Designation: E1796 – 24

Standard Guide for Selection and Use of Liquid Coating Encapsulation Products for Leaded Paint in Buildings[1]

This standard is issued under the fixed designation E1796; 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 is intended to provide building users such as private building owners, contractors, architects, homeowners, and regulatory authorities with assistance in selecting an appropriate liquid coating encapsulation product for architectural residence and child-care facility use situations for abating leaded paint. This guide also provides information that can be used to assist in the following: (*1*) determining whether a painted surface is suitable for encapsulation, (*2*) applying a liquid coating encapsulation product, (*3*) evaluating installed liquid coating encapsulation products, and (*4*) maintaining the encapsulated surface.

1.2 This guide applies to any liquid-applied product that relies primarily on adhesion for attachment to the surface and is designed to reduce human exposure to lead in paint.

1.3 This guide is not intended for use as a training manual. The information contained herein is not all-inclusive and does not provide comprehensive instructions for the selection, application, or maintenance of specific liquid coating encapsulation products. This guide is intended to supplement information supplied by encapsulation product manufacturers and safety requirements established by law. The user of this guide shall refer to the encapsulation product manufacturer's instructions for encapsulation product application and maintenance.

1.4 This guide does not cover minimum material performance requirements for liquid coating encapsulation products. Performance specifications for non-reinforced liquid coating encapsulation products are provided in Specification E1795.

1.5 Encapsulation products for use on industrial steel structures are not covered in this guide. Industrial steel structures include, but are not limited to, bridges, water towers, and tanks.

1.6 Limited documentation is available on evaluating the field performance of liquid coating encapsulation products. A conservative approach to assessing the selection and use of liquid coating encapsulation products is thus adopted in this guide. As appropriate, the guidance provided within will be revised as additional knowledge regarding how these products perform over time is gained.

1.7 The user of this guide should follow all regulations promulgated by authorities having jurisdiction regarding the use of encapsulation products.

1.8 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.

1.9 *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.*

1.10 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D16 Terminology for Paint, Related Coatings, Materials, and Applications

D1005 Test Method for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers

D1212 Test Methods for Measurement of Wet Film Thickness of Organic Coatings

D1356 Terminology Relating to Sampling and Analysis of Atmospheres

D3359 Test Methods for Rating Adhesion by Tape Test

D4214 Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films

D5064 Practice for Conducting a Patch Test to Assess Coating Compatibility

[1] This guide 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.

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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.

E1605 Terminology Relating to Lead in Buildings
E1795 Specification for Non-Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings
E2239 Practice for Record Keeping and Record Preservation for Lead Hazard Activities

3. Terminology

3.1 *Definitions*—For definitions of terms used in this guide, refer to Terminologies D16, D1356, and E1605.

4. Significance and Use

4.1 This standard primarily addresses encapsulant products for residential and child-care facilities. It may also be appropriate for some commercial buildings.

4.2 Encapsulation provides a means of protecting occupants from exposure to lead in paint in buildings that are likely to remain standing for a long period of time. This nondestructive abatement strategy is useful in situations in which the primary structure needs to remain intact for either historical or economic reasons. Encapsulation offers an abatement strategy that may be more cost effective than abatement by removal of the paint.

4.3 There are many environmental and use conditions that affect leaded paint liquid coating encapsulation products, and different types of liquid coating encapsulation products have been developed specifically to meet the requirements of the various conditions. Product types include non-reinforced liquid coatings, as well as products for interior or exterior use. These products may be applied over many different surfaces coated with one or more layers of leaded paint and possibly other coatings. Encapsulation products in service are subjected to many kinds of wear. Various colors and finishes are also available. This guide is intended to assist the purchaser in determining which product is most appropriate for the specific conditions under which the product will be used.

4.4 As described in this guide, an encapsulation product must be compatible with the surface to which it is applied. An encapsulation product must bond to the surface coating, and not cause the subsurface layers to separate or deteriorate.

5. Determining the Suitability of a Painted Component for Encapsulation

5.1 Prior to selecting a liquid coating encapsulation product, the substrate, subsurface coating layers, and surface to be encapsulated should be assessed to determine whether they are suitable for encapsulation and to provide information to be used when selecting an encapsulation product type. The assessment should include evaluating both the condition of the substrate and the integrity of the existing subsurface layers, and determining the surface use conditions, such as the degree of impact, abrasion, or weathering that the surface receives.

5.2 *Painted Components*—When assessing surfaces to be encapsulated, all painted components to be encapsulated should be identified and assessed individually since these components may experience different use and environmental conditions. Different painted components within a room often have distinct painting histories, which can affect their suitability for encapsulation. Examples of painted components include walls, doors, door jambs, window sills, window casings, and chair rails.

5.3 *Assessment of Substrates*—The substrate may be composed of wood, metal, plaster, masonry, or other building materials. The substrate should be sound and intact, or made so, before application of a liquid coating encapsulation product. Encapsulating a surface that exhibits large-scale, systemic damage to the substrate would likely not be effective since the damaged substrate may not have the structural integrity needed to support a liquid coating encapsulation product. The overall condition of the substrate should be evaluated first for evidence of structural integrity and systemic damage, such as moisture or water damage, that might cause the surface to be unsuitable for encapsulation until it is repaired. Next, the surface should be evaluated for localized damage such as cracks, holes, or other signs of deterioration. Spot repairs to correct localized damage may be necessary in order to provide a surface that can be encapsulated successfully.

5.4 *Assessment of Surface and Subsurface Coating Layers:*

5.4.1 A comprehensive assessment of the condition of the existing surface and subsurface coating layers should be performed in order to determine whether the painted component can be encapsulated successfully. The condition of the existing surface and subsurface coating layers should be examined visually for signs of deterioration. The type and extent of the deterioration and whether the areas of deterioration are systemic, random, or localized should be evaluated. The surface should be assessed visually for cleanliness since food, oil, grease, and dirt can affect the adhesion of an encapsulant to the surface. The amount of abrasion that the surface experiences should be evaluated and repairs made to building components reduce abrasion, if necessary. The surface should be examined for signs of chalking. Adhesion tests should be performed to evaluate the cohesive strength of the subsurface coating layers. The procedures for performing the entire assessment are explained below.

5.4.2 *Types of Surface and Subsurface Coating Layer Deterioration*—The surface should be evaluated for evidence of chalking, chipping, flaking, peeling, cracking, checking, blistering, or broken paint. Small, localized areas of deteriorated paint that are not caused by an ongoing, underlying source can be repaired by priming, patching, bridging, smoothing, wet-sanding, or other methods. The painted component to be encapsulated should be evaluated for the amount of abrasion and repeated impact it experiences during use. Painted components that experience extreme abrasion or repeated impact are generally not suitable for encapsulation. These painted components include, but are not limited to, window headers, stops, mullions, sashes, parting beads, inside door jambs, floors, and stair treads. Painted components having surfaces that rub together, such as drawers or cabinet doors, might also be ineligible for encapsulation. A surface may be suitable for encapsulation if the source of abrasion can be eliminated by such steps as scaling windows or planeing doors.