



Designation: ~~D5163-05a~~ Designation: D 5163 – 08

# ~~Standard Guide for Establishing Procedures to Monitor the Performance of Coating Service Level I Coating Systems in an Operating Nuclear Power Plant~~ Establishing a Program for Condition Assessment of Coating Service Level I Coating Systems in Nuclear Power Plants<sup>1</sup>

This standard is issued under the fixed designation D 5163; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This ~~guide standard~~ covers procedures for establishing a monitoring program to monitor the performance for condition assessment of Coating Service Level I coating systems in operating nuclear power plants. Monitoring is an ongoing process of evaluating the condition and performance of the in-service coating systems.

1.2 It is the intent of this ~~guide standard~~ to provide a recommended basis for establishing a coatings ~~monitoring condition assessment~~ program, not to mandate a singular basis for all programs. Variations or simplifications of the program described in this ~~guide standard~~ may be appropriate for each operating nuclear power plant depending on their licensing commitments. Similar guidelines are applicable for Coating Service Level III and other areas outside containment.

1.3 This standard does not address the requirements of ASME Section XI, In-Service Inspection Subsections IWE and IWL.

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:<sup>2</sup>

D 610 ~~Test Method~~Practice for Evaluating Degree of Rusting on Painted Steel Surfaces

D 714 Test Method for Evaluating Degree of Blistering of Paints

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

D 3359 Test Methods for Measuring Adhesion by Tape Test

~~D4537 Guide for Establishing Procedures to Qualify and Certify Personnel Performing Coating Work Inspection in Nuclear Facilities~~ 4538 Terminology Relating to Protective Coating and Lining Work for Power Generation Facilities

D 4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

D 5498 Guide for Developing a Training Program for Coating Work Inspectors in Nuclear Facilities

~~D 6677 Test Method for Evaluating Adhesion by Knife~~ ~~F1130 Practice for Inspecting the Coating System of a Ship~~

D 7108 Guide for Establishing Qualifications for a Nuclear Coatings Specialist

### 2.2 ANSI Standard:

~~N45.2.6 Qualification of Inspection, Examination, and Testing Personnel for Nuclear Power Plants~~ SSPC Standards:<sup>3</sup>

### 2.3 SSPC Standard:

~~SSPC-PA 2 Measurement of Dry Paint Thickness With Magnetic Gages~~

~~SSPC-VIS 2 Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces~~<sup>4</sup>

SSPC-PA 2 Measurement of Dry Paint Thickness With Magnetic Gages

SSPC-VIS 2 Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee D33 on Protective Coating and Lining Work for Power Generation Facilities and is the direct responsibility of Subcommittee D33.04 on Quality Systems and Inspection.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

<sup>4</sup> Available from Society for Protective Coatings (SSPC), 40 24th St., 6th Floor, Pittsburgh, PA 15222-4656, <http://www.sspc.org>.

### 3. Terminology

3.1 Definitions—Definitions for use with this standard are shown in Terminology D 4538 or other applicable standards.

3.2 Definitions of Terms Specific to This Standard:

3.1.1

3.2.1 coating maintenance work, n—all-inclusive term associated with coating work that expressly relates to repair, refurbishment, or replacement of an existing coating. (See also *coating work*.)

3.1.2 in-service coatings monitoring

3.2.2 in-service coatings monitoring program, n—systematic program established to assess and document the condition of an existing coating system with respect to prescribed performance attributes.

### 4. Significance and Use

4.1 Establishment of an in-service coatings monitoring program permits planning and prioritization of coatings maintenance work as needed to maintain coating integrity and performance in nuclear Coating Service Level I coating systems. For additional information on nuclear maintenance coating work, refer to ASTM Manual on Maintenance Coatings for Nuclear Power Plants.<sup>4</sup>

4.2 A coatings monitoring program enables early identification and detection of potential problems in coating systems. Some Coating Service Level I coating systems may be known in advance to be suspect, deficient, or unqualified. Monitoring coating performance will assist in developing follow-up procedures to resolve any significant deficiency relative to coating work.

4.3 Degraded coatings may generate debris under design basis accident conditions that could adversely affect the performance of the post-accident safety systems. A coatings monitoring program may be required to fulfill safety analysis report and generic letter commitments for Coating Service Level I coating work in a nuclear power plant facility.

### 5. Responsibility

5.1 The ~~owner/operator~~ licensee or his designee shall identify the department or group within the organization to be responsible for establishing the applicable requirements for activities or procedures covered by this guide and shall document the scope of their responsibility. ~~Owner/operator~~ Delegation of this responsibility to other outside qualified organizations is permitted and shall be documented.

5.2 It is the responsibility of the ~~owner/operator~~ licensee or his designee performing these activities to specify the detailed methods and procedures for meeting the applicable requirements of this guide.

5.3 The ~~owner/operator~~ licensee or his designee shall assign a coordinator to be responsible for supervising coating inspection activities, data collection and documentation, and for ensuring that inspection personnel are adequately trained and qualified.

5.4 The ~~owner/operator~~ licensee or his designee shall assign responsibility for evaluating the results of inspection activities carried out under the ~~coatings performance~~ in-service coatings monitoring program.

5.5 In the event of conflict, users of this guide must recognize that the licensee's plant-specific quality assurance program and licensing commitments shall prevail with respect to the coating performance monitoring process.

<https://standards.iteh.ai/catalog/standards/sist/b929bee4-2e85-4a46-b798-e7726095bd7d/astm-d5163-08>

### 6. Frequency

6.1 Frequency of in-service coating inspection monitoring shall be determined by the ~~owner/operator~~ licensee or his designee. In operating nuclear power plants certain monitoring activities may be restricted to major maintenance outages or refueling outages. It is a good practice to perform inspections during each refueling outage or during other major maintenance ~~outages as needed~~ outages.

### 7. Records and Past History

7.1 Coating performance will depend on the operating conditions experienced by the coating systems. Records of these conditions shall be obtained for each operating unit. These may include, but not be limited to, ambient conditions, temperatures, humidity, immersion, splash and spillage, chemical exposures, radiation exposures, previous decontamination procedures, abrasion and physical abuse, and start-up/shutdown frequency. Any change in service criteria or modifications of the physical design shall be identified and dated.

7.2 The last two performance monitoring reports pertaining to the coating systems shall be reviewed prior to the monitoring process. Other past coatings history data to be reviewed may include:

7.2.1 Copies of coating specifications, manufacturer's product data sheets, and application procedures for in-place coatings.

7.2.2 Quality control documentation for the existing in-place coating systems and their application.

7.2.3 Copies of previous inspection or monitoring reports.

7.2.4 Documentation pertaining to any maintenance work performed on existing coating systems.

### 8. Monitoring Procedure

8.1 Prior to conducting an inspection of the coating systems, the responsible organization shall ensure that the necessary

<sup>4</sup> Available from SSPC: The Society for Protective Coatings, 40 24th St., 6th Floor, Pittsburgh, PA 15222-4656.

<sup>4</sup> MNL8, Available from ASTM International Headquarters, 100 Barr Harbor Dr., West Conshohocken, PA 19428-2959.