Designation: D 5702 – 02

Standard Practice for Field Sampling of Coating Films for Analysis for Heavy Metals[1]

This standard is issued under the fixed designation D 5702; 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 a method to control the removal of samples of coating films from substrates for subsequent laboratory analysis for heavy metal content on a mass basis. This technique can be used in the field, the fabricating shop, or laboratory.

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

1.3 *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.* For specific hazard information, see Section 5, Note 1 and Note 3.

2. Referenced Documents

2.1 *ASTM Standards:*

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

D 1400 Test Method for Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base[2]

D 4138 Test Methods for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive Means[3]

3. Significance and Use

3.1 Prior to beginning a project that involves the removal, cutting, grinding, or burning of paint, it is necessary to determine if the coating contains hazardous materials, such as lead, as certain requirements for worker and environmental protection may need to be imposed. The presence and quantity of hazardous materials in a paint can be determined through laboratory analysis; however, since the analysis is based on the weight of the specimen, the removal of the sample must be properly controlled to improve the reliability of the test results. The number and location of samples to be removed must also be determined to characterize properly the extent of the presence of hazardous materials, if any, on a structure.

4. Materials and Equipment

4.1 *Sample Collection Container*—A clean plastic bag or rigid container comprised of a material such as polyethylene that will not contaminate the sample.

4.2 *Straight Edge or Ruler.*

4.3 *Knife or Chisel*, cleaned and sharpened, for removing paint samples.

4.4 *Dry Film Thickness Gage*, for measuring total coating thickness.

5. Procedure

5.1 Select a sufficient number of areas for coating removal that properly characterize the coatings on the structure.

5.1.1 Selection may be based on painting history, knowledge of previously applied coatings, prior touch-up and repainting programs, and other such factors.

5.1.2 Select areas that properly characterize the range of thickness found. Dry film thickness can be measured in accordance with Test Methods D 1186, D 1400, or D 4138.

5.1.3 Remove a minimum of three samples.

5.2 At each sample site, clean the surface of dirt, dust, or debris.

NOTE 1—Hazardous materials can be present in surface debris and chalk which may be removed during cleaning. Thus, consideration should be given to collecting this surface debris and chalk for analysis.

5.3 At each sample site, use a knife and straight edge to scribe the perimeter of a square through the coating film to the substrate. The square should be of sufficient size to give a one gram sample.

NOTE 2—Paint with a density of 1.5 g/cm^3 and 250 microns (10 mils) thick will generate one gram of sample in a square that is 5 cm (2 in.) on a side assuming 100 percent of the material is collected. Paint density normally ranges from 1.1 to 2.5 g/cm^3. Adjust the sample size based on density, thickness and collection efficiency.

5.4 Remove essentially all of the coating within the square down to the substrate by scraping, by making closely-spaced parallel scribes to disbond ribbons of the coating, or other controlled means that permit collection of all of the film

[1] This practice is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.46 on Industrial Protective Coatings.

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

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