

SUPERSEDING
AMC-631-1A
OCTOBER 1988

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)
ATLANTIC MARINE CENTER
STANDARD SPECIFICATION AMC-631-1B

EPOXY-POLYAMIDE/VINYL UNDERWATER BODY COATING SYSTEM

1. SCOPE. This specification contains the general requirements for application of an epoxy-polyamide/vinyl coating system on the underwater body of NOAA steel ships and boats.

2. REFERENCES.

a. Steel Structures Painting Council Surface Preparation Specification No. 10 (SSPC-SP 10-85), "Near White Blast Cleaning"

b. Steel Structures Painting Council Paint Application Specification No. 2 (SSPC-PA-2), "Measurement of Dry Paint Thickness with Magnetic Gages"

3. REQUIREMENTS.

3.1 General Requirements.

3.1.1 The underwater body is defined as the entire underwater hull plating and all appendages up to the upper boottopping limit. Included are all rudders, struts, skegs, bilge keels, sea chest strainer plates, sea chests, domes, propulsion shafting, fairwaters, and rope guards.

3.1.2 Boottopping lines are to be carefully cut in. The boottopping shall be same as existing unless otherwise specified.

3.1.3 All paint materials shall be applied using spray equipment, except sea chest strainer plates shall be coated by dipping. After the last coat of anti-fouling paint has been applied, the underwater body draft marks are to repainted, with brushes, using a high grade white gloss marine paint.

3.1.4 All coating thicknesses are stated in dry film thickness (DFT). All dry film thickness determinations shall be performed in accordance with reference 2.b.

3.1.5 Coatings shall be applied only when the following conditions are maintained:

JUNE 1989

a. Apply paint only to dry surfaces and when there is no chance of precipitation until after the paint has cured. The temperature of the surface to be painted shall be at least 5 degrees Fahrenheit above the dew point at the jobsite. The dew point can be presumed to be satisfactory if a thin, clearly defined film of water applied to the cleaned surface with a damp cloth evaporates within 15 minutes. Otherwise, the dew point shall be measured prior to painting by taking the dry-bulb temperature of the surface and the wet-bulb temperature at the jobsite.

b. The air temperature and surface temperature must both be a minimum of 45 degrees Fahrenheit at all times, unless a lower temperature is specifically authorized by the paint manufacturer's printed instructions.

c. Painting is permitted only when the humidity is less than 95 percent.

d. In the event the Contractor desires or must proceed with painting when the existing weather conditions do not meet the above specified conditions, the Contractor shall erect a cover over the surfaces to be painted and shall heat the surfaces and the surrounding air to establish the required conditions. The conditions shall be maintained until the paint has fully cured.

3.1.6 Bilge blocks shall be shifted to allow all their contact areas to be prepared and painted. The Dockmaster shall be consulted to determine the sequence of shifting blocks. Keel blocks need not be shifted unless otherwise specified.

3.1.7 Comply with the manufacturers' printed recommendations and instructions for all aspects of handling, mixing, and application of the paint materials.

3.1.8 All paint shall be delivered to the jobsite in original, unopened containers with labels intact. All containers shall remain unopened until required for use. Each container of paint shall be clearly marked or labelled to show paint identification, date of manufacture, batch number, analysis of contents, identification of all toxic substances, and special instructions.

3.1.9 Paint shall be used before its shelf life has expired. If a paint has no stated shelf life or is more than one year old, the manufacturer must certify in writing that the paint is suitable for use.

3.1.10 Each coat of paint shall be in a proper state of cure or dryness before the application of the succeeding coat. Paint shall be considered dry for recoating when an additional coat can be applied without the development of any detrimental film irregularities, such as lifting, wrinkling, or loss of adhesion

of the undercoat. The time interval between coating applications shall be in compliance with the manufacturer's printed instructions. The final coat of anti-fouling paint shall be allowed to cure a minimum of 24 hours prior to undocking the ship.

3.1.11 Comply with and enforce all safety and environmental protection regulations relative to removal, disposal, mixing, and application of paints and other materials.

3.2 Surface Preparation.

3.2.1 Prior to any sandblasting, all sea chests strainer plates shall be removed and all hull openings, transducers, anodes, waster pieces, bearings, stern tube openings, bow thrusters, fiberglass covers (over shafts and domes) and propellers shall be plugged, covered, and otherwise protected from damage or contamination during surface preparation and coating application.

3.2.2 Prepare all steel surfaces to near white blasted surfaces in accordance with reference 2.a.

3.2.3 After sandblasting, surfaces shall be brushed with clean brushes, blown off with compressed air, or cleaned by vacuum to remove all traces of blast products and dust.

3.2.4 All fiberglass surfaces shall be prepared as follows:

a. Use wooden or plastic scrapers, mechanically prepare to a bare clean surface, exercising care not to gouge, scratch, or otherwise damage the fiberglass.

b. Using a hand or finishing sander with fine grit paper, remove all remaining marine growth, loose paint, and dirt. Wipe the surfaces with a damp soft cloth to remove all dust and residue.

3.3 Paint Application.

3.3.1 Following surface preparation, apply the following coating system. The first coat is to be applied as soon as practical after surface preparation and before any rusting occurs. In no case shall the surfaces be allowed to remain overnight without coating.

a. Apply five coats of paint to the entire underwater body as follows:

1. One coat, 2.0-3.0 mils DFT, epoxy-polyamide primer (green), MIL-P-24441A, Formula 150.

2. One coat, 2.0-3.0 mils DFT, epoxy-polyamide (grey), MIL-P-24441A, Formula 151.

3. One coat, 2.0-3.0 mils DFT, epoxy-polyamide (white), MIL-P-24441A, Formula 152.

4. One coat, 2.0-3.0 mils DFT, vinyl anti-fouling (red) paint, MIL-P-15931, Formula 121. This coat must be applied while the previous coat is still tacky (normally 4-6 hours). If the previous coat is allowed to cure past the tacky stage, a mist coat, 0.5 DFT, epoxy-polyamide, formula 152 shall be applied before the vinyl anti-fouling paint.

5. One coat, 2.0-3.0 mils DFT, vinyl anti-fouling (red) paint, MIL-P-15931, Formula 121 (same as coat 4) to all underwater body except boottopping. In the boottopping, apply one coat, 2.0-3.0 DFT, vinyl anti-fouling (black) paint, MIL-P-15931, Formula 129.

4. QUALITY ASSURANCE.

4.1 Certification and Records.

4.1.1 Prior to commencing the surface preparation, comply with the following:

a. Prepare and submit to the COTR a detail "Paint Plan" which clearly outlines the complete painting timetable and procedures, including methods for conducting and documenting inspections. Also to be included shall be copies of all applicable manufacturers' printed recommendations, instructions and product data sheets.

b. The Contractor's paint foreman shall meet with the COTR to discuss and review the "Paint Plan".

4.1.2 Provide to the COTR the following information:

a. Number of gallons of each type paint used.

b. Certification by the Contractor's paint foreman that the conditions specified in 3.1.5 were maintained during application and curing of the paint. If measured, wet-bulb temperature at the jobsite and dry-bulb temperature of the surface immediately before applying each coat of paint.

c. Date and time of starting and completing each coat of paint.

d. Complete set of all DFT measurements taken.

4.2 Inspections.

4.2.1 Prior to any sandblasting, conduct an inspection with the COTR of all protective coverings to insure that the protection is adequate.

4.2.2 After completion of surface preparation, the COTR or other person designated by the COTR shall inspect the surfaces before the first coat of paint is applied.

4.2.3 Prior to applying each coat of paint, verify to the COTR or other person specified by the COTR that the conditions exist as prescribed in paragraph 3.1.5.

4.2.4 After each coat of paint is applied and prior to the next coat, take DFT readings in accordance with reference 2.b. The COTR or other person specified by the COTR shall be permitted to witness the measurements. Provide magnetic gages, calibrated immediately before taking the measurements in presence of the COTR or other person specified by the COTR.

4.2.5 In the event the COTR or other person specified by the COTR is unable to witness the required inspections and measurements, the Contractor shall nonetheless conduct and document the inspections and measurements to verify compliance with the requirements of this specification.

END OF SPECIFICATION