

SECTION 09 97 13.27

EXTERIOR COATING OF STEEL STRUCTURES

**PART 1 GENERAL**

**1.1 REFERENCES**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.
- B. ASTM INTERNATIONAL (ASTM)
- |                   |   |
|-------------------|---|
| ASTM D1200        | (2010; R 2014) Viscosity by Ford Viscosity Cup  |
| ASTM D1640/D1640M | (2014) Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings                              |
| ASTM D3276        | (2015; E 2016) Standard Guide for Painting Inspectors (Metal Substrates)  |
| ASTM D3925        | (2002; R 2015) Sampling Liquid Paints and Related Pigmented Coatings  |
| ASTM D4285        | (1983; R 2012) Indicating Oil or Water in Compressed Air  |
| ASTM D7127        | (2013) Measurement of Surface Roughness of Abrasive Blast Cleaned Metal Surfaces using a Portable Stylus Instrument |
| ASTM E11          | (2016) Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves                                       |
- C. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)
- |          |  |
|----------|--|
| ISO 9001 | (2008; Corr 1 2009) Quality Management Systems- Requirements |
|----------|--|
- D. SOCIETY FOR PROTECTIVE COATINGS (SSPC)
- |                  |  |
|------------------|--|
| SSPC 7/NACE No.4 | (2007; E 2004) Brush-Off Blast Cleaning  |
| SSPC AB 2        | (2015; E 2016) Cleanliness of Recycled Ferrous Metallic Abrasive                                 |
| SSPC AB 3        | (2003; E 2004) Ferrous Metallic Abrasive   |
| SSPC Guide 12    | (1998; E 2004) Guide for Illumination of Industrial Painting Projects                            |
| SSPC Guide 6     | (2015) Guide for Containing Surface Preparation Debris Generated During Paint Removal Operations |
| SSPC PA 1        | (2016) Shop, Field, and Maintenance Coating  |

	of Metals
SSPC PA 2	(2015) Procedure for Determining Conformance to Dry Coating Thickness Requirements
SSPC QP 1	(2012; E 2012) Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Industrial Structures)
SSPC QP 5	(2012) Standard Procedure for Evaluating the Qualifications of Coating and Lining Inspection Companies
SSPC QS 1	(2015) Standard Procedure for Evaluating a Contractor's Advanced Quality Management System
SSPC SP 1	(2015) Solvent Cleaning
SSPC SP 10/NACE No. 2	(2007) Near-White Blast Cleaning
SSPC SP COM	(2004) Surface Preparation Commentary for Steel and Concrete Substrates
SSPC VIS 1	(2002; E 2004) Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning
E. U.S. DEPARTMENT OF DEFENSE (DOD)	
MIL-A-22262	(1993; Rev B; Am 2 1996) Abrasive Blasting Media Ship Hull Blast Cleaning
MIL-DTL-24441	(2009; Rev D) Paint, Epoxy-Polyamide, General Specification for
MIL-DTL-24441/19	(2009; Rev C) Paint, Epoxy-Polyamide, Zinc Primer, Formula 159, Type III
MIL-DTL-24441/31	(2009; Rev B) Paint, Epoxy-Polyamide, White, Formula 152, Type IV
MIL-PRF-85285	(2012; Rev E; Notice 1 2016) Coating: Polyurethane Aircraft and Support Equipment
F. U.S. GENERAL SERVICES ADMINISTRATION (GSA)	
FED-STD-595	(Rev C; Notice 1) Colors Used in Government Procurement
G. U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)	
29 CFR 1910-SUBPART Z	Toxic and Hazardous Substances
29 CFR 1910.1000	Air Contaminants
29 CFR 1910.134	Respiratory Protection

**1.2 DEFINITIONS**

Definitions are provided throughout this Section, generally in the paragraph where used, and denoted by capital letters.

**1.3 SUBMITTALS**

## A. Test Reports

1. Joint Sealant Qualification Test Reports
2. Coatings Qualification Test Reports
3. Metallic Abrasive Qualification Test Reports
4. Coating Sample Test Reports (prequalifying)
5. Abrasive Sample Test Reports (prequalifying)
6. Film Thickness Test Reports

## B. Certificates

1. Coating Work Plan
2. Qualifications of Coating Contractors
3. Qualifications of Coating Inspection Company
4. Qualifications of QC Specialist Coating Inspector
5. Coating Thickness Gauge Qualification
6. Joint Sealant Materials
7. Coating Materials
8. Coating System Component Compatibility
9. Abrasive

## C. Product Data and Instructions

1. Joint Sealant
2. Coating System
3. Manufacturer's Available Colors

## D. Closeout Submittals

1. Disposal of Used Abrasive

**1.4 QUALITY ASSURANCE**

## A. Coating Work Plan

1. Provide procedures for verification of key processes during Initial Phase to ensure that contract requirements can be met. Key processes shall include surface preparation, coating application and curing, inspection, and documentation, and any other process that might adversely impact orderly progression of work.
2. Provide procedures for all phases of coating operations, including but not limited to:
  - a. Planned work, rework, repair, inspection, and documentation;

- b. Mobilization and setup;
  - c. Surface preparation;
  - d. Mixing method, mixing time, and induction time;
  - e. Types of brushers or rollers to be used;
  - f. Type of spray equipment to be used, including tip orifice size, fan type;
  - g. Type of spray gun, total output at spray tip, pressure for proper atomization of coating;
  - h. Type of heater to warm paint and lines from pump to nozzle;
  - i. Coating application including dry film thicknesses;
  - j. Cure time tables for all coatings at various temperature ranges that may be encountered;
  - k. Recoat times;
  - l. Demobilization.
- 3. Coordinate work processes with health and safety plans. For each process, provide procedures that include appropriate work instructions, material and equipment requirements, personnel qualifications, controls, and process verification procedures.
  - 4. Provide procedures for inspecting work to verify and document compliance with contract requirements, including inspection forms and checklists, and acceptance and rejection criteria.
  - 5. Provide procedures for determining the existing surface profile after paint removal, and procedures for ensuring that the paint removal operation does not create excessive profile beyond the maximum profile specified herein.
  - 6. Provide procedures for correcting noncompliant work. Detailed procedures are required in advance to avoid delays in meeting overcoat windows as well as to avoid delays in production.
  - 7. Provide procedures for repairing defects in the coating film, such as runs, drips, sags, holidays, overspray, as well as how to handle correct coating thickness noncompliance, any other areas of repair or rework that might be adversely affected by delays in preparing and approving new procedures.
- B. Test Reports
- 1. Joint Sealant Qualification Test Reports
    - a. Submit test results from independent laboratory of representative samples of joint sealant material. Samples must have been tested within the last three years. Submit results as

required in paragraph QUALITY ASSURANCE PROVISIONS of ASTM C920. Note that testing in accordance with QUALITY ASSURANCE PROVISIONS is a pre-qualification requirement.

2. Coatings Qualification Test Reports:
  - a. Submit test results from independent laboratory of representative samples of each coating material. Samples must have been tested within the last three years. Submit results for epoxy materials as required in paragraph QUALIFICATION INSPECTION of MIL-DTL-24441, and as revised by paragraph COATING SYSTEM herein. Submit results for polyurethane materials as required in paragraph QUALIFICATION INSPECTION of MIL-PRF-85285, and as revised by paragraph COATING SYSTEM herein. Note that requirement for QUALIFICATION INSPECTION is a pre-qualification requirement, and involves the same testing required for listing in the Qualified Products List of the respective material. See appropriate Military Specification for specific test requirements.
3. Abrasive Qualification Test Reports:
  - a. Submit results for abrasive as required in paragraph 4, REQUIREMENTS of SSPC AB 3. Submit test results from independent laboratory of representative samples of each abrasive to be used on the jobsite. Samples must have been tested within the last three years. Note that this testing is for the purpose of prequalifying the abrasive.
4. Film Thickness Test Reports:
  - a. Submit results from dry film thickness tests (DFT). The Contractor shall apply additional coats to meet dry film thickness requirements at the Contractor's expense. Verify DFT of each coat and total DFT of each coating system specified using dry film gauges. DFT's shall be measured in accordance with SSPC-PA2 Procedure for Determining Conformance to Dry Coating Thickness Requirements.

#### C. Qualifications

1. Qualifications of Coating Contractors:
  - a. All Contractors and Subcontractors that perform surface preparation or coating application shall be certified to SSPC QP 1 and SSPC QS 1 prior to contract award, and shall remain certified while accomplishing any surface preparation or coating

application. The painting Contractors and painting Subcontractors must remain so certified for the duration of the project. If a Contractor's or Subcontractor's certification expires, the firm will not be allowed to perform any work until the certification is reissued. Requests for extension of time for any delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply. Notify the Contracting Officer of any change in Contractor certification status.

2. Qualifications of Coating Inspection Company
  - a. Submit documentation that the coating inspection company that will be performing all coating inspection functions is certified by SSPC to the requirements of SSPC QP 5 prior to contract award, and shall remain certified while accomplishing any coating inspection functions. The coating inspection company must remain so certified for the duration of the project. If a coating inspection company's certification expires, the firm will not be allowed to perform any inspection functions, and all surface preparation and coating application work must stop, until the certification is reissued. Requests for extension of time for any delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply. Notify the Contracting Officer of any change in coating inspection company certification status.
3. Qualifications of QC Specialist Coating Inspector
  - a. Submit documentation that each coating inspector is employed, and qualified to SSPC QP 5, Level III, by the selected coating inspection company.
4. Coating Thickness Gauge Qualification
  - a. Submit Coating Thickness Gauge Qualification documentation of manufacturer's certification for all coating thickness gauges. Magnetic flux thickness gauges as described in ASTM D7091 shall be used to make all coating thickness measurements on ferrous metal substrates. Gauges shall have an accuracy of +/- 3 percent or better. Gauges to be used on the job shall be certified by the manufacturer as meeting these requirements.
5. Coating Materials:
  - a. Provide manufacturer's certification of conformance to contract

requirements.

6. Coating System Component Compatibility:

a. Provide certification from each manufacturer of components of the coating system, zinc-rich epoxy primer, epoxy intermediate, and polyurethane topcoat, that the supplied coating material is suitable for use in the specified coating system. Each manufacturer shall identify the specific products, including manufacturer's name, which their product may be used with. The certification shall provide the name of the manufacturer that will provide technical support for the entire system. When all coating materials are manufactured by one manufacturer, this certification is not required.

7. Abrasive:

a. Provide manufacturer's certification of conformance to contract requirements and provide copies of test results.

D. Pre-Application Meeting:

1. After approval of submittals but prior to the initiation of coating work, Contractor representatives, including at a minimum, project superintendent and QC manager, paint foreman, and coating inspector shall have a pre-application coating preparatory meeting. This meeting shall be in addition to the pre-construction conference. Specific items addressed shall include: corrective action requirements and procedures, coating work plan, safety plan, coordination with other Sections, inspection standards, inspection requirements and tools, test procedures, environmental control system, safety plan, and test logs. Notify Contracting Officer at least ten (10) calendar days prior to meeting.

**1.5 PRODUCT DATA**

A. Joint Sealant:

1. Submit manufacturer's specifications and printed instructions including detailed application procedures, minimum and maximum application temperatures, and curing procedures. Include Safety Data Sheets (SDS) for materials to be used at the job site in accordance with 29 CFR 1926.59.

B. Coating System:

1. Submit manufacturer's specifications and data on the proposed primers and paints, and printed instructions including detailed mixing and application procedures, number and types of coats

required, minimum and maximum application temperatures, and curing procedures. Include safety data sheets (SDS) for materials to be used at the job site in accordance with 29 CFR 1926.59.

C. Color Chart

1. If the manufacturer cannot match the Federal Standard colors specified in paragraph 2.1, COATING SYSTEM, the Contractor shall submit a current chart of manufacturer's available colors to the District Engineer for selection. The color chart shall be submitted at least thirty (30) days prior to the start of coating and painting operations.

**1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- A. Ship, store, and handle materials in accordance with SSPC PA 1, and as modified in this Section.
- B. All material shall be brought to the job site in the original, sealed, and labeled containers of the manufacturer. The labels shall contain the following information:
  1. Manufacturer's name;
  2. Type of paint;
  3. Manufacturer's stock number;
  4. Color;
  5. Instructions for reducing if applicable;
  6. Label analysis.
- C. Inspect materials for damage prior to use and return non-compliant materials to manufacturer. Store only acceptable project materials on the project site.
- D. Store and mix all painting materials in a single location acceptable to the Owner and the Engineer. Keep storage location neat and clean. Storage location shall be complete with adequate environmental controls to ensure coatings, thinners, and other agents are kept within manufacturer's recommended temperature ranges.
- E. Maintain temperature in storage spaces between 5 and 29 degrees C (40 and 85 degrees F), and air temperature more than 3 degrees C (5 degrees F) above the dew-point at all times.
- F. Comply with all health and fire regulations. Remove all soiled or used rags, waste, and trash from the site at the end of each work day.
  - E. The cost of repairing damage to the storage locations caused by the painting materials or equipment shall be at the expense of the Contractor.

G. Remove materials with expired shelf life from government property immediately and notify the Contracting Officer. If materials are approaching shelf life expiration and an extension is desired, samples may be sent to the manufacturer, along with complete records of storage conditions, with a request for shelf life extension. If the manufacturer finds the samples and storage data suitable for shelf life extension, the manufacturer may issue an extension, referencing the product evaluation and the review of storage records. Products may not be extended longer than allowed in the product specification.

**1.7 EXTRA STOCK**

A. Upon completion of the work of this Section, the Contractor shall deliver to the Owner an extra stock equaling one gallon of each color, type, and gloss of paint used in the work, tightly sealing each container and clearly labeling with contents and location where used.

**1.8 COATING HAZARDS**

A. Ensure that employees are trained in all aspects of the safety plan. Specified coatings may have potential health hazards if ingested or improperly handled. The coating manufacturer's written safety precautions shall be followed throughout mixing, application, and curing of the coatings. During all cleaning, cleanup, surface preparation, and paint application phases, ensure that employees are protected from toxic and hazardous chemical agents which exceed concentrations in 29 CFR 1910.1000. Comply with respiratory protection requirements in 29 CFR 1910.134.

**1.9 WARRANTY**

A. The Contractor shall warrant the coating system against any defects in workmanship and materials for a period of five (5) years from the date of acceptance by the Owner. If a defect should appear and is reported to the manufacturer during the warranty period, the Contractor shall make any necessary repairs without charge to the Owner.

**PART 2 PRODUCTS**

**2.1 COATING SYSTEM**

- A. Alternate systems or products will not be considered. All primer, intermediate coat and topcoat materials shall be supplied by one supplier. The entire coating system is intended to be applied in the field.
- B. The Military specification epoxy and polyurethane products specified in this Section do not require approval for listing on the Qualified

Products List (QPL) (<http://qpldocs.dla.mil/>) prior to contract award, as indicated in paragraph 3.2 of MIL-DTL-24441 and paragraph 3.1 of MIL-PRF-85285. Testing of products by an independent laboratory to the QUALIFICATION INSPECTION requirements of MIL-DTL-24441 and MIL-PRF-85285 prior to contract award is required. See specific submittal requirements in paragraph QUALITY ASSURANCE.

C. Zinc-Rich Epoxy Primer Coat:

1. Epoxy polyamide, MIL-DTL-24441/19 (Formula 159, Type III).

D. Epoxy Intermediate Coat

1. Epoxy polyamide, MIL-DTL-24441/31 (Formula 152, Type IV, White (Tinted)). Tint to approximately FED-STD-595 color number 27778 ("parchment") (<http://www.federalstandardcolor.com/>) using pigment dispersions prepared for epoxy paint tinting. Manufacturer shall tint material and appropriately label. All other requirements of this Military Specification apply.

E. Polyurethane Topcoat

1. Polyurethane coating topcoat of MIL-PRF-85285, Type II (support equipment application), Class H (high-solids formulation), "Purple" FED-STD-595 color number 37100.
2. Modify paragraph 3.6.4 of MIL-PRF-85285, Viscosity and Pot Life, as follows:  
 "The viscosity of the admixed coating, when tested in accordance with ASTM D1200 through a No. 4 Ford cup, shall be as follows:"

Time from mix (minimum)	Maximum time through a No. 4 Ford cup
Initially	30 seconds
2 hours	60 seconds
4 hours	No gel

3. Modify paragraph 3.7.1 of MIL-PRF-85285, Drying Time, as follows:  
 "When applied by spray techniques and when tested in accordance with ASTM D1640/D1640M, the coating shall be set-to-touch within four hours and dry-hard within eight hours (see 4.6 and table I)."

**2.2 COATING SAMPLE COLLECTION AND SHIPPING KIT**

- A. Provide a kit that contains one liter quart can for the base of each coating material, an appropriately sized can for each activator, dipping cups for each component to be sampled, a shipping box sized for

the samples to to be shipped, and packing material. Mark cans for the appropriate component. Provide shipping documents, including pre-paid shipping to the approved coating testing laboratory.

### **2.3 ABRASIVE SAMPLE COLLECTION AND SHIPPING KIT**

- A. Provide a kit that contains one suitable plastic bag or container for each sample to be collected. Mark containers for the appropriate component. Provide shipping documents, including pre-paid shipping to the approved coating testing laboratory.

### **2.4 TEST KITS**

- A. Test Kit for Measuring Chloride, Sulfate and Nitrate Ions on Steel and Coated Surfaces

- 1. Provide test kits called CHLOR\*TEST CSN Salts, as manufactured by CHLOR\*RID International Inc. of Chandler, Arizona ([www.chlor-rid.com](http://www.chlor-rid.com)) or equal. An "equal" test kit shall meet the following requirements:
  - a. Kit contains all materials, supplies, tools and instructions for field testing and on-site quantitative evaluation of chloride, sulfate and nitrate ions;
  - b. Kit extract solution is acidic, factory pre-measured, pre-packaged, and of uniform concentration;
  - c. Kit components and solutions are mercury free and environmentally friendly;
  - d. Kit contains new materials and solutions for each test extraction;
  - e. Extraction test container (vessel, sleeve, cell. etc.) creates a sealed, encapsulated environment during salt ion extraction;
  - f. Test extract container is suitable for testing the following steel surfaces: horizontal (up/down configuration), vertical, flat, curved, smooth, pitted, and rough;
  - g. All salt ion concentrations are directly measured in micrograms per square centimeter.

- B. Test Kit for Identifying Amine Blush on Epoxy Surfaces

- a. After coating and/or primer has hardened and prior to applying the next coat, test for unreacted amines using the AMINE BLUSH CHECK, manufactured by Elcometer, Rochester Hills, Michigan, or equal. To be considered for approval as an "equal" test kit it shall meet the following requirements:
- b. Be a completely self-contained field test kit with all

materials, supplies, tools and instructions to perform tests and indicate the presence of unreacted amines;

- c. Use an identifiable, consistent, uniform, pre-packaged, factory pre-measured indicating solution;
- d. Kit contains no mercury or lead and is environmentally friendly;
- e. Kit contains a solution of an unreacted amine for the purpose of "self checking" the indicator solution;

## **2.5 ABRASIVE**

- A. The referenced abrasive specifications have maximum limits for soluble salts contamination, however, this maximum level of contamination does not guarantee that contamination will not be transferred to the steel surface during abrasive blasting. Other factors such as on-site handling and recycling can allow contamination of abrasive. Contractors are cautioned to verify that the chosen abrasive, along with work and storage processes, allow the final surface cleanliness requirements to be achieved. Successful testing of chlorides in abrasive does not negate the final acceptance testing of steel surfaces.

### **B. Non-metallic Abrasive**

Conform to MIL-A-22262, Type I (Inorganic materials). Abrasive shall be approved by the District Engineer and listed on the appropriate Qualified Products List (QPL) for the specified materials. Use sampling procedures and testing frequencies as prescribed in MIL-A-22262. Use abrasive that is specifically selected and graded to provide a sharp, angular profile to the specified depth. Do not use ungraded abrasive. Make adjustments to processes or abrasive gradation to achieve specified surface profile. Recycled non-metallic abrasive shall meet all requirements of the specification each time that it is placed in the blast pot.

### **C. Metallic Abrasive**

- 1. New and Remanufactured Steel Grit
  - a. Conform to the chemical and physical properties of SSPC AB 3 Class 1 (Steel) only[, except that the gross gamma radioactivity shall not exceed 5 picocuries per gram]. Class 2 (Iron) abrasive shall not be used.
  - b. To develop a suitable work mix from new steel abrasive, a minimum of 200 -400 recycles is required, therefore, it is advantageous for a Contractor to use remanufactured steel grit or grit reclaimed from a previous project. Such grit shall be

considered to conform if it can be traced to new grit conforming to SSPC AB 3 Class 1 and it meets all cleanliness requirements of SSPC AB 3 Class 1 when brought to the current jobsite. Submit one representative sample of this work mix to the laboratory for testing, along with samples of new material. Acceptance and use of this work mix shall not be used to justify any deviation from surface preparation requirements.

2. Recycled Steel Grit

a. Conform to the chemical and physical properties of SSPC AB 2

**2.6 WHITE ALUMINUM OXIDE NON-SKID GRIT**

A. Size #60, dust free (washed and dry), minimum 99 percent pure, having the following sieve analysis when tested in accordance with ASTM E11 using a 1000 gram 2.2-pound sample:

Sieve #	Percent Retained
40	0
50	15-40
60	60-85

**PART 3 EXECUTION**

3.1 Perform all work, rework, and repair in accordance with approved procedures in the Coating Work Plan.

**3.2 SURFACES TO BE COATED**

Coat exterior surfaces of water distribution piping, steel supports, fittings bolts, and other exterior appurtenances.

**3.3 LIGHTING**

Provide lighting for all work areas as prescribed in SSPC Guide 12.

**3.4 ENVIRONMENTAL CONDITIONS**

A. Containment

1. Design and provide a containment system for the capture, containment, collection, storage and disposal of the waste materials generated by the work under this Section, to meet the requirements of SSPC Guide 6, Class 3. Vapor concentrations shall be kept at or below 10 percent of Lower Explosive Limit (LEL) at all times. Containment may be designed as fixed containment for complete structure or portable containment for sections of structure, however, containment shall remain in any one place from beginning of abrasive blasting through initial cure of coating.

2. It is the Contractors responsibility to ensure the feasibility and workability of the containment system. The Contractor shall perform his operations and work schedule in a manner as to minimize leakage of the containment system. The containment system shall be properly maintained and shall not deviate from the approved drawings. If the containment system fails to function satisfactorily, the Contractor shall suspend all operations, except those required to minimize adverse impact on the environment or government property. Operations shall not resume until modifications have been made to correct the cause of the failure.

B. Climate Requirements

1. The Contractor shall ensure that all coatings are applied within the manufacturers' recommended maximum and minimum tolerances for temperature, relative humidity, and dew point. The Contractor is responsible for appropriate sensors and data collection.

**3.5 SURFACE PREPARATION**

A. Abrasive Blasting Equipment

1. Use abrasive blasting equipment of conventional air, force-feed, or pressure type. Maintain a minimum pressure of 650 kPa 95 psig at nozzle. Confirm that air supply for abrasive blasting is free of oil and moisture when tested in accordance with ASTM D4285. Test air quality at each startup, but in no case less often than every five operating hours.

C. Operational Evaluation of Abrasive

1. Test abrasive for salt contamination and oil contamination as required by the appropriate abrasive specification daily at startup and every five operating hours thereafter.

D. Surface Standard

1. Inspect surfaces to be coated, and select area with similar properties and surface characteristics for use as a surface standard. Blast clean one or more 300 mm (1 foot) square steel areas as specified in paragraph SURFACE PREPARATION. Record blast nozzle type and size, air pressure at nozzle and compressor, distance of nozzle from panel, and angle of blast to establish procedures for blast cleaning. Measure surface profile in accordance with ASTM D7127. When the surface standard complies with all specified requirements, seal with a clearcoat protectant. Use the surface standard for comparison to abrasive blasted surfaces

throughout the course of work.

E. Pre-Preparation Testing for Surface Contamination

1. Perform testing, abrasive blasting, and testing in the prescribed order.
2. Pre-Preparation Testing for Oil and Grease Contamination
  - a. Inspect all surfaces for oil and/or grease contamination using two or more of the following inspection techniques: 1) Visual inspection, 2) WATER BREAK TEST, 3) CLOTH RUB TEST. Reject oil and/or grease contaminated surfaces, clean in accordance with SSPC SP 1, and re-check for contamination until surfaces are free of oil and grease.
  - b. WATER BREAK TEST - Spray atomized mist of distilled water onto surface, and observe for water beading. If water "wets" surface rather than beading up, surface can be considered free of oil or grease contamination. Beading of water (water forms droplets) is evidence of oil or grease contamination.
  - c. CLOTH RUB TEST - Rub a clean, white, lint free, cotton cloth onto surface and observe for discoloration. To confirm oil or grease contamination in lightly stained areas, a non-staining solvent may be used to aid in oil or grease extraction. Any visible discoloration is evidence of oil or grease contamination.
3. Pre-Preparation Testing for Soluble Salts Contamination
  - a. Test surfaces for soluble salts, and wash as required, prior to abrasive blasting. Soluble salt testing is also required in paragraph PRE-APPLICATION TESTING FOR SOLUBLE SALTS CONTAMINATION as a final acceptance test of prepared surfaces after abrasive blasting, and successful completion of this phase does not negate that requirement. This phase is recommended since pre-preparation testing and washing are generally more advantageous than attempting to remove soluble salt contamination after abrasive blasting. Effective removal of soluble salts will require removal of any barrier to the steel surface, including rust. This procedure may necessitate combinations of wet abrasive blasting, high pressure water rinsing, and cleaning using a solution of water washing and soluble salts remover. The soluble salts remover shall be acidic, biodegradable, nontoxic, noncorrosive, and after application,

will not interfere with primer adhesion. Delays between testing and preparation, or testing and coating application, may allow for the formation of new contamination. Use potable water, or potable water modified with soluble salt remover, for all washing or wet abrasive blasting. Test methods and equipment used in this phase are selected at the Contractor's discretion.

F. Abrasive Blasting

1. Abrasive blast steel surfaces to near-white metal in accordance with SSPC SP 10/NACE No. 2. Prepared surfaces shall conform to SSPC VIS 1 and shall match the prepared test-panels. Provide a 50 to 75 micron 2 to 3 mil surface profile. Reject profile greater than 75 microns 3 mils, discontinue abrasive blasting, and modify processes and materials to provide the specified profile. Measure surface profile in accordance with ASTM D7127, using Rmax as the measure of profile height. Record all measurements required in this standard. Measure profile at rate of three test areas for the first 100 square meters 1000 square feet plus one test area for each additional 100 square meters 1000 square feet or part thereof. When surfaces are re-blasted for any reason, retest profile as specified. Following abrasive blasting, remove dust and debris by vacuum cleaning. Do not attempt to wipe surface clean.

G. Disposal of Used Abrasive

1. Dispose of used abrasive off Government property in accordance with Federal, State, and Local mandated regulations.

H. Pre-Application Testing For Surface Contamination

1. Pre-Application Testing for Oil and Grease Contamination
  - a. Ensure surfaces are free of contamination as described in paragraph PRE-PREPARATION TESTING FOR OIL AND GREASE CONTAMINATION, except that only questionable areas need be checked for beading of water misted onto surface.
2. Pre-Application Testing for Soluble Salts Contamination
  - a. Test surfaces for chloride contamination using the Test Kit described in TEST KIT FOR MEASURING CHLORIDE, SULFATE AND NITRATE IONS ON STEEL AND COATED SURFACES. Test all surfaces at rate of three tests for the first 100 square meters 1000 square feet plus one test for each additional 200 square meters 2000 square feet or part thereof. One or more readings greater than 3 micrograms per square centimeter of chlorides or 10 micrograms

per square centimeter of sulfates or 5 micrograms per square centimeter of nitrates is evidence of soluble salt contamination. Reject contaminated surfaces, wash as discussed in paragraph PRE-PREPARATION TESTING FOR SOLUBLE SALTS CONTAMINATION, allow to dry, and re-test until all required tests show allowable results. Reblast tested and cleaned areas as required. Label all test tubes and retain for test verification.

3. Pre-Application Testing for Surface Cleanliness
  - a. Apply coatings to dust free surfaces. To test surfaces, apply strip of clear adhesive tape to surface and rub onto surface with finger. When removed, the tape should show little or no dust, blast abrasive, or other contaminant. Reject contaminated surfaces and retest. Test surfaces at rate of three tests for the first 100 square meters 1000 square feet plus one test for each additional 100 square meters 1000 square feet or part thereof. Provide two additional tests for each failed test or questionable test. Attach test tapes to Daily Inspection Reports.

### **3.6 MIXING AND APPLICATION OF SEALANT AND COATING SYSTEM**

- A. Preparation of Sealant and Coating Materials for Application
  1. Each of the sealant, primer, intermediate, and topcoat materials is a two-component material supplied in separate containers.
  2. Mixing Sealant, Primer and Intermediate Coat Materials
    - a. Mix in accordance with manufacturer's instructions, which may differ for each product. Do not mix partial kits, or alter mix ratios. Mix materials in same temperature and humidity conditions specified in paragraph DELIVERY AND STORAGE. Allow mixed material to stand for the required induction time based on its temperature.
  3. Mixing Topcoat Material
    - a. Do not mix partial kits, or alter mix ratios. Mix polyurethane coating materials in same temperature conditions specified in paragraph DELIVERY AND STORAGE. The polyurethane coating material is moisture sensitive and any introduction of moisture or water into the material during mixing or application will shorten usable pot life. Use a mixer that does not create a vortex. Do not add solvent without specific written

recommendation from the manufacturer. No induction time is required, only thorough agitation of the mixed material.

4. Pot Life

- a. Apply mixed products within stated pot life for each product. Stop applying when material becomes difficult to apply in a smooth, uniform wet film. Add all required solvent at time of mixing. Do not add solvent to extend pot life. Pot life is based on standard conditions at 21 degrees C (70 degrees F) and 50 percent relative humidity. For every 10 degrees C (18 degrees F) rise in temperature, pot life is reduced by approximately half, and for every 10 degrees C (18 degrees F) drop it is approximately doubled. Usable pot life depends on the temperature of the material at the time of mixing and the sustained temperature at the time of application. Other factors such as the shape of the container and volume of mixed material may also affect pot life. Precooling or exterior icing of components for at least 24 hours to a minimum of 10 degrees C (50 degrees F) in hot climates will extend pot life. High humidity at time of mixing and application shortens pot life of the Polyurethane topcoat material. Following are approximate pot life times (as specified by manufacturer):

Sealant

Epoxy primer and intermediate materials	4 hours
Polyurethane topcoat materials	2 hours

5. Application Conditions and Recoat Windows

- a. The application condition requirements for the coating system are very time and temperature sensitive, and are intended to avoid the delamination problems frequently found on industrial structures. Plan coating application to ensure that specified temperature, humidity, and condensation conditions are met. If conditions do not allow for orderly application of sealant, primer, stripe coat, intermediate coat and topcoat, use appropriate means of controlling air and surface temperatures, as required. Partial or total enclosures, insulation, heating or cooling, or other appropriate measures may be required to control conditions to allow for orderly application of all required coats.
- b. Maintain air and steel surface temperature between 16 and 38

degrees C (60 and 100 degrees F) during application and the first four hours of cure for epoxy coats and the first eight hours of cure for polyurethane coats.

- c. Maintain steel surface temperature more than 3 degrees C (5 degrees F) above the dew-point of the ambient air for the same period.
- d. Use Table entitled "RECOAT WINDOWS" to determine appropriate recoat windows for each coat after the initial coat. Apply each coat during appropriate RECOAT WINDOW of preceding coat. If a RECOAT WINDOW is missed, the minimum and maximum primer and intermediate coat thickness may be adjusted to accommodate a FILL COAT, however, requirements for total epoxy coating thickness and total coating thickness will not be modified. Missing more than one RECOAT WINDOW may require complete removal of coating if maximum total coating thickness requirements cannot be achieved.
- e. If coating is not applied during RECOAT WINDOW, or if surface temperature exceeds 49 degrees C (120 degrees F) between applications, provide GLOSS REMOVAL, apply next coat within 24 hours. If next planned coat is topcoat, apply FILL COAT if required to fill sanding marks. Sanding marks from GLOSS REMOVAL of intermediate coat reflecting through topcoat will be considered as noncompliant. Apply FILL COAT within 24 hours of GLOSS REMOVAL, then apply topcoat within RECOAT WINDOW of FILL COAT.

RECOAT WINDOWS						
<u>EPOXY OVER EPOXY</u>						
Temp (deg C)	16-21	22-27	28-32	33-38	39-43	44-49
Temp (deg F)	60-70	71-80	12-36	91-100	101-110	111-120
RECOAT WINDOW (hrs)	24-72	18-60	16-48	12-36	8-18	4-6
<u>POLYURETHANE OVER EPOXY</u>						
Temp (deg C)	16-21	22-27	28-32	33-38	39-43	44-49
Temp (deg F)	60-70	71-80	12-36	91-100	101-110	111-120
RECOAT WINDOW (hrs)	24-96	24-72	16-48	12-36	10-24	8-16

POLYURETHANE OVER POLYURETHANE						
Temp (deg C)	16-21	22-27	28-32	33-38	39-43	44-49
Temp (deg F)	60-70	71-80	12-36	91-100	101-110	111-120
RECOAT WINDOW (hrs)	8-48	6-48	4-36	3-24	2-12	1-2

- f. The temperature ranges shown in the table above are for determining recoat windows. Choose recoat window based on the highest surface temperature that was sustained for one or more hours between coats. This applies to the entire time between coats. Measure and record air and surface temperatures on hourly basis to determine appropriate recoat windows. If surface temperature goes above 38 degrees C (100 degrees F), measure and record temperatures every half hour.
- g. FILL COAT - Where indicated, apply coat of intermediate coat epoxy, at 50 to 75 microns 2 to 3 mils DFT, then apply next specified full coat within recoat window of FILL COAT. A FILL COAT may be used to adjust coating thickness to comply with requirements or to fill sanding marks in intermediate coat.
- h. GLOSS REMOVAL - Where required, hand sand in a linear fashion to remove gloss using 120-200 grit wet/dry sandpaper, followed by solvent wiping with a clean rag soaked with denatured alcohol to remove all dust. GLOSS REMOVAL of primer coat is to scarify surface and shall consist of removal of approximately 25 microns 1 mil of coating. If steel is exposed during GLOSS REMOVAL, repair in accordance with paragraph PROCEDURE FOR HOLIDAY AND SPOT REPAIRS OF NEWLY APPLIED COATING. GLOSS REMOVAL of intermediate coat may include removal of up to 75 microns 3 mils of coating to avoid excess thickness, prior to application of FILL COAT.

B. Amine Blush Testing of Epoxy Coat Prior to Overcoating

1. Test epoxy surfaces prior to application of roof joint sealant, epoxy coat, or polyurethane topcoat for amine blush contamination using the Test Kit described in paragraph TEST KIT FOR IDENTIFYING AMINE BLUSH ON EPOXY SURFACES. Test all surfaces at rate of three tests for the first 100 square meters 1000 square feet plus one test for each additional 200 square meters 2000 square feet or part

thereof. Remove any identified contamination using an approved procedure.

C. Application of Coating System and Joint Sealant

1. Apply coatings in accordance with SSPC PA 1 and as specified herein. Apply coatings to surfaces that meet all stated surface preparation requirements.
2. After application of primer coat and prior to application of each subsequent coat, perform testing prescribed in paragraph PRE-APPLICATION TESTING FOR SURFACE CONTAMINATION, as necessary, to ensure minimal intercoat contamination. This testing may be reduced to one half of the prescribed rate for bare steel if the testing indicates no contamination when sampling is evenly distributed over surfaces being tested. If contamination is found between coats, revert to the specified testing rate. Generally, oil and grease contamination and soluble salts contamination are not encountered if subsequent coats are applied within specified recoat windows and unusual atmospheric events do not occur. Such atmospheric events as a coastal storm blowing onshore can bring unusual chloride contamination. Concern for intercoat contamination should be continually prevalent, and spot testing should be accomplished to verify satisfactory conditions. Where visual examination or spot testing indicates contamination, perform sufficient testing to verify non-contamination, or to define extent of contamination for appropriate treatment.
3. Apply each coat in a consistent wet film, at 90 degrees to previous coat. Ensure that primer and intermediate coat "cold joints" are no less than 150 mm six inches from welds. Apply stripe coat by brush. For convenience, stripe coat material may be delivered by spray if followed immediately with brush-out and approved procedures include appropriate controls on thickness. Apply all other coats by spray application. Use appropriate controls to prevent airborne coating fog from drifting beyond 3 meters (15 feet) from the structure perimeter. Cover or protect all surfaces that will not be coated. The cleanliness, temperature, recoat windows, and airborne paint containment requirements may necessitate the use of enclosures, portable shelters, or other appropriate controls.
4. Apply coatings at the following specified thickness:

Coat	Minimum DFT (Microns)	Maximum DFT (Microns)
Primer	75	125
Intermediate	75	125
Top	50	75
Total system	200	325

Coat	Minimum DFT (Mils)	Maximum DFT (Mils)
Primer	3	5
Intermediate	3	5
Top	2	3
Total system	8	13

D. Application of Primer

1. Apply primer coat, maintaining paint supply container height within 1 meter (3 feet) of the paint nozzle for applying zinc primer. Maintain constant agitation of paint pot to ensure that zinc does not settle in container.

E. Application of Stripe Coat

1. Apply a stripe coat of intermediate coat epoxy material within RECOAT WINDOW of primer, allowing sufficient dry time to allow application of intermediate coat within RECOAT WINDOW of primer. Apply by brush, working material into corners, crevices, angles, and welds, and onto outside corners and angles.

F. Application of Intermediate Coat

1. Apply intermediate coat within RECOAT WINDOW of primer coat.

G. Application of Topcoat

1. Make all required repairs to primer and intermediate coats as specified in paragraph entitled "Procedure for Holiday and Spot Repairs of Newly Applied Coating" prior to applying topcoat. Apply topcoat within RECOAT WINDOW of intermediate coat. The polyurethane topcoat may require multiple passes to achieve desired aesthetics and required thickness. Consult manufacturer for thinning and application procedures for anticipated temperature, humidity, and wind conditions. Touch-up blemishes and defects within recoat window of polyurethane topcoat. Retain sample of polyurethane topcoat, from the same batch used to coat structure, to make touch-ups that might be required later.

#### H. Application of Joint Sealant

1. Apply joint sealant to back-to-back steel joints that are less than 3/8 inches wide and are not seal welded. Apply sealant to top and bottom, or each side, of narrow joints. Apply sealant within 48 hours of application of the topcoat, and touch-up with topcoat after appropriate cure of the sealant.

#### I. Procedure for Holiday and Spot Repairs of Newly Applied Coating

1. Repair coating film defects at the earliest practicable time, preferably before application of the succeeding coat. Observe all requirements for soluble salts contamination, cleanliness between coats, and application conditions. Prepare defective area in accordance with SSPC SP 10/NACE No. 2, and feather coating as required to leave 100 mm (4 inches) of each succeeding coat feathered and abraded. Protect adjacent areas from damage and overspray. Remove dust and solvent wipe the prepared area plus an additional 100 mm (4 inches) beyond the prepared area with clean denatured alcohol. Apply each coat within RECOAT WINDOW of preceding coat. Within four hours of preparation, apply zinc-rich primer to prepared steel and feather onto prepared primer. Apply intermediate coat to primed area and feather to prepared intermediate area. Apply topcoat to intermediate coat and feather to prepared topcoat. Apply each repair coat to approximate thickness of surrounding coating system.

### 3.7 FIELD QUALITY CONTROL

- A. For marking of tank surfaces, use chalk for marking bare steel, and water based markers for marking coated surfaces, and remove marks prior to coating. Do not use any wax or grease based markers, or any other markers that leave a residue or stain.
- B. Coating Inspector
  1. The coating inspector shall be considered a QC Specialist and shall report to the QC Manager, as specified in Sections 01 45 00.00 10, 20, and 40, QUALITY CONTROL. The Coating Inspector shall be present during all pre-preparation testing, surface preparation, coating application, initial cure of the coating system, during all coating repair work, and during completion activities as specified in Sections 01 45 00.00 10, 20 and 40, QUALITY CONTROL. The Coating Inspector shall provide complete documentation of conditions and occurrences on the job site, and be aware of conditions and

occurrences that are potentially detrimental to the coating system. The requirements for inspection listed in this Section are in addition to the QC inspection and reporting requirements specified in Sections 01 45 00.00 10, 20, and 40, QUALITY CONTROL.

C. Field Inspection

1. Inspection Requirements

- a. Perform field inspection in accordance with ASTM D3276 and the approved Coating Work Plan. Document Contractor's compliance with the approved Coating Work Plan.
- b. Provide all tools and instruments required to perform the required testing, as well as any tools or instruments that the inspector considers necessary to perform the required inspections and tests. Document each inspection and test, including required hold points and other required inspections and tests, as well as those inspections and tests deemed prudent from on-site evaluation to document a particular process or condition.
- c. Thickness measurements will be taken by the Coating Inspector, of each applied paint film to assure compliance with these specifications. If the thickness fails to meet the requirements of the specifications, the Contractor will be required to perform all work necessary to bring the paint to specifications prior to applying the next coat of paint. Verify DFT of each coat and total DFT of each coating system specified using dry film gauges. DFT's shall be measured in accordance with SSPC-PA2 Procedure for Determining Conformance to Dry Coating Thickness Requirements.
- d. Collect and record Environmental Conditions as described in ASTM D3276 on a 24 hour basis, as follows:
  - During surface preparation, every two hours or when changes occur;
  - During coating application and the first four days of initial cure, every hour, or when changes occur;
  - Note location, time, and temperature of the highest and lowest surface temperatures each day;
  - Use a non-contact thermometer to locate temperature extremes, then verify with contact thermometers.
- a. Document all equipment used in inspections and testing,

including manufacturer, model number, serial number, last calibration date and future calibration date, and results of on-site calibration performed.

- b. Document Contractors compliance with the approved Coating Work Plan.
2. Inspection Report Forms
  - a. Develop project-specific report forms as required to report measurements, test results, and observations being complete and conforming to contract requirements. This includes all direct requirements of the contract documents and indirect requirements of referenced documents. Show acceptance criteria with each requirement and indication of conformity of each inspected item. The data may be in any format, but must be legible and presented so that entered data can be quickly compared to the appropriate requirement.
3. Daily Inspection Reports
  - a. Submit one copy of daily inspection report completed each day when performing work under this Section, to the Contracting Officer's Representative. Note all non-compliance issues, and all issues that were reported for rework. Each report shall be signed by the coating inspector and the QC Manager. Submit report within 24 hours of date recorded on the report.
4. Inspection Logbook
  - a. A continuous record of all activity related to this Section shall be maintained in an Inspection Logbook on a daily basis. The logbook shall be hard or spiral bound with consecutively numbered pages, and shall be used to record all information provided in the Daily Inspection Reports, as well as other pertinent observations and information. The Coating Inspector's Logbook that is sold by NACE is satisfactory. Submit the original Inspection Logbook to the Contracting Officer upon completion of the project and prior to final payment.
5. Inspection Equipment
  - a. All equipment shall be in good condition, operational within its design range, and calibrated as required by the specified standard for use of each device.

### **3.8 FINAL CLEANUP**

- A. Following completion of the work, remove debris, equipment, and

materials from the site. Remove temporary connections to Government or Contractor furnished water and electrical services. Restore existing facilities in and around the work areas to their original condition.

TABLE I

## COATING QUALITY CONFORMANCE INSPECTION REQUIREMENTS

Table Ia - Zinc-rich Epoxy Primer Coat MIL-DTL-24441/19 Formula 159

Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Max.	Min.	Max.
Pigment content, percent (zinc dust)	---	---	81.5	85.5	---	---
Volatiles, percent	42.8	44.3	8.0	8.4	---	---
Non-volatile vehicle percent	53.7	57.7	8.3	8.7	---	---
Weight, Kilograms/liter	0.87	1.01	3.30	3.40	2.80	2.91
Weight, Pounds/gallon	7.3	8.4	27.5	28.4	23.4	24.4
Flashpoint, Degrees C	35.6	---	37.8	---	---	---
Flashpoint, Degrees F	96	---	100	---	---	---
Consistency, grams	---	---	250	500	150	300
Set to touch time, hours at 23 degrees C (73 degrees F)	---	---	---	---	---	2
Dry hard time, hours at 23 degrees C (73 degrees F)	---	---	---	---	---	8
Pot life, hours at 23 degrees C (73 degrees F)	---	---	---	---	4	---
Sag resistance, Micrometers	---	---	---	---	300	---
Sag resistance, Mils	---	---	---	---	12	---
VOC, Grams/liter	---	---	---	---	---	304
VOC, Pounds/gallon	---	---	---	---	---	2.5

NOTES: Test methods as specified in MIL-DTL-24441.

TABLE I						
COATING QUALITY CONFORMANCE INSPECTION REQUIREMENTS						
Table Ib. - Epoxy Intermediate Coat MIL-DTL-24441/31 Formula 152 Type IV (White (Tinted))						
Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Max.	Min.	Max.
Pigment content, percent	44.0	49.0	33.0	38.0	---	---
Volatiles, percent	29.0	35.0	16.0	21.0	---	---
Non-volatile vehicle percent	17.5	23.5	44.0	49.0	---	---
Coarse particles, percent	---	0.3	---	0.3	---	---
Consistency, grams	180	320	300	470	180	245
Weight, Kilograms/liter	1.39	1.45	1.29	1.35	1.34	1.4
Weight, Pounds/gallon	11.6	12.1	10.8	11.3	11.2	11.7
Set to touch time, hours at 23 degrees C (73 degrees F)	---	---	---	---	---	3
Dry hard time, hours at 23 degrees C (73 degrees F)	---	---	---	---	---	8
Fineness of grind, Hegman	4	---	4	---	---	---
Flashpoint, Degrees C	35.5	---	37.8	---	---	---
Flashpoint, Degrees F	96	---	100	---	---	---
Titanium dioxide, percent of pigment	91	---	---	---	---	---
Pot life, hours at 23 degrees C (73 degrees F)	---	---	---	---	4	---
Sag resistance, Micrometers	---	---	---	---	300	---
Sag resistance, Mils	---	---	---	---	12	---

Table Ib. - Epoxy Intermediate Coat MIL-DTL-24441/31 Formula 152 Type IV (White (Tinted)), continued						
Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Max.	Min.	Max.
Color of dry film to approximate color of FED-STD-595 color 27778	---	---	---	---	---	Conform
Contrast ratio, at 75 micrometers, 3 mils DFT	---	---	---	---	.098	---
Gloss, 60 degree specular	---	---	---	---	35	---
VOC, Grams/liter	---	---	---	---	---	340
VOC, Pounds/gallon	---	---	---	---	---	2.8
GENERAL NOTES: Test methods as specified in MIL-DTL-24441. Where "Conform" is indicated, refer to specific requirements of MIL-DTL-24441/31.						

TABLE I						
COATING QUALITY CONFORMANCE INSPECTION REQUIREMENTS						
Table Ic - Polyurethane Topcoat MIL-PRF-85285 Type II (White and Colors)						
Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Max.	Min.	Max.
Moisture content, percent	---	2	---	---	---	---
Course particles, percent	---	---	---	---	---	.5
Viscosity	---	---	---	---	---	See Note 1
Fineness of grind, Hegman	---	---	---	---	7	---
Drying to touch (See Note 2)	---	---	---	---	---	4
Dry-hard (See Note 2)	---	---	---	---	---	8
VOC, grams per liter	---	---	---	---	---	340
Color	---	---	---	---	delta E+-1.0	
Gloss 60 degree specular gloss						
Gloss	---	---	---	---	---	90
Semi-gloss	---	---	---	---	15	45
Opacity	---	---	---	---	0.95	---
Flexibility	---	---	---	---	---	Conform
Fluid resistance	---	---	---	---	---	Conform
Heat resistance (cure)	---	---	---	---	---	Conform
Solvent resistance (cure)	---	---	---	---	---	Conform
Condition in container	---	---	---	---	---	Conform
Odor	---	---	---	---	---	Conform
Lead percent	---	---	---	---	---	0.06
Cadmium percent	---	---	---	---	---	0.06

Table Ic - Polyurethane Topcoat MIL-PRF-85285 Type II (White and Colors),  
continued

Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Min.	Max.	Min.
Chromium percent	---	---	---	---	---	0.00

NOTES:

(1) Modify paragraph 3.6.4 Viscosity and Pot Life, of MIL-PRF-85285 as follows:

The viscosity of the admixed coating, when tested in accordance with ASTM D1200 through a No. 4 Ford cup, shall be as follows:

Time from mix (minimum)	Maximum time thru a No. 4 Ford cup
Initially	30 seconds
2 hours	60 seconds
4 hours	No gel

(2) Modify paragraph 3.7.1 Drying Time, of MIL-PRF-85285.

When applied by spray techniques and when tested in accordance with ASTM D1640/D1640M, the coating shall be set-to-touch within four hours and dry-hard within eight hours (see 4.6 and table I).

GENERAL NOTES:

Test methods as specified in MIL-PRF-85285, except those marked with "\*".

Where "Conform" is indicated, refer to specific requirements of MIL-PRF-85285.

-- End of Section --