

SSPC: The Society for Protective Coatings

PAINTING SYSTEM GUIDE NO. 2.00

Guide for Selecting Alkyd Painting Systems*

Combinations of surface preparation, primers, intermediates, and topcoats may be selected for special situations for alkyd painting systems using the following Guide. To do so, select the desired surface preparation, primer, intermediate(s), and topcoat from those listed herein and insert them into the standard SSPC Painting System format. In order to aid in the selection, short comments are given. For additional information consult the "Commentary on Painting Systems" and the referenced standards.

1. Scope

1.1 These specifications cover alkyd painting systems for commercial blast cleaned or pickled steel.

1.2 These systems are suitable for use on parts or structures exposed in Environmental Zones 1A (interior, normally dry) and 1B (exterior, normally dry).

1.3 The color of the finish paint must be specified.

2. Description

2.1 This guide outlines the components of a complete alkyd painting system. A painting system shall consist of surface preparation by commercial blast cleaning or pickling, one coat of alkyd primer, one or two intermediate coat(s), and one finish coat.

3. Reference Standards

3.1 The standards referenced in this guide are listed in Section 3.4 through 3.7 and form a part of the specification.

3.2 The latest issue, revision, or amendment of the reference standards in effect on the date of invitation to bid shall govern unless otherwise specified.

3.3 If there is a conflict between the requirements of any of the cited reference standards and the specification, the requirements of the specification shall prevail.

3.4 SSPC STANDARDS AND JOINT STANDARDS:

PA 1	Shop, Field, and Maintenance Painting of Steel
PA 2	Measurement of Dry Coating Thickness With Magnetic Gages

PA Guide 4	Guide to Maintenance Repainting with Oil Base or Alkyd Painting Systems
Paint 11*	Red Iron, Zinc Chromate, Raw Linseed Oil and Alkyd Primer
Paint 21	White or Colored Silicone Alkyd Paint
Paint 25	Red Iron Oxide, Zinc Oxide, Raw Linseed Oil, and Alkyd Primer
Paint 101	Aluminum Alkyd Paint
Paint 102	Black Alkyd Paint
Paint 103	Black Phenolic Paint
Paint 104	White or Tinted Alkyd Paint
Paint 108	High-Build Thixotropic Leafing Aluminum Paint
SP 2	Hand Tool Cleaning
SP 3	Power Tool Cleaning
SP 5/NACE No. 1	White Metal Blast Cleaning
SP 6/NACE No. 3	Commercial Blast Cleaning
SP 8	Pickling
SP 10/NACE No. 2	Near-White Blast Cleaning

3.5 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARD:

D 3925	Practice for Sampling Liquid Paints and Related Pigmented Coatings
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3.6 FEDERAL SPECIFICATIONS AND STANDARDS:

TT-E-489	Enamel, Alkyd, Gloss (for Exterior and Interior Surfaces)
TT-E-527	Enamel, Alkyd, Lusterless
TT-E-529	Enamel, Alkyd, Semi-Gloss
TT-P-645	Primer Paint, Zinc Molybdate, Alkyd Type

3.7 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO):

M 69	Aluminum Paint
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4. Surface Preparation

4.1 SSPC-SP 6, "Commercial Blast Cleaning," or SSPC-SP 8, "Pickling." If specified in the procurement documents, better degrees of blast cleaning shall be substituted (SSPC-SP 5 or 10).

COMMENT: Blast cleaning or pickling of the steel is the minimum recommended surface preparation for new work. Better degrees of blast cleaning (SSPC-SP 5 or 10) may be substituted. These methods are more thorough, and the better cleaning they provide may be more economical. In maintenance painting when only small areas need to be cleaned, hand or power tool cleaning (SSPC-SP 2 or 3) may suffice.

5. Paints

5.1 ALKYD PRIMERS: After cleaning, the steel shall be primed with one coat of paint conforming with one of the following specifications.

5.1.1 Federal Specification TT-P-645, "Primer, Paint, Zinc Molybdate, Alkyd Type":

COMMENT: TT-P-645 is pigmented with titanium dioxide and zinc molybdate (older formulations used zinc chromate.) It is particularly useful for alternate dry and wet areas. The vehicle has non-volatile alkyd resin with 23% phthalic anhydride.

5.1.2 SSPC-Paint 11*, "Red Iron Oxide, Zinc Chromate, Raw Linseed Oil and Alkyd Paint":

5.1.3 SSPC-Paint 25, "Red Iron Oxide, Zinc Oxide, Raw Linseed Oil and Alkyd Primer":

COMMENT: SSPC-Paint 25 is an iron oxide, zinc oxide primer similar in composition to SSPCPaint 11 except that zinc chromate is replaced with zinc oxide.

5.1.4 Proprietary Primer:

COMMENT: A proprietary primer of proved performance capability may be substituted for any of the above if desired by the specifier. Specify the manufacturer, trade name, and product number of the desired proprietary paint. The paint manufacturer should furnish a typical label analysis.

5.2 INTERMEDIATE COAT(S) FOR ALKYD PAINTING SYSTEMS: The second coat of paint in a three-coat system may be the same as the first coat, but tinted with carbon black or lampblack paste in oil; or when stipulated, it may instead be the same as the finish coat (third coat), but tinted to contrast with the finish coat.

The primers listed above (particularly those of contrasting color) are suitable for intermediate coats. The primer or finish coat may also be used as the third coat of a four coat system, provided they are tinted to provide contrast with the preceding and following coats. If an aluminum finish coat is used, the next to last coat may be the same as the last (finish) coat except that the corresponding non-leafing pigment shall be used in place of leafing aluminum.

Alternatively, the intermediate coat(s) of paint shall conform with the following specification.

5.2.1 SSPC-Paint 101, "Aluminum Alkyd Paint," Type II, "Non-Leafing":

COMMENT: This non-leafing aluminum paint is suitable for use as an intermediate coat where the final paint coat is to be an aluminum paint and where longer weathering without the prime coat showing through the aluminum finish coat is desired.

5.2.2 Proprietary Intermediate:

COMMENT: A proprietary intermediate of proved performance capability may be substituted for any of the above if desired by the specifier. Specify the manufacturer, trade name and product number of the desired proprietary paint. The paint manufacturer should furnish a typical label analysis.

5.3 ALUMINUM FINISH COATS: The paint shall conform with one of the following specifications.

5.3.1 SSPC-Paint 101, "Aluminum Alkyd Paint," Type I "Leafing":

COMMENT: This aluminum alkyd paint has good stability, drying, and application properties as well as excellent durability in atmospheric exposures. Its lapping properties are fairly good. It is generally mixed on the job by adding two pounds of aluminum paste to one gallon of alkyd varnish vehicle.

5.3.2 SSPC-Paint 108, "High-Build Thixotropic Leafing Aluminum Paint":

COMMENT: Added protection is possible because of the thicker film which may be applied with this special high build composition.

5.3.3 AASHTO Specification, "Aluminum Paint," Designation M 69:

COMMENT: This is a ready to mix aluminum finish coat for bridges, and has an oleoresinous tung oil spar varnish vehicle.

5.4 BLACK FINISH COATS: The paint shall conform with one of the following specifications.

5.4.1 SSPC-Paint 102, "Black Alkyd Paint":

COMMENT: A very durable carbon black and long oil alkyd varnish paint which is recommended for severe exposures such as railroad bridges and industrial atmospheres.

5.4.2 SSPC-Paint 103, "Black Phenolic Paint":

COMMENT: A carbon black and silica phenolic varnish paint which is suitable for water immersion, high humidity, condensation, industrial atmospheres, or chemical environments.

5.5 WHITE OR TINTED FINISH COATS: If a colored finish coat is specified, the color and shade of color should be agreed upon among the contracting parties, using a suitable method of color designation. The paint shall conform with one of the following specifications.

5.5.1 SSPC-Paint 104, "White or Tinted Alkyd Paint":

COMMENT: A long oil alkyd paint that has good stability, drying, and application properties as well as excellent durability in atmospheric exposures, particularly industrial atmospheres.

5.5.2 Federal Specification TT-E-489 Class A, "Enamel, Alkyd, Gloss (for Exterior and Interior Surfaces)":

COMMENT: A series of medium oil, alkyd colored enamels, suitable for interior or exterior use; high gloss but low build per coat; particularly suited for machinery and similar equipment where appearance is important.

5.5.3 Federal Specification TT-E-529 Class A, "Enamel, Alkyd, Semi-Gloss":

COMMENT: Similar to preceding paint, but semi-gloss.

5.5.4 Federal Specification TT-E-527, "Enamel, Alkyd, Lusterless":

COMMENT: Similar to preceding two paints, but flat finish.

5.5.5 SSPC-Paint 21, "White or Colored Silicone Alkyd Paint," Type I, "High Gloss" or Type II, "Medium Gloss":

COMMENT: Silicone alkyd paints are highly weather resistant and are characterized by excellent color and gloss retention. Twelve colors are described under each type.

5.6 PROPRIETARY FINISH PAINTS:

COMMENT: A proprietary finish of proved performance capability may be substituted for any of the above if desired by the specifier. Specify the manufacturer, trade name, color, and product number of the desired proprietary paint. The manufacturer should furnish a typical label analysis.

6. Paint Application

6.1 PAINT APPLICATION: Follow requirements of SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel."

6.2 FIELD TOUCH-UP PAINTING: In accordance with specification SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel" and in particular with the section thereof entitled "Field Painting."

6.3 MAINTENANCE PAINTING: The provisions of SSPC-PA Guide 4, "Guide to Maintenance Repainting with Oil Base or Alkyd Painting Systems" should be followed.

COMMENT: This guide covers the steps necessary for repainting previously painted steel surfaces.

6.4 NUMBER OF COATS: A minimum of three.

COMMENT: Three coats are required for usual conditions. Two coats will result in an uneconomically thin paint film, poorer coverage of the blast profile pattern, and shorter life in normal atmospheric exposures. Four coats are recommended in more severe exposures such as near the seashore and areas of high humidity.

6.5 DRY FILM THICKNESS OF PAINT SYSTEM: Not less than the following as measured in accordance with SSPC-PA 2, "Measurement of Dry Coating Thickness with Magnetic Gages": primer 50 micrometers (2.0 mils); intermediate 38 micrometers (1.5 mils); finish 25 micrometers (1.0 mil); for a three-coat system 115 micrometers (4.5 mils); for a four-coat painting system 150 micrometers (6.0 mils).

7. Inspection

7.1 All work and materials supplied under this specification is subject to timely inspection by the purchaser or his authorized representative. The contractor shall correct such work or replace such material as is found defective under this specification. In case of dispute, unless otherwise specified, the arbitration or settlement procedure established in the procurement documents shall be followed. If no arbitration procedure is established, the procedure specified by the American Arbitration Association shall be used.

7.2 Samples of paints under this painting system may be requested by the purchaser and shall be supplied upon request along with the manufacturer's name and identification for the materials. Samples may be requested at the time the purchase order is placed, or may be taken from unopened containers at the job site.

7.3 Unless otherwise specified, the sampling shall be in accordance with ASTM D 3925.

7.4 The procurement documents should establish the responsibility for samples, testing, and any required affidavit certifying full compliance with the specification.

8. Disclaimer

8.1 While every precaution is taken to ensure that all information furnished in SSPC standards and specifications 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 specified herein, or of the specification or standard itself.

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

* This paint contains chromate pigments. Users are urged to follow all health, safety, and environmental requirements in applying, handling or disposing of these materials.