

SSPC: The Society for Protective Coatings

PAINT APPLICATION GUIDE NO. 4

Guide to Maintenance Repainting with Oil Base or Alkyd Painting Systems

1. Scope

1.1 This Guide covers the steps necessary for the repainting of steel structures previously painted with oil base, alkyd, or other conventional oleoresinous paint systems with the same generic paint system as the existing one.

1.2 When special paint systems such as zinc-rich, epoxy, or urethane are involved, spot tests may be necessary and the instructions of the manufacturer should be followed.

1.3 The amount of maintenance cleaning and painting is determined by the need for corrosion protection and appearance and should be described in the procurement documents.

2. Description

2.1 This Guide outlines the components of a complete maintenance repainting system. A standard system consists of surface preparation and repainting according to the guidelines presented in Table 1.

3. Referenced Standards

3.1 SSPC AND JOINT STANDARDS :

PA 1	Shop, Field, and Maintenance Painting of Steel
PA 2	Measurement of Dry Coating Thickness with Magnetic Gages
PA Guide 3	A Guide to Safety in Paint Application
SP 1	Solvent Cleaning
SP 2	Hand Tool Cleaning
SP 6/NACE No. 3	Commercial Blast Cleaning
VIS 2	Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces

3.2 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS:

D 610	Evaluating Degree of Rusting on Painted Steel Surfaces
D 3359	Measuring Adhesion by Tape Test

4. Surface Condition and Preparation

4.1 SURFACE CONDITION: The surface condition of the previously painted steel substrate should be classified and repainted in accordance with the applicable section of Table 1.

It is recognized that in any maintenance painting project, the structure or equipment to be repainted may have areas where the condition of the old paint work varies. In these cases each particular section of the area to be repainted should then be recoated in accordance with the applicable section of Table 1.

4.2 SURFACE PREPARATION: The SSPC Surface Preparation Specifications should be followed as in Table 1, or with the mutual agreement of both owner and contractor, another set of surface preparation criteria may be established.

5. Paints

5.1 PAINT SYSTEMS: The wash primer (if any), primer, intermediate, and finish coat should be the same as those specified in the original paint system. Alternatively, a paint having the same generic type of vehicle as in the original painting may be used. Some other compatible paint system may be used if mutually agreed upon between the owner and contractor.

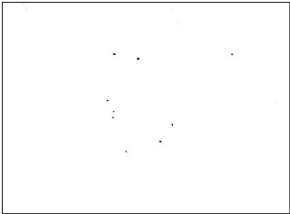
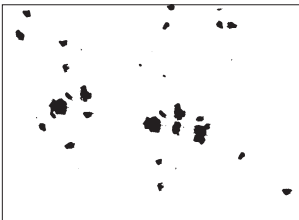
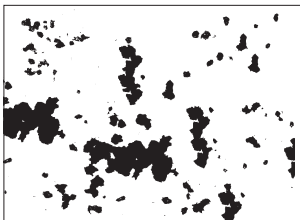
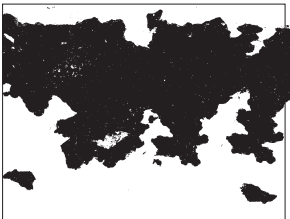
5.2 COMPATIBILITY—SPOT TEST: If the composition of the original paint system is unknown, a spot test should be made to determine the compatibility of the new system with the old, and should include: assuring the adhesion of the present system to the substrate; applying proposed painting system; and observing for adhesion, lifting, bleeding, or other evidence of incompatibility.

6. Paint Application

6.1 PAINT APPLICATION: Painting should be performed in accordance with Table 1 and the requirements of SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel."

6.2 TOUCH-UP PAINTING: After cleaning the previously painted steel surfaces, those areas with bare steel exposed should be spot primed in accordance with the "Field Painting" Section of SSPC-PA 1.

TABLE 1
MAINTENANCE PAINTING OF OIL BASE OR ALKYD PAINTING SYSTEMS

PAINT SYSTEM CONDITION	RUST GRADES*	EXAMPLE OF AREA % (Generally Dispersed Rust)	CLEANING AND PAINTING RECOMMENDED
NON-DETERIORATED (0 to 0.1% rust) Paint almost intact; some primer may show, rust covers less than 0.1% of the surface.	10-8		Solvent clean (SSPC-SP 1) entire repaint area, and spot prime, if necessary. If required to maintain film thickness or continuity, spot apply finish coat, then apply 1.5-2.0 mils (36-51 micrometers) of finish coat over entire repaint area.
SLIGHTLY TO MODERATELY DETERIORATED: (0.1 to 1% rust) Finished coat somewhat weathered; primer may show slight staining or blistering; after stains are wiped off, less than 1% of area shows rust, blistering, loose mill scale, or loose paint film.	8-6		Spot clean (minimum SSPC-SP 2, hand tool cleaning) entire repaint area, and spot prime. If required to maintain minimum film thickness or continuity, spot apply finish coat, then apply 1.5-2.0 mils (38-51 micrometers) of finish coat over entire repaint area.
DETERIORATED: (1 to 5% rust) Paint thoroughly weathered, blistered, or stained, up to 10% of surface is covered with rust, rust blisters, hard scale or loose paint film, very little pitting visible.	6-4		Spot clean (minimum SSPC-SP 2, hand cleaning) entire repaint area, feather edges and spot prime. If required to maintain film thickness or continuity, spot apply finish coat, then apply 1.5-2.0 mils (38-51 micrometers) of finish coat over entire repaint area.
SEVERELY DETERIORATED (10 to 50% rust) Large portion of surface is covered with rust, pits, nodules, and non-adherent paint. Pitting is visible.	4-1		Spot clean (minimum SSPC-SP 6, commercial blast cleaning) entire repaint area, feather edges and spot prime. If required to maintain film thickness or continuity, spot apply finish coat, then apply 1.5-2.0 mils (38-51 micrometers) of finish coat over entire repaint area.
TOTALLY DETERIORATED (over 50% rust)	1-0		Clean (minimum SSPC-SP 6, commercial blast cleaning) entire repaint area and apply primer, intermediate, and finish coats over entire repaint area.

*See SSPC-VIS 2 for pictorial representation of rust classification. Area percents illustrated here are representative only.

6.3 DRY FILM THICKNESS OF PAINT SYSTEM: Not less than the following as measured in accordance with SSPC PA 2, "Measurement of Dry Paint Thickness with Magnetic Gages"—the total dry film thickness at any point should not be less than 5.5 mils (140 micrometers). This means that areas of cleaned bare steel will require 1.5-2.0 mils (38-51 micrometers) of primer, 1.5-2.0 mils (38-51 micrometers) of intermediate coat, and 1.5-2.0 mils (38-51 micrometers) of finish coat.

7. Disclaimer

7.1 This guide is designed to describe, review, or analyze new or improved technology and does not meet the definition of a standard as defined by SSPC. A guide differs from a standard in that it is not suitable for referencing in a specification or procurement document.

7.2 While every precaution is taken to ensure that all information furnished in SSPC guides is as accurate, complete, and useful as possible, SSPC cannot assume responsibility nor incur any obligation resulting from the use of any materials, coatings, or methods described herein, or of the guide itself.

7.3 This guide does not attempt to address problems concerning safety associated with its use. The user of this guide, as well as the user of all products or practices described herein, is responsible for instituting appropriate health and safety practices and for ensuring compliance with all governmental regulations.

8. Notes

8.1 INSPECTION AND REPAIR: It is most desirable to maintain paint systems by a scheduled inspection and repair procedure. In this manner, the life of the coating is prolonged through preventive maintenance which includes spot cleaning and spot painting when necessary. Although it is impossible to set down specific rules that should govern the repainting intervals or time, Table 1 is a summation of current good practice. Since the deterioration of paint is not uniform over an entire structure, the engineer in charge must use his own discretion in the application of such standard practices.

8.2 MAINTENANCE PAINTING: In maintenance painting it is not ordinarily intended that sound, adherent old paint be removed unless it is excessively thick or brittle or is incompatible with the new paint. It is essential, however, that the removal of deteriorated paint be carried back around the edges of the spot or area until an area of completely intact and adherent paint film, with no rust or blisters underneath, is attained. Testing should be in accordance with ASTM D 3359. Edges of tightly adhered paint remaining around the area to be recoated must be feathered, so that the repainted surface will have a smooth appearance.

8.3 PREFERRED REPAINTING PROCEDURE: The preferred repainting procedure is to spot clean only the deteriorated areas and apply a coat of rust inhibitive primer followed by an intermediate coat to build those areas back to a satisfactory level. Then apply an overall finish coat to the entire structure or repainted area.

