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Standard Practice for Sampling of Coating Films¹

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1. Scope

1.1 This practice covers methods to remove samples of coating films for subsequent analysis related to identification of generic coating type and failure analysis or other reasons. These techniques can be used in the field, the fabricating shop, or laboratory.

1.2 The method for obtaining coating samples for heavy metal analysis is presented in Practice D 5702.

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

1.4 *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:*²

D 4840 ~~Guide for Sampling Chain-of-Custody Procedures~~ Guide for Sample Chain-of-Custody Procedures

D 5702 Practice for Field Sampling of Coating Films for Analysis for Heavy Metals

3. Significance and Use

3.1 Specimens for analysis must be adequately sampled, packaged, and documented to obtain meaningful information from the laboratory. The sampling procedure and packaging will be dependent upon the reason for taking the sample.

4. Procedure

4.1 *General:*

4.1.1 Contaminating samples must be avoided. Hands must be kept clean by washing or wearing protective covers such as latex gloves. Contact the laboratory that will perform the analysis to determine if any other precautions are needed. Clean blades or knife between each sample with a rag soaked in solvent, or change blades between each sample.

4.1.2 The number and location of samples will vary depending upon the reason for sampling. Document the sampling location prior to obtaining the sample. Measure and record dry film thicknesses. If delamination is present, measure and record dry film thickness of the coating remaining in the delaminated area as well as the intact area. Record the type of delamination, that is, adhesive or cohesive, and the color of the coating layer(s) where the delamination occurred. Document any other visual defects such as alligatoring, mudcracking, checking, blistering, non-uniform appearance, or chalking.

4.1.3 Obtain any history of the coating system available. This should include when the coating was applied, the type of coating, and intended dry film thicknesses. Obtain a copy of the painting specification, if possible, to verify the information.

4.1.4 Photograph the sample area before and after obtaining the sample.

4.1.5 Samples should be sent to the laboratory with a ~~chain-of-custody~~ chain-of-custody form, especially if there are existing or potential legal ramifications to the results of the laboratory analysis. Guide D 4840 presents the minimum requirements for sample ~~chain-of-custody~~ chain-of-custody procedures.

4.2 *Peeling Paint or Paint with Poor Adhesion:*

4.2.1 Samples should be taken that have not had both sides exposed to the elements. Make an incision approximately 5 cm (2-in.) long in the coating using a sharp knife blade (such as a utility knife). Hold the blade at a low angle to the surface and probe the incision by pushing forward on the knife. Alternatively, it may be possible to remove the sample by cutting a 5 cm (2-in.) square in the coating and peeling a sample by inserting the knife blade held at a low angle to the surface at one of the edges of the incision. For brittle coatings, masking tape may be used to hold the film together during removal.

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 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*, Vol 11.01, volume information, refer to the standard's Document Summary page on the ASTM website.