

SSPC: The Society for Protective Coatings

PAINT APPLICATION SPECIFICATIONS AND GUIDES

Commentary on Paint Application

1. Introduction

This commentary is for information only and is not part of the standards and guides in this chapter. Its purpose is to present a general description of the sections that comprise this chapter.

The documents in this section focus on aspects of the coating application process. They provide requirements and guidance procedures for applying coatings to both steel and concrete substrates, measuring film thickness on steel and concrete substrates after coating application, safety considerations for coating applicators, and requirements for coating application for specialized services.

Three of the documents in this section are products of cooperative standards development projects. Two were developed in cooperation with NACE International, and the third is the result of a joint project between SSPC and the AASHTO/NSBA Steel Bridge Collaboration.

2. SSPC-PA 1, “Shop, Field, and Maintenance Painting of Steel”

This specification should be used when paint service is severe or when rigid requirements for appearance are established. When painting is necessary for protection from corrosive environments or for good appearance, then it is in the best interests of the purchaser to see that paint is applied in strict conformance with good practice. While surface preparation is probably the most critical factor that governs the performance of paints, improper paint application may result in paint failure, even over blast cleaned surfaces.

The specification covers pre-application procedures that are necessary before actual application of paint can begin. They include handling and use of materials, surface preparation, and proper mixing and thinning of paints. Also, general conditions for good application are covered in detail and include proper air temperature, moisture, humidity, cover, and surface temperature.

SSPC-PA 1 permits application by brush, air spray, airless spray, hot spray, plural component spray, high volume low pressure spray, or a combination of these methods. Roller coat applications may be used over flat or slightly curved steel surfaces.

Inspection procedures for paint applications are discussed in detail in Volume 1 of the SSPC Painting Manual and in , “The Inspection of Coatings and Linings, A Handbook of Basic Practice for Inspectors, Owners, and Specifiers.”

3. SSPC-PA 2, “Measurement of Dry Coating Thickness With Magnetic Gages”

This document describes the types of magnetic gages available, how to verify the calibration of the gages, and procedures to use in measuring the dry film thickness of paint on steel.

The gages are classified as either Type 1 – pull-off gages or Type 2 – electronic gages. Both are magnetic gages and measure the thickness of dry film of a non-magnetic coating applied on a magnetic substrate.

This standard specifies the number of measurements to be made to determine compliance with the specified minimum and maximum dry film thicknesses.

The 2004 revision includes some changes and additions, as listed below.

- Changes in gage terminology
- The procedure for dealing with a non-conforming area when measuring large structures has been modified. As before, only one 100 ft² (10 m²) area need be measured in each 1000 ft² (100 m²). In the previous version of PA 2, “additional measurements must be made to isolate the non-conforming area.” Added to that sentence in this latest version is “and each 100 ft² (10 m²) area painted during that work shift shall be measured.” The idea behind this change is that finding one non-conforming area indicates that something went wrong during that work shift. Therefore, there is no way of knowing how many other areas are non-conforming unless they are all measured.
- Gage accuracy has been changed from 10% to 5%. Contracting parties must now agree whether pen gages, which normally do not meet the 5% accuracy requirement, are permitted.
- The “Definitions” section has been expanded. A clear distinction is made between calibration (normally done by the gage manufacturer) and adjustment (done by the user). Two sample protocols for measuring the DFT on beams and girders is given in Appendix 3. The full DFT determination requires five spot measurements on each surface of the beam, while the less stringent sample determination requires only two or three spot measurements on each surface. The committee recognized that the existing PA 2 was appropriate for large flat surfaces, but there were some concerns when the method was applied to more irregular shapes. Although appendices are not requirements of PA 2, they were written in such a way that they can be referenced in a job specification.

- Appendix 4 is similar to Appendix 3 except that it refers to beams or miscellaneous parts painted as a laydown in a shop. Protocols are given for two levels of DFT determination. It is suitable for referencing in a job specification.
- Protocols for measuring DFT on test panels are given in Appendices 5 and 6. The small size of test panels does not fit well with the usual PA 2 procedure of making five spot measurements per 100 ft² (10 m²). This is obviously for lab work and not for field use. Appendix 5 specifies the number of gage readings for each test panel and Appendix 6 specifies how many gage readings to take in the special case of a blast cleaned test panel with a thin coating.

4. SSPC-PA Guide 4, “Guide to Maintenance Repainting with Oil Base or Alkyd Painting Systems”

This guide has been prepared specifically for use in repainting with oil base, alkyd, and other solvent-thinned paint systems. It is concerned with procedures necessary to maintain previously painted steel structures so that they continue to provide the corrosion protection as originally intended. Items covered are determining when maintenance painting is required and preparing the existing surface for painting.

5. SSPC-PA Guide 5, “Guide to Maintenance Coating of Steel Structures for Atmospheric Service”

This guide, intended for use primarily by the owner's representative, covers procedures for developing a maintenance painting program for steel structures. It may be used for one time repaint programs or long range repaint programs.

Planning and implementing maintenance painting programs is presented in a logical sequence of six specific steps. These steps range from assessing the initial condition of the structure to follow-up activities required to implement an on-going maintenance program. Each step is designed such that it may be utilized in sequence with other steps, or independently for those with interest in only one or a few aspects of the program.

6. SSPC-PA 6/NACE No. 10, “Fiberglass-Reinforced Plastic (FRP) Linings Applied to Bottoms of Carbon Steel Aboveground Storage Tanks”

This standard recommended practice specifies the procedures to design, apply, and inspect fiberglass-reinforced plastic (FRP) linings that are applied internally to the bottom of carbon steel aboveground storage tanks (ASTs). PA 6 includes sections on lining materials, tank repair and preparation, applicator qualifications, surface preparation, holding primer, caulking, laminate application, and roof leg bearing plates and a section on lining inspection, testing, and repair.

7. SSPC-PA 7, “Applying Thin Film Coatings to Concrete”

This standard covers methods and procedures for applying thin film organic coatings to concrete surfaces by brush, roller, or spray. It is not intended for coatings applied to concrete floors or similar surfaces where thick coatings or surfacings are applied by trowel or mechanical equipment. Among the topics addressed are materials handling, mixing, thinning, moisture, temperature, topcoating, surface porosity, coating thickness, continuity, and various methods of application.

8. SSPC-PA 8/NACE No. 11, “Thin-Film Organic Linings Applied in New Carbon Steel Process Vessels”

This standard covers methods and procedures for applying thin film (less than 500 μm [20 mils]) organic coatings to new steel vessels. Among the topics addressed in this standard are lining materials, vessel fabrication and preparation, applicator qualifications, surface preparation, lining application, and inspection and repair of vessel lining.

9. SSPC-PA 9, “Measurement of Dry Organic Coating Thickness on Cementitious Substrates Using Ultrasonic Gages”

This standard describes procedures and methods for measuring the thickness of dry, homogeneous coatings applied on cementitious surfaces using commercially available ultrasonic coating thickness gages.

10. SSPC-PA Guide 10, “Guide to Safety and Health Requirements for Industrial Painting Projects”

This document provides guidance for facility owners and project specifiers who have a mandate to incorporate appropriate requirements for safety and health program submittals and associated acceptance criteria in contract documents. It also alerts contractors to their responsibilities to protect workers as required by the U.S. Occupational Safety and Health Administration (OSHA).

11. SSPC-PA Guide 11, “Guide to Protection of Edges, Crevices, and Irregular Surfaces by Stripe Coating”

PA Guide 11 provides guidance for facility owners, project specifiers, and contractors who need to choose among various options for protecting areas of a structure that are susceptible to corrosion due to their configuration. Edge grinding, chamfering, and techniques for proper use and application of stripe coats are discussed.