities defined in applicable Federal, state, or local regulations for which individuals may receive training from accredited training programs and become certified. (40 CFR 745.223, adapted)

dust wipe—See **wipe**.

dust wipe sample—a sample of settled dust collected on a wipe. (E 1644)

NOTE 1—The ASTM standard procedure for collecting dust wipe samples is E 1728.

dwelling unit—unit providing complete independent living facilities for one or more persons, including permanent

provisions for living, sleeping, eating, cooking, and sanitation. (E 631)

EBL—elevated blood level.

elevated blood level (EBL)—lead content in blood that exceeds the safe level established by regulation/local jurisdiction.

encapsulation, n—the application of an encapsulant. An encapsulant or encapsulation product is a substance that forms a barrier between lead-based paint and the environment using a liquid-applied coating (with or without reinforcement materials) or an adhesively bonded covering material. (40 CFR 745.223, adapted)

DISCUSSION—An encapsulant is intended to have a life expectancy of at least 20 years. Wallpaper and contact paper are not considered to be encapsulants.

DISCUSSION—Encapsulation is one of the four principal abatement methods.

enclosure, n—the use of rigid, durable construction materials that are mechanically fastened to the substrate in order to act as a dust-tight barrier between lead-based paint and the environment. (40 CFR 745.223, adapted)

DISCUSSION—Enclosure is one of the four principal abatement methods.

engineering controls—measures other than respiratory protection or administrative controls that are implemented at the work site to contain, control, and/or otherwise reduce exposure to lead-contaminated dust and debris, usually in the occupational health setting. The measures include process and product substitution, isolation, and ventilation. (HUD Guidelines, OSHA)

ex situ—a term used to describe work performed after removal to another location or away from a facility.

extraction, n—the dissolution of target analytes from a solid matrix into a liquid form. (E 1979)

DISCUSSION—Digestion is an example of an extraction process. Other extraction processes are ultrasonic extraction (PS 87) and leaching (for example, the **toxicity characteristic leaching procedure**).

facility, n—a physical setting used to serve a specific purpose.

DISCUSSION—As used in lead hazard management activities, a facility may be a part of a building, a whole building, or a group of buildings with or without surrounding property, or a non-building setting such as a playground.

field blank—blank sample prepared at the field sampling location.

field operation laboratory—a laboratory that uses portable technology to provide analytical services in the field near the sampling site.

fixed-site laboratory—a laboratory that is located in improved real estate such as a building or similar structure.

flaking (scaling), n—phenomenon manifested in paint films by the actual detachment of pieces of the film itself either from its substrate or from paint previously applied.

DISCUSSION—Flaking (scaling) is generally preceded by cracking or checking or blistering, and is the result of loss of adhesion, usually due to stress-strain factors coming into play. (D 772)