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June 11, 1999

Fiberlock Technologies
630 Putnam Avenue
P.O. Box 390432
Cambridge, MA 02139-0802

Att: Mr. Cole W. D. Stanton

DL-12362

OBJECTIVE

To test an encapsulant product for conformance to the requirements of ASTM E 1795-97, Non-Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings, Type III, Either Exterior or Interior Use.

PRODUCT TESTED

LBC Lead Barrier Compound, Type III

TEST PROCEDURES

The test procedures used in this study were as outlined in ASTM E 1795-97.

PANEL PREPARATION

The encapsulant was applied to obtain a dry film thickness of 7 mils.

The test panels were dried at ambient conditions for 30 days before testing was initiated.



TEST RESULTS

The test results are shown in the Appendix.

CONCLUSION

The submitted sample of Fiberlock LBC Lead Barrier Compound, Type III conforms to all of the requirements of ASTM E 1795 , "Standard Specification for Non-Reinforced Liquid Coating Encapsulation Products For Leaded Paint in Buildings", Type III, Either Exterior or Interior Use.

D/L LABORATORIES

A handwritten signature in cursive script, appearing to read "Thomas J. Sliva".

Thomas J. Sliva
Assistant Technical
Director

cw
cc: S. Spindel
J. Willner

APPENDIXTEST RESULTSENCAPSULANT PRODUCT PERFORMANCEProduct: LBC Lead Barrier Compound, Type IIIManufacturer: Fiberlock Technologies

<u>Par.</u>	<u>Requirement</u>	<u>Result</u>
5.1	Impact Resistance, Direct, (80 in. lbs. min.)	160+ in. lbs.
5.2	Adhesion, (5A min.)	5A
5.3	Abrasion Resistance, Thickness Loss, % (20% max.) CS-17, 1000 gms	7.9%
5.4	Water Vapor Transmission,, grains/ft ² /hr.	0.28
5.5	Flexibility, (No cracking or defect 1/4" from apex)	Conforms
5.6.1	Water and Chemical Resistance	
	50% Ethanol	
	Blistering (None)	None
	Wrinkling, Cracking, etc. (None)	None
	Difference in Hardness, 24 hrs.	None
	5% Acetic Acid	
	Blistering (None)	None
	Wrinkling, Cracking, etc. (None)	None
	Difference in Hardness, 24 hrs.	None
	5% Sodium Hydroxide	
	Blistering (None)	None
	Wrinkling, Cracking, etc. (None)	None
	Difference in Hardness, 24 hrs.	None
	5% Hydrochloric Acid	
	Blistering (None)	None
	Wrinkling, Cracking, etc. (None)	None
	Difference in Hardness, 24 hrs.	None



APPENDIX

<u>Par.</u>	<u>Requirement</u>	<u>Result</u>
5.6.1	Water and Chemical Resistance, 24 Hrs.	
	5% Citric Acid	
	Blistering (None)	None
	Wrinkling, Cracking, etc. (None)	None
	Difference in Hardness, 24 hrs.	None
	Corn Oil	
	Blistering (None)	None
	Wrinkling, Cracking, etc. (None)	None
	Difference in Hardness, 24 hrs.	None
	2% Phosphoric Acid	
	Blistering (None)	None
	Wrinkling, Cracking, etc. (None)	None
	Difference in Hardness, 24 hrs.	None
	5% Trisodium Phosphate	
	Blistering (None)	None
	Wrinkling, Cracking, etc. (None)	None
	Difference in Hardness, 24 hrs.	None
	Distilled Water	
	Blistering (None)	None
	Wrinkling, Cracking, etc. (None)	None
	Difference in Hardness, 24 hrs.	None
5.6.2	Water Immersion, 24 Hrs.	
	Adhesion after 2 hrs. recovery (5A min.)	5A
	Difference in Hardness, 24 hrs.	Conforms
5.7	Surface Burning Characteristics	
	Flame Spread Index (25 max.)	5
	Smoke Development Rating (50 max.)	0
5.8	Volatile Organic Content	
	gm/L	85
	lbs/gal	0.7



APPENDIX

<u>Par.</u>	<u>Requirement</u>	<u>Result</u>
5.9	Weathering – 1000 Hrs. Chalking, ASTM, (8 min.) Adhesion, ASTM, (5A min.) Flexibility, (No cracking or defects 1/4" from apex) Tensile Strength, psi Elongation, 35% relative change, max.	<u>8</u> <u>5A</u> <u>Conforms</u> <u>695 psi</u> <u>-34.4%</u>
5.10	Aging – 12 cycles Adhesion, ASTM Scale, (5A min.) Flexibility, (No cracking or defect 1/4" from apex) Tensile Strength, psi Elongation, 35% relative change, max.	<u>5A</u> <u>Conforms</u> <u>635 psi</u> <u>-22.7%</u>
	Aging – 2 weeks at 40°C Adhesion, ASTM Scale, (5A min.) Flexibility, (No cracking or defect 1/4" from apex) Tensile Strength, psi Elongation, 35% relative change, max.	<u>5A</u> <u>Conforms</u> <u>633 psi</u> <u>-5.5%</u>
5.11	Scrub Resistance, cycles (1200 min.)	<u>1350 cycles</u>
5.12	Mildew Resistance, Rating (8 min.)	<u>10</u>
5.13	Paintability	
5.13.1	Encapsulant / Latex Paint, ASTM Scale (5A min.)	<u>5A</u>
5.13.2	Encapsulant / Encapsulant, ASTM Scale (5A min.)	<u>5A</u>
5.14	Tensile Properties Tensile Strength, psi Elongation, % Elongation at 100 psi	<u>565 psi</u> <u>48.9%</u> <u>1.2%</u>



Standard Specification for Non-Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings¹

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

1.4 This specification does not cover the use of encapsulation products intended for use on residential exterior coated metal surfaces, as no corrosion control requirements are included. However, this specification does not preclude the use of encapsulation as an abatement technology on residential exterior metal coated surfaces.

1.5 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.

1.6 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.

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

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

1.9 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the*

TABLE 1 Alphabetical List of Test Methods and Practices

Test Method	Section	ASTM Test Method or Practice	Federal Test Method Std. No. 141C
Adhesion	9.2	D 3359	
Chalking	9.9	D 4214	
Condition in container	5.2		3011
Density or weight per gallon	5.3	D 1475	
Dry abrasion resistance	9.3	D 4060	
Dry-film thickness	6.1.3	D 1005, D 1186	
Film application on test panels	6.1.3	D 823	
Flexibility	9.5	D 522	
Free film preparation	6.2.1	D 4708	
Impact resistance	9.1	D 2794	
Mildew resistance	9.12	D 3273, D 3274	
Paintability	9.13	D 3359 (modified)	
Sampling	5.3	E 300	
Scrub resistance	9.11	D 2486	
Standard laboratory conditions	6.1.4	D 3924	
Steel panel preparation	6.1.2		2011
Surface burning characteristics	9.7	E 84	
Tensile properties	9.14	D 2370	
Tin panel preparation	6.1.2		2012
VOC content	9.8	D 3960	
Water and chemical resistance	9.6	D 1308	
Water vapor transmission	9.4	D 1653	
Weathering/aging	9.9, 9.10	G 53	

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 Relating to Paint, Varnish, Lacquer, and Related Products²
- D 522 Test Methods for Mandrel Bend Test of Attached Organic Coatings²
- D 823 Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels²
- D 1005 Test Method for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers²
- D 1186 Test Methods for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base²
- D 1308 Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes³
- D 1475 Test Method for Density of Paint, Varnish, Lacquer, and Related Products²
- D 1653 Test Methods for Water Vapor Transmission of Organic Coating Films²

¹ This specification 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.

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² Annual Book of ASTM Standards, Vol 06.01.

³ Annual Book of ASTM Standards, Vol 06.02.

- D 2370 Test Method for Tensile Properties of Organic Coatings²
- D 2486 Test Method for Scrub Resistance of Interior Latex Flat Wall Paints³
- 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 Chamber²
- D 3274 Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation²
- D 3359 Test Methods for Measuring Adhesion by Tape Test²
- D 3924 Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquer and Related Materials²
- D 3960 Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings²
- D 4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser²
- D 4214 Test Methods for Evaluating Degree of Chalking of Exterior Paint Films²
- D 4708 Practice for Preparation of Uniform Free Films of Organic Coatings²
- E 84 Test Method for Surface Burning Characteristics of Building Materials⁴
- E 300 Practice for Sampling Industrial Chemicals⁵
- E 1605 Terminology Relating to Abatement of Hazards from Lead-Based Paint in Buildings and Related Structures⁴
- E 1796 Guide for Selection and Use of Liquid Coating Encapsulation Products for Leaded Paint in Buildings⁴
- E 1797 Specification for Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings⁴
- G 53 Practice for Operating Light- and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials⁶
- 2.2 *Federal Test Methods Standard 141C.7*
- 2011 Preparation of Steel Panels
- 2012 Preparation of Tin Panels
- 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 *Description of Term 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. Performance Requirements

4.1 *Impact Resistance*—Minimum performance is 92 cm-kg (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 9.1.

4.2 *Adhesion*—Minimum performance is a 5A rating when determined in accordance with 9.2.

4.3 *Dry Abrasion Resistance*—Minimum performance is no greater than a 20 % loss in film thickness after 1 000 cycles when determined in accordance with 9.3.

4.4 *Water Vapor Transmission*—Test results shall be reported in accordance with 9.4.

NOTE 1—Minimum performance depends on architectural and use conditions.

4.5 *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 9.5.

4.6 *Water and Chemical Resistance:*

4.6.1 *Spot Test*—For the 24-h covered spot test, determined in accordance with 9.6.1, 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.

4.6.2 *Immersion Test*—For the 24-h distilled water immersion test, minimum performance for adhesion is a 5A rating determined in accordance with 9.6. 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.

4.7 *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 9.7.

4.8 *Volatile Organic Compound (VOC) Content*—Test results shall be reported in accordance with 9.8.

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

4.9 *Weathering*—For non-reinforced liquid coating encapsulation products designated for exterior use, resistance to weathering is determined in accordance with 9.9. Minimum performance is an 8 rating for chalking. Minimum performance for adhesion and flexibility is as specified for each property when unexposed panels are tested. Minimum performance for elongation is no more than 35 % relative change from the ultimate value obtained when unexposed panels are tested.

4.10 *Aging*—Effects of aging are determined in accordance with 9.10. Minimum performance for adhesion and flexibility is as specified for each property when unexposed panels are tested. Minimum performance for elongation is no more than 35 % relative change from the ultimate value obtained when unexposed panels are tested.

4.11 *Scrub Resistance*—Minimum performance is the absence of failure to substrate (that is, erosion of coating) after 1200 cycles when determined in accordance with 9.11.

4.12 *Mildew Resistance*—Minimum performance is an 8 rating when determined in accordance with 9.12.

4.13 *Paintability:*

4.13.1 Minimum performance for adhesion is a 5A rating when determined in accordance with 9.13.1.

4.13.2 Minimum performance for adhesion is a 5A rating

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 14.02.

⁷ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

when determined in accordance with 9.13.2.

4.14 *Tensile Properties*—Minimum performance depends on specific use conditions. However, the test results shall be reported in accordance with 9.14.

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 accessibility. 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.

5. Sampling

5.1 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.

5.2 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.

5.3 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.

5.4 Report the size of the container from which the sample was taken and product identification codes. A 3.8-L (1-gal) sample is usually sufficient for the recommended tests.

6. Test Specimens

6.1 Preparation of Test Panels:

6.1.1 The test specimen (substrate) shall be the encapsulant coated test panel.

6.1.2 Prior to product application, the tin plated steel panels shall be solvent cleaned in accordance with Method 2012 of the Federal Test Method Standard No. 141C. Supplement the test panel cleaning procedure with an additional cleaning so that water wets the entire surface of the panel. Dry and wipe clean.

6.1.3 Product application shall be performed using the draw-down procedure in accordance with Practice D 823. Determine dry-film thickness in accordance with Test Method D 1005 or D 1186. If a range of thicknesses is specified by the manufacturer for field application, the minimum value of this range shall be used for product testing in accordance with this specification. Dry-film thickness shall remain constant for all tests.

6.1.4 Curing shall be performed under standard laboratory conditions in accordance with D 3924. Cure time shall

be 7 days unless otherwise agreed upon between the purchaser and seller. Cure time shall remain constant for all tests.

6.2 Preparation of Free Film Specimens:

6.2.1 Free film specimens shall be prepared in accordance with Practice D 4708.

6.3 Laboratory Tests:

6.3.1 Where applicable, all test methods and practices included in this specification shall be performed under standard laboratory conditions. ASTM standard conditions for laboratory testing are $23 \pm 2^\circ\text{C}$ ($73.5 \pm 3.5^\circ\text{F}$) and $50 \pm 5\%$ relative humidity.

7. Number of Tests

7.1 *Impact Resistance*—A minimum of two panels shall be tested in accordance with 9.1.

7.2 *Adhesion*—A minimum of three locations each on two panels shall be tested in accordance with 9.2.

7.3 *Dry Abrasion Resistance*—A minimum of two panels shall be tested in accordance with 9.3.

7.4 *Water Vapor Transmission*—A minimum of three cups shall be tested in accordance with 9.4.

7.5 *Flexibility*—A minimum of three panels shall be tested in accordance with 9.5.

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 9.6.

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 9.6.

7.7 *Surface Burning Characteristics*—A minimum of one panel shall be tested in accordance with 9.7.

7.8 *Volatile Organic Compound (VOC) Content*—A minimum of one test shall be performed in accordance with 9.8.

7.9 *Weathering*—For non-reinforced liquid coating encapsulation products designated for exterior use, after weathering, a minimum of three tests for chalking shall be performed in accordance with 9.9. A minimum of three locations each on two panels shall be tested for adhesion in accordance with 9.2. A minimum of three panels shall be tested for flexibility in accordance with 9.5. A minimum of ten specimens shall be tested for tensile properties in accordance with 9.14.

7.10 *Aging*—After aging, a minimum of three locations each on two panels shall be tested for adhesion in accordance with 9.2. A minimum of three panels shall be tested for flexibility in accordance with 9.5. A minimum of ten specimens shall be tested for tensile properties in accordance with 9.14.

7.11 *Scrub Resistance*—A minimum of two panels shall be tested in accordance with 9.11.

7.12 *Mildew Resistance*—A minimum of three panels shall be tested in accordance with 9.12.

7.13 Paintability:

7.13.1 A minimum of two panels with three locations per panel shall be tested in accordance with 9.13.1.

7.13.2 A minimum of two panels with three locations per panel shall be tested in accordance with 9.13.2.

7.14 *Tensile Properties*—A minimum of ten specimens shall be tested in accordance with 9.14.

8. Retesting

8.1 If any failure occurs, the material may be retested to establish conformity in accordance with agreement between the purchaser and the seller. Conditions of retesting shall be identical to those specified for initial testing.

9. Test Methods

9.1 *Impact Resistance*—Determine impact resistance in accordance with Test Method D 2794 using 0.81 mm (0.032 in.) zinc phosphate treated, cold-rolled steel panels as substrate and 15.9 mm (0.625 in.) punch diameter.

9.2 *Adhesion*—Determine the degree of adhesion in accordance with Test Method D 3359, Method A, using 0.256 mm (0.010 in.) tin plated steel panels as substrate.

9.3 *Dry Abrasion Resistance*—Determine dry abrasion resistance in accordance with Test Method D 4060 using CS-17 wheels, a 1 000-g weight, and 0.81-mm (0.032-in.) cold-rolled steel panels as substrate. Where applicable, specialty primers used only for flash rust resistance and not as a component of the product system may be used. If used, subtract the thickness of the primer coat from the total film thickness used in the performance calculation. To more accurately measure film loss, draw diagonal lines with a marking pen from corner to corner across the test panel. Measure initial and final film thickness in an area approximately 31.4 mm (1.25 in.) from all four corners.

9.4 *Water Vapor Transmission*—Determine the water vapor transmission in accordance with Test Method D 1653, Method A (Dry Cup Method), Condition A. Test as free film with a minimum thickness of 0.075 mm (0.003 in.).

9.5 *Flexibility*—Determine the degree of flexibility in accordance with Test Method D 522 using a conical mandrel and 0.256-mm (0.010-in.) tin plated steel panels as substrate.

9.6 *Water and Chemical Resistance*—Determine the resistance to water and chemicals in accordance with Test Method D 1308, using 0.256-mm (0.010-in.) tin-plated steel panels as substrate for the immersion test and glass panels for the spot tests.

9.6.1 *Spot Test*—Conduct the spot test as follows on the following reagents. For each reagent, add 3 ml to a cotton ball placed on the coated glass panel. Cover the cotton ball with a watch glass or other suitable device. After 24 h, remove the cotton ball and gently pat dry with a paper towel. After a 1-h recovery period, examine coating film with the unaided eye for the presence of blisters, wrinkling, cracking, or delamination. After a 24-h recovery period, evaluate for evidence of softening by lightly rubbing the affected area and an adjacent unexposed area with a wood tongue depressor.

- 9.6.1.1 *Ethyl Alcohol* (50 % volume).
- 9.6.1.2 *White Vinegar*.
- 9.6.1.3 *Sodium Hydroxide* (5 %).
- 9.6.1.4 *Hydrochloric Acid* (5 %).
- 9.6.1.5 *Citric Acid* (5 %).
- 9.6.1.6 *Corn Oil*.
- 9.6.1.7 *Cola Beverage*.⁸
- 9.6.1.8 *Lubricating Oils*.⁹

⁸ Coca Cola, a registered trademark of the Coca Cola Corp., Atlanta, GA 30301, has been found suitable for this purpose.

⁹ 3-in-1 Oil, a registered trademark of Boyle-Midway, Inc., New York, NY 10017, has been found suitable for this purpose.

9.6.1.9 *Household Cleaners*.¹⁰

9.6.1.10 *Nail Polish Remover* (non-acetone based).

9.6.1.11 *Distilled Water*.

9.6.2 *Immersion Test*—Conduct the immersion test by immersing one half of the panel in distilled water for 24 h at standard laboratory conditions. Protect the backs, sides, and edges of the panel against rusting. After removal, allow the panel to dry for 2 h at standard laboratory conditions before testing for adhesion in accordance with Test Method D 3359, Method A.

9.7 *Surface Burning Characteristics*—Determine surface burning characteristics in accordance with Test Method E 84 using Sterling Board or equivalent as substrate.

9.8 *Volatile Organic Compound (VOC) Content*—Determine VOC content in accordance with Practice D 3960.

9.9 *Weathering*—For non-reinforced liquid coating encapsulation products designated for exterior use, determine the degree of weathering in accordance with Practice G 53. Conduct practice for 1 000 h under fluorescent lamps with a peak emission at 313 nm and a time/temperature cycle of 4 h UV at 60°C and 4 h condensation at 50°C. Evaluate the degree of chalking in accordance with Test Method D 4214, Method A, using wool felt of a contrasting color. Determine the degree of adhesion in accordance with Test Method D 3359, Method A, (9.2) using 0.256-mm (0.010-in.) tin plated steel panels as substrate, the flexibility in accordance with Test Method D 522 (9.5) using 0.256-mm (0.010-in.) tin plated steel panels as substrate. Evaluate tensile properties in accordance with Test Method D 2370 (9.14).

9.10 *Aging*—There is no applicable ASTM or Federal test method to measure aging for encapsulation products; however, the following test method, involving subjecting test panels to changes from high to low temperatures, shall be performed.

9.10.1 *Exterior Products*—Expose panels coated with exterior use products to twelve cycles (three cycles shall be performed on one day, resulting in a four day test), each cycle involving the following time/temperature changes: 49°C (120°F) for 1 h, room temperature for 15 min, -15°C (0°F) for 1 h, and room temperature for 15 min. Store panels at -15°C (0°F) overnight between cycles. After exposure, determine the degree of adhesion in accordance with Test Method D 3359, Method A, (9.2) using 0.256-mm (0.010-in.) tin plated steel panels as substrate, and the flexibility in accordance with Test Method D 522 (9.5) using 0.256-mm (0.010-in.) tin plated steel panels as substrate. Evaluate tensile properties in accordance with Test Method D 2370 (9.14).

9.10.2 *Interior Products*—Expose panels coated with interior use products to a regimen of 40°C for a period of 2 weeks. After exposure, determine the degree of adhesion in accordance with Test Method D 3359, Method A, (9.2) using 0.256-mm (0.010-in.) tin plated steel panels as substrate, and the flexibility in accordance with Test Method D 522 (Section 9.5) using 0.256-mm (0.010-in.) tin plated steel panels as substrate. Evaluate tensile properties in accordance with Test Method D 2370 (9.14).

¹⁰ Formula 409, a registered trademark of the Clorox Co., has been found suitable for this purpose.

NOTE 4—If absence of color change after exposure to weathering/aging tests is desirable, conduct tests using an encapsulant product of the color to be used in the field. Evaluate and report visual color change. Minimum performance is agreed upon by the purchaser and the seller.

9.11 *Scrub Resistance*—Determine scrub resistance in accordance with Test Method D 2486.

9.12 *Mildew Resistance*—Determine resistance to mildew in accordance with Test Method D 3273. Determine rating in accordance with Test Method D 3274.

9.13 *Paintability/Recoatibility*—There are no applicable ASTM or Federal test methods to measure these properties, however, the following two test methods, modifications to the adhesion test, D 3359, Method A, shall be performed.

9.13.1 *Paintability*—Apply the encapsulation product to a 0.256-mm (0.010-in.) tin plated steel panel. Allow the encapsulation product to cure for at least 7 days or as agreed upon between purchaser and seller. Apply a coat of standard commercially available latex paint in accordance with the latex paint manufacturer's specifications for dry-film thickness and cure time. Determine the degree of adhesion between the encapsulant and the latex paint in accordance with Test Method D 3359, Method A.

9.13.2 *Recoatibility*—Apply the encapsulation product to a 0.256-mm (0.010-in.) tin plated steel panel. Allow the encapsulation product to cure for at least 7 days or as agreed upon between purchaser and seller. Apply another coat of the encapsulation product to the panel. Apply both coats in accordance with the manufacturer's specifications for dry-film thickness. Determine the degree of adhesion between

the two coats of the encapsulant in accordance with Test Method D 3359, Method A.

NOTE 5—Coats of different colors applied to the test panel may aid in the identification of visual defects in the coated surface after performance of the adhesion test.

9.14 *Tensile Properties*—Determine tensile properties in accordance with Test Method D 2370. Test shall be performed on free film, not less than 0.075 mm (0.003 in.) thick. Specimens shall be 100 mm (4 in.) in length and 6.25 mm (0.25 in.) in width. Use a gage length of 50 mm (2 in.) and a cross head speed of 10 ± 1 mm/min (0.5 ± 0.05 in./min). Determine percent elongation at 700 kPa (100 psi).

10. Report

10.1 The test report shall include a brief description of the system tested, including use of any primers, base coats and top coats, application instructions, curing conditions, and substrates used. Report dry-film thickness and dry/cure time. Report the size of the container from which the sample was taken and product identification codes. Report the type of latex paint used in the paintability test (9.13). The average value and all individual test results for all performance properties listed in this specification shall be reported.

11. Keywords

11.1 abatement; encapsulant; encapsulation, lead; leaded paint; liquid coating; liquid coating encapsulation product; non-reinforced liquid coating encapsulation product

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