Designation: E 1795 – 00

Standard Specification for Non-Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings[1]

This standard is issued under the fixed designation E 1795; 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 specification covers minimum material performance requirements and laboratory test procedures for non-reinforced liquid coating encapsulation products (single or multiple-coat systems) for leaded paint in buildings. The test methods and practices included are listed in Table 1. Specifications for reinforced liquid coating encapsulation products are provided in Specification E 1797.

1.2 This specification does not address the selection of an encapsulation product for specific use conditions. Specific use conditions may require performance values other than those stated in this specification. See Guide E 1796.

1.3 This specification does not cover the use of encapsulation products on industrial steel structures nor on residential coated metal surfaces because no corrosion control requirements are included.

1.4 This specification applies to any non-reinforced liquid applied product, designed to reduce human exposure to lead in paints, which relies primarily on adhesion for attachment to the surface.

1.5 The laboratory testing specified in this specification shall be performed on the entire non-reinforced liquid coating encapsulation product system, whether single or multiple coat, as applied in the field. A non-reinforced liquid coating encapsulation product shall be comprised of all principal components in the system, including the base and top coats and primer, if specified, for field application. Except for dry abrasion testing, where specialty primers maybe used for flash rust resistance, primers shall not be used solely for product performance testing in accordance with this specification.

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

1.7 The results of the test methods included in this specification will not necessarily predict field performance.

1.8 *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 16 Terminology for Paint and Related Coatings, Materials and Applications[2]

D 522 Test Methods for Mandrel Bend Test of Attached Organic Coatings[2]

D 823 Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels[2]

D 1005 Test Methods for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers[2]

D 1186 Test Methods for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base[2]

D 1212 Test Methods for Measurement of Wet Film Thickness of Organic Coatings[2]

D 1308 Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes[3]

D 1475 Test Method for Density of Paint, Varnish, Lacquer, and Related Products[2]

D 1653 Test Methods for Water Vapor Transmission of Organic Coating Films[2]

D 2370 Test Method for Tensile Properties of Organic Coatings[2]

D 2486 Test Method for Scrub Resistance of Wall Paints[3]

D 2794 Test Method for Resistance of Organic Coatings to Effects of Rapid Deformation (Impact)[2]

D 3273 Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber[2]

D 3274 Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation[2]

[1] This specification is under the jurisdiction of ASTM Committee E6 on Performance of Buildings and is the direct responsibility of Subcommittee E06.23 on Lead Paint Abatement.

Current edition approved May 10, 2000. Published August 2000. Originally published as PS 16 – 95. Last previous edition E 1795 – 97.

[2] *Annual Book of ASTM Standards*, Vol 06.01.

[3] *Annual Book of ASTM Standards*, Vol 06.02.

TABLE 1 Alphabetical List of Test Methods and Practices

Test Method	Section	ASTM Test Method or Practice	Federal Test Method Std. No. 141C
Adhesion	10.2	D 3359	
Chalking	10.9	D 4214	
Condition in container	6.2		3011
Density or weight per gallon	6.3	D 1475	
Dry abrasion resistance	10.3	D 4060	
Dry-film thickness	7.1.3	D 1005, D 1186	
Film application on test panels	7.1.3	D 823	
Flexibility	10.5	D 522	
Free film preparation	7.2.1	D 4708	
Glass panel preparation	9.1.5		2021
Impact resistance	10.1	D 2794	
Mildew resistance	10.12	D 3273, D 3274	
Paintability	10.13	D 3359 (modified)	
Sampling	6.3	E 300	
Scrub resistance	10.11	D 2486	
Standard laboratory conditions	7.1.4	D 3924	
Steel panel preparation	7.1.2		2011
Surface burning characteristics	10.7	E 84	
Tensile properties	10.14	D 2370	
Tin panel preparation	7.1.2		2012
VOC content	10.8	D 3960	
Water and chemical resistance	10.6	D 1308	
Water vapor transmission	10.4	D 1653	
Weathering/aging	10.9, 10.10	G 53	

D 3359 Test Methods for Measuring Adhesion by Tape Test[2]
D 3924 Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquers and Related Materials[2]
D 3960 Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings[2]
D 4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser[2]
D 4214 Test Methods for Evaluating Degree of Chalking of Exterior Paint Films[2]
D 4414 Practice for Measurement of Wet Film Thickness by Notched Gages[2]
D 4708 Practice for Preparation of Uniform Free Films of Organic Coatings[2]
E 84 Test Method for Surface Burning Characteristics of Building Materials[4]
E 300 Practice for Sampling Industrial Chemicals[5]
E 1605 Terminology Relating to Abatement of Hazards from Lead-Based Paint in Buildings and Related Structures[6]
E 1796 Guide for Selection and Use of Liquid Coating Encapsulation Products for Leaded Paint in Buildings[6]
E 1797 Specification for Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings[6]
G 53 Practice for Operating Light- and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials[7]

2.2 *Federal Test Methods Standard 141C:*[8]
2011 Preparation of Steel Panels
2012 Preparation of Tin Panels
2021 Glass Panel Preparation
3011 Condition in Container

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to Terminologies D 16 and E 1605.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *lead inaccessibility*—the ability of an encapsulation product to resist or inhibit the transport of lead to its surface.

4. Classification

4.1 *Type I: Interior Use Only*—Type I defines encapsulation products intended for interior use. These products shall meet all the requirements of this specification except those of 5.9 and 5.10.1.

4.2 *Type II: Exterior Use Only*—Type II defines encapsulation products intended for exterior use. These products shall meet all the requirements of this specification except those of 5.10.2.

4.3 *Type III: Either Exterior or Interior Use*—Type III defines encapsulation products intended for either interior or exterior use. These products shall meet all the requirements of this specification.

5. Performance Requirements

5.1 *Impact Resistance*—Minimum performance is 9-J (80-in.-lb) direct impact (that is, coating side up) without cracking to substrate, determined by visual observation using 5× magnification and in accordance with 10.1.

5.2 *Adhesion*—Minimum performance is a 5A rating when determined in accordance with 10.2.

5.3 *Dry Abrasion Resistance*—Minimum performance is no greater than a 20 % loss in film thickness after 1 000 cycles when determined in accordance with 10.3.

5.4 *Water Vapor Transmission*—Test results shall be reported in accordance with 10.4.

NOTE 1—Minimum performance depends on architectural and use conditions. (See 1.2.)

5.5 *Flexibility*—Minimum performance is absence of cracking and other visual defects measured at 6.4 mm (0.25 in.) from the 3.2-mm (0.125-in.) end of the conical mandrel after a 1-s bend and determined in accordance with 10.5.

5.6 *Water and Chemical Resistance*:

5.6.1 *Spot Test*—For the 24-h covered spot test, determined in accordance with 10.6.1, after a recovery period of 1 h, minimum performance is no evidence of blistering, wrinkling, cracking, or delamination. After a recovery period of 24 h, minimum performance is no distinguishable difference in the hardness between the area exposed to the reagent and adjacent unexposed area when rubbed lightly with a tongue depressor.

[4] *Annual Book of ASTM Standards*, Vol 04.07.
[5] *Annual Book of ASTM Standards*, Vol 15.05.
[6] *Annual Book of ASTM Standards*, Vol 04.11.
[7] *Annual Book of ASTM Standards*, Vol 14.04.

[8] Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

5.6.2 *Immersion Test*—For the 24-h distilled water immersion test, minimum performance for adhesion is a 5A rating determined in accordance with 10.2. After a recovery period of 24 h, the portions of the panel that were and were not immersed should be indistinguishable with respect to hardness when rubbed lightly with a tongue depressor.

5.7 *Surface Burning Characteristics*—Minimum performance is a flame spread index (FSI) of less than 25 and a smoke development rating of less than 50 determined in accordance with 10.7.

5.8 *Volatile Organic Compound (VOC) Content*—Test results shall be reported in accordance with 10.8.

NOTE 2—Volatile organic compound requirements may be specified by Federal, State, and local regulatory agencies and ordinances.

5.9 *Weathering*—For non-reinforced liquid coating encapsulation products designated for exterior use, resistance to weathering is determined in accordance with 10.9. Minimum performance is an 8 rating for chalking. Minimum performance for adhesion and flexibility is absence of cracking and other visual deterioration measured at 6.4 mm (0.25 in) from the 3.2-mm (0.125-in.) end of the conical mandrel after a 1-s bend. Minimum performance for elongation is no more than 35 % relative change from the ultimate value obtained when unexposed panels are tested.

5.10 *Aging*—Minimum performance for adhesion and flexibility is absence of cracking and other visual deterioration measured at 6.4 mm (0.25 in) from the 3.2-mm (0.125-in.) end of the conical mandrel after a 1-s bend. Minimum performance for elongation is no more than 35 % relative change from the ultimate value obtained when unexposed panels are tested.

5.10.1 *Exterior Products*—For exterior end-use products, effects of aging are determined in accordance with 10.10.1. (See 5.9 for minimum performance requirements.)

5.10.2 *Interior Products*—For interior end-use products, effects of aging are determined in accordance with 10.10.2. (See 5.9 for minimum performance requirements.)

5.11 *Scrub Resistance*—Minimum performance is the absence of failure to substrate (that is, erosion of coating) after 1200 cycles when determined in accordance with 10.11.

5.12 *Mildew Resistance*—Minimum performance is an 8 rating when determined in accordance with 10.12.

5.13 *Paintability/Repairability*:

5.13.1 Minimum performance for adhesion is a 5A rating when determined in accordance with 10.13.1.

5.13.2 Minimum performance for adhesion is a 5A rating when determined in accordance with 10.13.2.

5.14 *Tensile Properties*—Minimum performance depends on specific use conditions. However, the test results shall be reported in accordance with 10.14.

NOTE 3—Three additional properties are of concern for non-reinforced liquid coating encapsulation products. These are combustion toxicity, emissions during application and curing, and lead inaccessibility. However, requirements for these properties cannot be included in this specification at this time because there are no adequate ASTM or Federal test methods for determining them. Requirements for two of these properties, combustion toxicity and emissions during application and curing, may be subject to Federal, State and local regulations or ordinances. The user of this specification is advised to determine whether such regulations or ordinances exist. The addition of requirements for these properties to this specification will be undertaken when suitable test methods are available.

6. Sampling

6.1 Prior to sampling, establish the condition of the container since damage to it may cause evaporation, skinning, or other undesirable effects. Excessive storage time and temperature fluctuations may cause settling or changes in viscosity. Materials beyond the manufacturer's stated shelf life shall not be sampled.

6.2 Thickening, settling, and separation are undesirable and objectionable if a coating, after storage, cannot be readily reconditioned and made suitable for application with a reasonable amount of stirring. The referenced method covers procedures for determining changes in properties after storage. Determine the conditions in the container in accordance with Method 3011 of the Federal Test Method Standard No. 141C.

6.3 Sample the encapsulant in accordance with Practice E 300. Determine the density in accordance with Test Method D 1475 and repeat until two successive readings agree within 90 g (0.2 lb). Samples for testing may then be taken.

6.4 Report the size of the container from which the sample was taken and product identification codes. A3.8-L (1-gal) sample is usually sufficient for the recommended tests.

7. Number of Tests

7.1 *Impact Resistance*—A minimum of two panels shall be tested in accordance with 10.1.

7.2 *Adhesion*—A minimum of three locations each on two panels shall be tested in accordance with 10.2.

7.3 *Dry Abrasion Resistance*—A minimum of two panels shall be tested in accordance with 10.3.

7.4 *Water Vapor Transmission*—A minimum of three cups shall be tested in accordance with 10.4.

7.5 *Flexibility*—A minimum of three panels shall be tested in accordance with 10.5.

7.6 *Water and Chemical Resistance*:

7.6.1 *Spot Test*—For the 24-h covered spot test, a minimum of two tests for each reagent shall be performed in accordance with 10.6.1.

7.6.2 *Immersion Test*—For the 24-h distilled water immersion test, a minimum of three sets of locations on one panel shall be tested in accordance with 10.6.2.

7.7 *Surface Burning Characteristics*— A minimum of one panel shall be tested in accordance with 10.7.

7.8 *Volatile Organic Compound (VOC) Content*—Testing shall be performed in accordance with 10.8.

7.9 *Weathering*—A minimum of three locations each on two panels shall be tested for adhesion in accordance with 10.2 and chalking in accordance with 10.9. A minimum of three panels shall be tested for flexibility in accordance with 10.5. A minimum of ten specimens shall be tested for tensile properties in accordance with 10.14.

7.10 *Aging*—After aging, a minimum of three locations each on two panels shall be tested for adhesion in accordance with 10.2. A minimum of three panels shall be tested for flexibility in accordance with 10.5. A minimum of ten specimens shall be tested for tensile properties in accordance with 10.14.