To prospective Bidder for Bid # 41672 entitled, “Construct and Deliver Two (2) Barge-Type Rail Car Floats for the Transport of Rail Cars”:

Due back on 4/7/2015, no later than 11:00 AM

I. CHANGES/MODIFICATIONS:

A. See attached Part V, Specifications:

- Exhibit B – Sustainability Documents
- Exhibit C – Coating Reference Documents
- Exhibit D – Cathodic Protection Reference Documents

which were inadvertently not included.

II. BIDDER’S QUESTIONS AND ANSWERS

The following information is available in response to questions submitted by prospective Bidders. The responses should not be deemed to answer all questions, which have been submitted by Bidders to the Port Authority. It addresses only those questions, which the Port Authority has deemed to require additional information and/or clarification. The fact that information has not been supplied with respect to any questions asked by a Bidders does not mean or imply, nor should it be deemed to mean or imply, any meaning, construction, or implication with respect to the terms.

The Port Authority makes no representations, warranties or guarantees that the information contained herein is accurate, complete or timely or that such information accurately represents the conditions that would be encountered during the performance of the Contract. The furnishing of such information by the Port Authority shall not create or be deemed to create any obligation or liability upon it for any reason whatsoever and each Bidder, by submitting its Bid, expressly agrees that it has not relied upon the foregoing information, and that it shall not hold the Port Authority liable or responsible therefore in any manner whatsoever. Accordingly, nothing contained herein and no representation, statement or promise, of the Port Authority, its Commissioners, officers, agents, representatives, or employees, oral or in writing, shall impair or limit the effect of
the warranties of the Bidder required by this Bid or Contract and the Bidder agrees that it shall not hold the Port Authority liable or responsible therefore in any manner whatsoever.

Q1. Is the Bid Opening the same date as Bid Due Date, April 7th at 11AM?
A1. Yes. Please see front cover of the “Invitation for Bid/Public bid Opening” where it states, “SUBMIT SEALED BIDS BEFORE THE DUE DATE AND TIME TO THE ABOVE ADDRESS WHERE THEY WILL BE PUBLICLY OPENED AND READ”.

Q2. Is there a weight estimate for the Car Float?
A2. No. Please refer to the Invitation for Bid. Based on the material specified in the design, the Bidder can determine the weight estimate for the Car Float.

Q3. When is Contract award?
A3. Please see Part II, Contract Specific Information for Bidders, Section 3, “Expected Date of Commencement of Contract”, “On or about June 11, 2015.”

Q4. Could you please offer guidance on the likelihood of the Port Authority requiring a Performance Bond?
A4. It cannot be determined at this time if a Performance Bond will be required. However, please see Part III, “Contract Specific Terms and Conditions, Section 10, penultimate paragraph, first sentence, “If the Contractor furnishes a bond in accordance with the requirements of the Port Authority under this numbered clause, the Port Authority shall reimburse the Contractor for the net amount actually paid by it to the surety or sureties as the premium on such bond.”

THE PORT AUTHORITY OF NY & NJ
Kathy Leslie Whelan, Asst. Director
Commodities & Services Division

QUESTIONS CONCERNING THIS ADDENDUM MAY BE ADDRESSED TO Mr. Richard A. Grehl, WHO CAN BE REACHED AT (201) 395-3441 or at rgrehl@panynj.gov.
<table>
<thead>
<tr>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Infrastructure Guidelines - Project Credit Checklist Form</td>
</tr>
<tr>
<td>Sustainable Infrastructure Guidelines - Project Credit Documentation Form</td>
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### Choose a Project Type or Types

<table>
<thead>
<tr>
<th>Airfield New Construction / Reconstruction</th>
<th>Airfield Pavement Rehabilitation</th>
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<tbody>
<tr>
<td>Bridge New Construction / Reconstruction</td>
<td>Bridge and Tunnel Rehabilitation</td>
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<tr>
<td>Civil - Work Orders</td>
<td>Civil - Work Orders</td>
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<tr>
<td>Intelligent Transportation System</td>
<td>Marine Structures - Docks, Wharves, Bulkheads, etc.</td>
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<tr>
<td>Parking Lot New Construction / Reconstruction</td>
<td>Parking Lot Rehabilitation</td>
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<tr>
<td>Port Site Work</td>
<td>Roadway New Construction / Reconstruction</td>
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<tr>
<td>Roadway Pavement Rehabilitation</td>
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<tr>
<td>Trackwork</td>
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<tr>
<td>Utility New Construction</td>
<td>Traffic Safety and Public Environment</td>
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<tr>
<td>Utility Rehabilitation</td>
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### Associated Scopes of Work

- Landscaping
- Exterior Lighting
- MECH / EL / Fire Suppression System Installation
- Traffic Safety and Public Environment

### SUSTAINABLE INFRASTRUCTURE GUIDELINES

#### PROJECT CREDIT CHECKLIST FORM - Version 1.0

<table>
<thead>
<tr>
<th>CREDIT NUMBER</th>
<th>POINTS ACHIEVABLE</th>
<th>CREDIT NAME</th>
<th>PURSUING CREDIT?</th>
<th>POINTS ACHIEVED</th>
<th>INCLUDE CREDIT</th>
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<tbody>
<tr>
<td>IS-1</td>
<td></td>
<td>Utilize Integrated Team Approach</td>
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<tr>
<td>IS-2</td>
<td></td>
<td>Prepare a Site Assessment</td>
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<tr>
<td>IS-3</td>
<td></td>
<td>Maximize Use of Previously Developed Land</td>
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<tr>
<td>IS-4</td>
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<td>Maximize Use of Known Contaminated Sites</td>
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<tr>
<td>IS-5</td>
<td></td>
<td>Protect the Ecological Health of Wetlands and Floodplains</td>
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<tr>
<td>IS-6</td>
<td></td>
<td>Protect and Maintain Absorbent Landscapes</td>
<td>15% of absorbent landscape protected and maintained</td>
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<tr>
<td>IS-7</td>
<td></td>
<td>Utilize Pervious Pavements</td>
<td>25% of total pavement area utilizes pervious pavement</td>
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<tr>
<td>IS-8</td>
<td></td>
<td>Utilize Appropriate Vegetation</td>
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<tr>
<td>IS-9</td>
<td></td>
<td>Use Turfgrass Appropriately</td>
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<tr>
<td>IS-10</td>
<td></td>
<td>Amend and Reuse Existing Soils</td>
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<tr>
<td>IS-11</td>
<td></td>
<td>Balance Earthwork</td>
<td>25% less removal of material or less new material</td>
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<td>IS-12</td>
<td></td>
<td>Coordinate Utility Work</td>
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<td>IS-13</td>
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<td>Utilize Trenchless Technology</td>
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<td>IS-14</td>
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<td>Mitigate Heat Island Effect</td>
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<td>IS-15</td>
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<td>Minimize Light Pollution</td>
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<td>IS-16</td>
<td></td>
<td>Optimize Public Environments - Bicycles and Pedestrians</td>
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<td>IS-17</td>
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<td>Optimize Traffic Safety</td>
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<td>IS-18</td>
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<td>Optimize Roadway Alignment Selection</td>
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<td>IS-19</td>
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<td>Expand or Enhance Intermodal Connection</td>
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<td>IS-20</td>
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<td>Use Transportation System Management</td>
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<tr>
<td>IS-21</td>
<td></td>
<td>Use Transportation Technologies</td>
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#### WATER

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<th>POINTS ACHIEVED</th>
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<td>IW-1</td>
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<td>Implement Stormwater Best Management Practices</td>
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<tr>
<td>IW-2</td>
<td></td>
<td>Implement Retractor Neutrality</td>
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<tr>
<td>IW-3</td>
<td></td>
<td>Reduce Use of Potable Water for Irrigation</td>
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<td></td>
<td></td>
<td>Use harvested storm water for 50% of irrigation requirements</td>
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<td>IW-4</td>
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<td>Utilize End Use Metering - Water</td>
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#### ENERGY

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<tr>
<td>IE-1</td>
<td></td>
<td>Optimize Energy Performance</td>
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<tr>
<td></td>
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<td>10% reduction (2 points)</td>
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<td>20% reduction (4 points)</td>
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<td></td>
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<td>30% reduction (6 points)</td>
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<tr>
<td>IE-2</td>
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<td>Commissioning Electrical and Mechanical Systems</td>
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<td>RATING</td>
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<td>TOTAL POINTS ACHIEVABLE:</td>
<td>IE-3</td>
<td>IE-4</td>
<td>IE-5</td>
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<td>CERTIFIED</td>
<td>6 to 8</td>
<td>14</td>
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<tr>
<td>GOLD</td>
<td>9 to 10</td>
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<td>PLATINUM</td>
<td>11 to 14</td>
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<table>
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<tr>
<th>MATERIAL</th>
<th>IM-1 1 to 3</th>
<th>Use Recycled Materials</th>
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<tr>
<td></td>
<td>Specify one (1) type of material (1 point)</td>
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<tr>
<td></td>
<td>Specify five (5) types of materials (3 points)</td>
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<tr>
<td>IM-2 1</td>
<td>Use Local / Regional Materials</td>
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<tr>
<td>IM-3</td>
<td>Reuse Materials</td>
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</tr>
<tr>
<td>IM-4 1</td>
<td>Use Durable Materials</td>
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<tr>
<td>IM-5 1</td>
<td>Use Sustainably Harvested Wood</td>
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<tr>
<td>IM-6</td>
<td>Minimize Use of Toxic and / or Hazardous Materials</td>
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<tr>
<td>IM-7</td>
<td>Enhance Pavement Lifecycle</td>
<td></td>
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<tr>
<td>IM-8</td>
<td>Utilize Thin Surface Paving</td>
<td></td>
</tr>
<tr>
<td>IM-9</td>
<td>Utilize Warm Mix Asphalt Technology</td>
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<table>
<thead>
<tr>
<th>CONSTRUCTION</th>
<th>IC-1 2</th>
<th>Minimize Pollution from Construction Activity</th>
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<tbody>
<tr>
<td>IC-2 2</td>
<td>Protect Existing Natural Systems</td>
<td></td>
</tr>
<tr>
<td>IC-3</td>
<td>Utilize Transportation Management During Construction</td>
<td></td>
</tr>
<tr>
<td>IC-4 1</td>
<td>Utilize Green Construction Equipment</td>
<td></td>
</tr>
<tr>
<td>IC-5 1</td>
<td>Reduce Noise and Vibration During Construction</td>
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</tr>
<tr>
<td>IC-6 1 to 2</td>
<td>Implement Construction Waste Management</td>
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<tr>
<td></td>
<td>75% diversion - all required materials (1 point)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>75% diversion - all recommended materials (1 point)</td>
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<tr>
<td>IC-7</td>
<td>Implement Integrated Pest Management During Construction</td>
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<tr>
<th>O+M</th>
<th>IO-1</th>
<th>Implement Sustainable Landscape Maintenance</th>
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<tbody>
<tr>
<td>IO-2</td>
<td>Maintain Soil Quality</td>
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<table>
<thead>
<tr>
<th>RATING</th>
<th>POINTS ACHIEVED:</th>
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<tr>
<td>TOTAL POINTS ACHIEVED: 14</td>
<td>9</td>
<td>GOLD</td>
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**SUSTAINABLE INFRASTRUCTURE GUIDELINES**

**PROJECT CREDIT DOCUMENTATION FORM**

**GENERAL PROJECT INFORMATION**

| PROJECT NAME: | Enter project name here |
| FACILITY: | Enter facility here |
| LEA or RE: | Enter LEA or RE name here |
| PHONE: | Enter phone number here |
| EMAIL: | Enter email address here |
| PID #: | Enter PID number here |
| CONTRACT #: | Enter contract number here |
| DATE: | |

**INSTRUCTIONS**

For each credit, provide applicable documentation type (drawing #, specification # or narrative) as indicated in project manual. All documentation is required at the end of Stage 3 and/or 4 as indicated below.

**SITE SECTION**

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<thead>
<tr>
<th>Credit Number</th>
<th>Credit Title</th>
<th>Document-Stage</th>
<th>Contract Drawing Number</th>
<th>Reference Specification Number</th>
<th>Narrative Description</th>
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<tbody>
<tr>
<td>IS-1</td>
<td>UTILIZE AN INTEGRATED TEAM APPROACH</td>
<td>1, 2, &amp; 3</td>
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<tr>
<td>IS-2</td>
<td>PREPARE A SITE ASSESSMENT</td>
<td>1, 2, &amp; 3</td>
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<tr>
<td>IS-3</td>
<td>MAXIMIZE USE OF PREVIOUSLY DEVELOPED SITES</td>
<td>3</td>
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<tr>
<td>IS-4</td>
<td>MAXIMIZE USE OF KNOWN CONTAMINATED SITES</td>
<td>3, 4</td>
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<tr>
<td>IS-5</td>
<td>PROTECT ECOLOGICAL HEALTH OF WETLAND, FLOODPLAINS &amp; RIPARIAN BUFFERS</td>
<td>3</td>
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<tr>
<td>IS-6</td>
<td>PROTECT AND MAINTAIN ABSORBENT LANDSCAPES</td>
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<td>IS-7</td>
<td>UTILIZE PERVIOUS PAVEMENT</td>
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<td>IS-8</td>
<td>UTILIZE APPROPRIATE VEGETATION</td>
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<tr>
<td>IS-9</td>
<td>USE TURFGRASS APPROPRIATELY</td>
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<tr>
<td>IS-10</td>
<td>AMEND AND REUSE EXISTING SOILS</td>
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<td>IS-11</td>
<td>BALANCE EARTHWORK</td>
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<td>IS-12</td>
<td>COORDINATE UTILITY WORK</td>
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<td>IS-14</td>
<td>MITIGATE HEAT ISLAND EFFECT</td>
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<td>OPTIMIZE TRAFFIC SAFETY</td>
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<td><strong>WATER SECTION</strong></td>
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<tr>
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<td>IMPLEMENT STORMWATER BEST MANAGEMENT PRACTICES STRATEGIES</td>
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<td>PROVIDE ALTERNATIVE FUELING STATIONS</td>
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<td>USE RECYCLED MATERIALS</td>
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<td>IM-2</td>
<td>USE LOCAL / REGIONAL MATERIALS</td>
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<td>USE SUSTAINABLY HARVESTED WOOD</td>
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<td>IM-6</td>
<td>MINIMIZE USE OF TOXIC AND/OR HAZARDOUS MATERIALS</td>
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<td>UTILIZE THIN SURFACE PAVING</td>
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<td>IM-9</td>
<td>UTILIZE WARM-MIX ASPHALT TECHNOLOGY</td>
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<td>IC-1</td>
<td>MINIMIZE POLLUTION FROM CONSTRUCTION ACTIVITY</td>
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<td>PROTECT EXISTING NATURAL SYSTEMS</td>
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<td>IC-4</td>
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<td>IC-5</td>
<td>REDUCE NOISE AND VIBRATION ABATEMENT DURING CONSTRUCTION</td>
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<td>IO-2</td>
<td>MAINTAIN SOIL QUALITY</td>
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EXHIBIT C. COATING REFERENCE DOCUMENTS

<table>
<thead>
<tr>
<th>Document Title</th>
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<tbody>
<tr>
<td>Hempel Specification Sheets</td>
</tr>
<tr>
<td>Product Data - Hempadur Multi-Strength 45751/45753</td>
</tr>
<tr>
<td>Product Data - Hempasil Nexus 27302</td>
</tr>
<tr>
<td>Product Data - Hempasil X3 87500</td>
</tr>
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<td>Product Data - Hempathane HS 55610</td>
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**Other Acceptable Coating Manufacturers:**

<table>
<thead>
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<tr>
<td>Sherwin – Williams Specification Sheets</td>
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<tr>
<td>Product Data - Sherwin – Williams SEAGUARD 5000 HS Black &amp; Red</td>
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<tr>
<td>Product Data - Sherwin – Williams SEAGUARD ABLATIVE Antifouling Coating Red</td>
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<tr>
<td>Product Data - Sherwin – Williams SEAGUARD Void Coat LT</td>
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<tr>
<td>PPG Protective and Marine Coatings Specification Sheets</td>
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<tr>
<td>Product Data – Amercoat 235</td>
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<tr>
<td>Product Data – Amercoat 214 Antifouling Coating</td>
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<tr>
<td>Product Data – Amercoat 450 H</td>
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<tr>
<td>Product Data – Dimetcote 302 H</td>
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<tr>
<td>Product Data – Amercoat 237 M</td>
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Area:
Underwater Area

Surface preparation:
Oil and grease etc. to be removed by emulsion cleaning. Salts and other contamination to be removed by high pressure fresh water hosing. When the surface is dry abrasive blasting to minimum SSPC-SP 10 with a surface profile corresponding to RugoTest No. 3 BN 10, Keans-Tator Comparator, min. 3.0 G/S or ISO Comparator Rough Medium (G). Dust off residues.

<table>
<thead>
<tr>
<th>Product name (including quality number)</th>
<th>Treated area %</th>
<th>Colour</th>
<th>Shade no.</th>
<th>Film thickness (mil)</th>
<th>Theoretical spreading rate (sq.ft/US gal)</th>
<th>Application methods</th>
<th>Recommended Nozzle orifice</th>
<th>Recommended Nozzle pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEMPADUR MULTI-STRENGTH 45751</td>
<td>f/c 100</td>
<td>Red</td>
<td>50630</td>
<td>10</td>
<td>8</td>
<td>160.9</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>HEMPADUR MULTI-STRENGTH 45751</td>
<td>f/c 100</td>
<td>Grey</td>
<td>11480</td>
<td>10</td>
<td>8</td>
<td>160.9</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>HEMPASIL NEXUS 27302</td>
<td>f/c 100</td>
<td>Light red</td>
<td>55001</td>
<td>7</td>
<td>4</td>
<td>237.6</td>
<td>(X)</td>
<td>X</td>
</tr>
<tr>
<td>HEMPASIL X3 87500</td>
<td>f/c 100</td>
<td>Red</td>
<td>59151</td>
<td>7</td>
<td>5</td>
<td>228.1</td>
<td>(X)</td>
<td>X</td>
</tr>
</tbody>
</table>

 vu: touch up f/c: full coat s/c: stripe coat Total d.f.t. 25 X: Recommended (X): Possible

Recoating intervals, Adequate ventilation

<table>
<thead>
<tr>
<th>Quality no</th>
<th>D.F.T. (mil)</th>
<th>Rec. coated with quality no</th>
<th>104°F</th>
<th>86°F</th>
<th>68°F</th>
<th>50°F</th>
<th>32°F</th>
<th>14°F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>45751</td>
<td>24 Hrs</td>
<td>15 Day</td>
<td>6 Hrs</td>
<td>30 Day</td>
<td>15 Hrs</td>
<td>75 Day</td>
</tr>
<tr>
<td>45751</td>
<td>8</td>
<td>45751</td>
<td>110 Min</td>
<td>9 Day</td>
<td>3 Hrs</td>
<td>15 Day</td>
<td>6 Hrs</td>
<td>30 Day</td>
</tr>
<tr>
<td>45751</td>
<td>8</td>
<td>27302</td>
<td>2 Hrs</td>
<td>7 Hrs</td>
<td>4 Hrs</td>
<td>12 Hrs</td>
<td>8 Hrs</td>
<td>24 Hrs</td>
</tr>
<tr>
<td>27302</td>
<td>4</td>
<td>87500</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Remarks and Product information see next page.
Area:
Underwater Area

Remarks:
Normal good painting practice must be followed throughout the entire painting procedure.
HEMPASIL products contain silicone materials, which may contaminate other paint materials and surfaces. Any equipment used, e.g. brushes, rags or cans should either be disposed of or thoroughly cleaned after use. All efforts (including masking if necessary) should be made to ensure, that silicone contamination in the form of spray dust is kept to a minimum.

It is recommended that all other paint work is completed prior to application of HEMPASIL system and that special care is taken during both application and cleaning.

Note that the minimum application temperature for HEMPASIL is 50°F and if the temperature is below 59°F, then the temperature of the paint must be a minimum of 68°F, when applied.

All hoses used must be extremely clean and, if possible, should be either new or dedicated for silicone use. It is recommended that the same paint hoses are used for both HEMPEL NEXUS and HEMPASIL X3 87500, with thorough cleaning between the two operations.

All equipment that is not new must be cleaned using HEMPEL'S TOOL CLEANER 99610 by recirculation or immersion (stirrers) for several hours before use to remove all traces of paint and then rinsed with HEMPEL'S THINNER 08080 prior to use.

It is recommended that extra equipment is available and ready in the event of a failure of the equipment in use.

Any masking should be secured carefully; the topsides area and any other area not to be coated with HEMPASIL X3 87500 should be covered with plastic. This plastic should be properly secured using double width tape so that it does not fall or blow into any freshly applied paint. The masking must be checked and if necessary repaired prior to every application to make sure that it is secure.

All sharp edges or areas that are difficult to paint should receive a stripe coat prior to full coat application.

Application of HEMPASIL products are only permitted during daylight hours.

The specified high film thickness for HEMPASIL X3 87500 can best be obtained by airless spray application. If another application method is used more applications are necessary to achieve the specified dry film thickness. Use of an application method other than spray may affect the fouling release performance of the system.

A minimum of 24 hours should be allowed before undocking, irrespective of temperature (above 50°F). If the temperature falls below 50°F then 48 hours must be allowed before undocking.

1) Overcoating intervals between HEMPEL NEXUS 27302 and HEMPASIL X3 87500
   (in hours)

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>80-90% RH</td>
<td>3</td>
<td>12</td>
<td>4</td>
<td>18</td>
<td>6</td>
<td>24</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>60-80% RH</td>
<td>4</td>
<td>12</td>
<td>5</td>
<td>18</td>
<td>7</td>
<td>24</td>
<td>20</td>
<td>30</td>
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<td>40-60% RH</td>
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<td>12</td>
<td>6</td>
<td>18</td>
<td>9</td>
<td>24</td>
<td>22</td>
<td>30</td>
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</tbody>
</table>
# Specification sheet

**Hempel (USA) Inc.**

**Project:** CAR FLOAT SPECIFICATION Rev1

## Area:
**Underwater Area**

<table>
<thead>
<tr>
<th>Product information:</th>
<th>Shade no.</th>
<th>Volume solids %</th>
<th>Curing agent</th>
<th>Mixing ratio volume</th>
<th>Pot life 68°F</th>
<th>Dry to touch 68°F</th>
<th>Flash point °F</th>
<th>Thinner</th>
<th>Min. Temp. °F</th>
<th>Max. RH%</th>
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</thead>
<tbody>
<tr>
<td>HEMPADUR MULTI-STRENGTH 45751</td>
<td>50630</td>
<td>79</td>
<td>97652</td>
<td>3 : 1</td>
<td>1 h</td>
<td>7 h</td>
<td>81</td>
<td>08450</td>
<td>50</td>
<td>90</td>
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<tr>
<td>HEMPADUR MULTI-STRENGTH 45751</td>
<td>11460</td>
<td>79</td>
<td>97652</td>
<td>3 : 1</td>
<td>1 h</td>
<td>7 h</td>
<td>81</td>
<td>08450</td>
<td>50</td>
<td>90</td>
</tr>
<tr>
<td>HEMPASIL NEXUS 27302</td>
<td>55001</td>
<td>70</td>
<td>98100</td>
<td>14.8 : 4.2 : 1</td>
<td>1 h</td>
<td>2 h</td>
<td>86</td>
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<td>50</td>
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<tr>
<td>HEMPASIL X3 87500</td>
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<td>70</td>
<td>98950</td>
<td>17.8 : 2.2</td>
<td>2 h</td>
<td>3 h</td>
<td>82</td>
<td>08080</td>
<td>32</td>
<td>85</td>
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</tbody>
</table>

The data, specifications, directions and recommendations (hereinafter "Information") given in this painting specification are based upon test results obtained under controlled or specifically defined conditions and said Information is correct to the best of our knowledge. The User must satisfy itself that it is appropriate to use the Product in accordance with the Information in the actual conditions under which the Product is intended to be used, and the Manufacturer and Seller do not guarantee the accuracy, completeness or appropriateness of the Information when the Product is used in those conditions. The provisions regarding Hempel's liability in its applicable conditions for sale, delivery and service shall apply to any and all claims arising out of or in connection with the use of the products recommended above, overleaf or otherwise.
Specifications Sheet

Project: CAR FLOAT SPECIFICATION Rev1

Area:
Above Water Area

Surface preparation:
Oil and grease etc. to be removed by emulsion cleaning. Salts and other contamination to be removed by high pressure fresh water hosing. When the surface is dry abrasive blasting to minimum SSPC-SP 10 with a surface profile corresponding to Rugotest No. 3 BN 10, Keane-Tator Comparator, min. 3.0 G/S or ISO Comparator Rough Medium (G). Dust off residues.

<table>
<thead>
<tr>
<th>Product name (including quality number)</th>
<th>Treated area %</th>
<th>Colour</th>
<th>Shade no.</th>
<th>Film thickness (mil)</th>
<th>Theoretical spreading rate (sq.ft/US gal)</th>
<th>Application methods</th>
<th>Recommended Nozzle orifice</th>
<th>Nozzle pressure</th>
</tr>
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<tbody>
<tr>
<td>HEMPADUR MULTI-STRENGTH 45751</td>
<td>f/c 100</td>
<td>Red</td>
<td>50630</td>
<td>10</td>
<td>160.9</td>
<td>X</td>
<td>X</td>
<td>.021&quot;-.023&quot; 3625 p.s.i</td>
</tr>
<tr>
<td>HEMPADUR MULTI-STRENGTH 45751</td>
<td>f/c 100</td>
<td>Grey</td>
<td>11480</td>
<td>10</td>
<td>160.9</td>
<td>X</td>
<td>X</td>
<td>.021&quot;-.023&quot; 3625 p.s.i</td>
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<tr>
<td>HEMPATHANE HS 55610</td>
<td>f/c 100</td>
<td>To Be Advised</td>
<td>T.B.A</td>
<td>5</td>
<td>353.0</td>
<td>X</td>
<td>X</td>
<td>.017&quot;-.021&quot; 2538 p.s.i</td>
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Film thickness: Theoretical spreading rate.

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<th>Product name (including quality number)</th>
<th>Treated area %</th>
<th>Colour</th>
<th>Shade no.</th>
<th>Film thickness (mil)</th>
<th>Theoretical spreading rate (sq.ft/US gal)</th>
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<th>Nozzle pressure</th>
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<td>50630</td>
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<td>160.9</td>
<td>X</td>
<td>X</td>
<td>.021&quot;-.023&quot; 3625 p.s.i</td>
</tr>
<tr>
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<td>f/c 100</td>
<td>Grey</td>
<td>11480</td>
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<td>f/c 100</td>
<td>To Be Advised</td>
<td>T.B.A</td>
<td>5</td>
<td>353.0</td>
<td>X</td>
<td>X</td>
<td>.017&quot;-.021&quot; 2538 p.s.i</td>
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Film thickness: Theoretical spreading rate.

Recoating intervals. Ample ventilation

<table>
<thead>
<tr>
<th>Quality no</th>
<th>D.F.T.</th>
<th>Recoted with quality no</th>
<th>104°F Min.</th>
<th>104°F Max.</th>
<th>86°F Min.</th>
<th>86°F Max.</th>
<th>68°F Min.</th>
<th>68°F Max.</th>
<th>50°F Min.</th>
<th>50°F Max.</th>
<th>32°F Min.</th>
<th>32°F Max.</th>
<th>14°F Min.</th>
<th>14°F Max.</th>
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<tr>
<td>45751</td>
<td>8</td>
<td>45751</td>
<td>110 Min</td>
<td>9 Day</td>
<td>3 Hrs</td>
<td>15 Day</td>
<td>6 Hrs</td>
<td>30 Day</td>
<td>15 Hrs</td>
<td>75 Day</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
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<tr>
<td>45751</td>
<td>8</td>
<td>55610</td>
<td>95 Min</td>
<td>22 Hrs</td>
<td>3 Hrs</td>
<td>36 Hrs</td>
<td>5 Hrs</td>
<td>72 Hrs</td>
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<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
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</table>

Remarks and Product information see next page.
Area:
Above Water Area

Remarks:
Normal good painting practice must be followed throughout the entire painting procedure.

Consult the separate APPLICATION INSTRUCTIONS for HEMPADUR MULTI-STRENGTH 45751.

The surface must be completely clean and dry with a temperature 5°F above the dew point to avoid condensation.

The specified high film thickness can best be obtained by airless spray application. If another application method is used more applications are necessary to achieve the specified dry film thickness.

Stripe coating with brush before or after spray application of each coat is to be carried out on areas difficult to cover properly by spray as eg edges, corners, flanges, cutouts, handwelds and other rough surfaces.

Before recoating after exposure in contaminated environments, clean the surface thoroughly by (high pressure) fresh water hosing and allow to dry.

If the maximum recoating interval is exceeded, roughening of the surface is necessary to ensure intercoat adhesion.

<table>
<thead>
<tr>
<th>Product information:</th>
<th>Shade no</th>
<th>Volume solids %</th>
<th>Curing agent</th>
<th>Mixing ratio</th>
<th>Pot life</th>
<th>Dry to touch</th>
<th>Flash point</th>
<th>Thinner</th>
<th>Application restrictions</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ratio volume</td>
<td>68°F</td>
<td>68°F</td>
<td>°F</td>
<td>°F</td>
<td>Min. Temp. Max. RH%</td>
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<tr>
<td>HEMPADUR MULTI-STRENGTH 45751</td>
<td>50630</td>
<td>79</td>
<td>97652</td>
<td>3 : 1</td>
<td>1 h</td>
<td>7 h</td>
<td>81</td>
<td>08550</td>
<td>50 90</td>
</tr>
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<td>HEMPADUR MULTI-STRENGTH 45751</td>
<td>11480</td>
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<td>97652</td>
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<td>1 h</td>
<td>7 h</td>
<td>81</td>
<td>08550</td>
<td>50 90</td>
</tr>
<tr>
<td>HEMPATHANE HS 55610</td>
<td>T.B.A</td>
<td>65</td>
<td>97050</td>
<td>7 : 1</td>
<td>2 h</td>
<td>5 h</td>
<td>89</td>
<td>08860</td>
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</tbody>
</table>

The data, specifications, directions and recommendations (hereinafter “information”) given in this painting specification are based upon test results obtained under controlled or specifically defined conditions and said information is correct to the best of our knowledge. The User must satisfy itself that it is appropriate to use the Product in accordance with the information in the actual conditions under which the Product is intended to be used, and the Manufacturer and Seller do not guarantee the accuracy, completeness or appropriateness of the information when the Product is used in those conditions. The provisions regarding Hempel’s liability in its applicable conditions for sale, delivery and service shall apply to any and all claims arising out of or in connection with the use of the products recommended above, overtal or otherwise.
Area:
Main Deck

Surface preparation:
Oil and grease etc. to be removed by emulsion cleaning. Salts and other contamination to be removed by high pressure fresh water hosing. When the surface is dry abrasive blasting to minimum SSPC-SP 10 with a surface profile corresponding to Rugotest No. 3 BN 10, Keane-Tator Comparator, min. 3.0 G/S or ISO Comparator Tough Medium (G).

Dust off residues.

Product name (including quality number) 
HEMADUR MULTI-STRENGTH 45751 
HEMADUR MULTI-STRENGTH 45751 
HEMPATHANE HS 56810

<table>
<thead>
<tr>
<th>Product name</th>
<th>Treated area</th>
<th>Colour</th>
<th>Shade no. (mil)</th>
<th>Film thickness</th>
<th>Theoretical spreading rate (sq.ft/US gal)</th>
<th>Application methods</th>
<th>Recommended recoating intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEMADUR MULTI-STRENGTH 45751</td>
<td>100</td>
<td>Red</td>
<td>50630</td>
<td>10</td>
<td>8</td>
<td>160.9</td>
<td>X</td>
</tr>
<tr>
<td>HEMADUR MULTI-STRENGTH 45751</td>
<td>100</td>
<td>Grey</td>
<td>11480</td>
<td>10</td>
<td>8</td>
<td>160.9</td>
<td>X</td>
</tr>
<tr>
<td>HEMPATHANE HS 56810</td>
<td>100</td>
<td>To Be Advised</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Theoretical spreading rate for HEMPDUR MULTI-STRENGTH 45751:

- Wet: 160.9 sq.ft/US gal
- Dry: 160.9 sq.ft/US gal

Application methods:
- Roller
- Spray
- Brush

Recommended recoating intervals:
- Total d.f.t: 19
- X: Recommended
- (X): Possible

Recoating intervals, ample ventilation:

<table>
<thead>
<tr>
<th>Quality no</th>
<th>D.F.T.</th>
<th>Recoated with quality no</th>
<th>104°F Min.</th>
<th>Max.</th>
<th>86°F Min.</th>
<th>Max.</th>
<th>68°F Min.</th>
<th>Max.</th>
<th>50°F Min.</th>
<th>Max.</th>
<th>32°F Min.</th>
<th>Max.</th>
<th>14°F Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>45751</td>
<td>8</td>
<td>45751</td>
<td>110 Min</td>
<td>9 Day</td>
<td>3 Hrs</td>
<td>15 Day</td>
<td>6 Hrs</td>
<td>30 Day</td>
<td>15 Hrs</td>
<td>75 Day</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
</tr>
<tr>
<td>45751</td>
<td>8</td>
<td>55610</td>
<td>95 Min</td>
<td>22 Hrs</td>
<td>3 Hrs</td>
<td>36 Hrs</td>
<td>5 Hrs</td>
<td>72 Hrs</td>
<td>13 Hrs</td>
<td>7 1/2 Day</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
</tr>
</tbody>
</table>

Remarks and Product information see next page.
Area:
Main Deck

Remarks:
Normal good painting practice must be followed throughout the entire painting procedure.
Consult the separate APPLICATION INSTRUCTIONS for HEMPADUR MULTI-STRENGTH 45751.
The surface must be completely clean and dry with a temperature 5°F above the dew point to avoid condensation.
The specified high film thickness can best be obtained by airless spray application. If another application method is used more applications are necessary to achieve the specified dry film thickness.
Stripe coating with brush before or after spray application of each coat is to be carried out on areas difficult to cover properly by spray as eg edges, corners, flanges, cutouts, handwelds and other rough surfaces.
HEMPEL'S ANTI-SLINT 67500 should be sprinkled evenly on the surface immediately upon application of the penultimate coat of HEMPADUR MULTI-STRENGTH 45751 while the paint is still wet. Consumption approximately 5.5 lbs per 270 sq-ft. When the paint is dry, sweep up surplus grit and apply the final coat of HEMPATHANE HS 55610.

Before recoating after exposure in contaminated environments, clean the surface thoroughly by (high pressure) fresh water hosing and allow to dry.
If the maximum recoating interval is exceeded, roughening of the surface is necessary to ensure intercoat adhesion.

<table>
<thead>
<tr>
<th>Product information:</th>
<th>Shade no.</th>
<th>Curing agent</th>
<th>Mixing ratio</th>
<th>Pot life</th>
<th>Dry to touch</th>
<th>Flash point</th>
<th>Thinner</th>
<th>Application restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volume</td>
<td>solids %</td>
<td>volume</td>
<td>68°F</td>
<td>68°F</td>
<td>°F</td>
<td>°F</td>
<td>Min. Temp.</td>
</tr>
<tr>
<td>HEMPADUR MULTI-STRENGTH 45751</td>
<td>50630</td>
<td>79</td>
<td>97652</td>
<td>3 : 1</td>
<td>1 h</td>
<td>7 h</td>
<td>81</td>
<td>08450</td>
</tr>
<tr>
<td>HEMPADUR MULTI-STRENGTH 45751</td>
<td>11480</td>
<td>79</td>
<td>97652</td>
<td>3 : 1</td>
<td>1 h</td>
<td>7 h</td>
<td>81</td>
<td>08450</td>
</tr>
<tr>
<td>HEMPATHANE HS 55610</td>
<td>T.B.A</td>
<td>65</td>
<td>97050</td>
<td>7 : 1</td>
<td>2 h</td>
<td>5 h</td>
<td>88</td>
<td>08080</td>
</tr>
</tbody>
</table>

The data, specifications, directions and recommendations (hereinafter "Information") given in this painting specification are based upon test results obtained under controlled or specifically defined conditions and said Information is correct to the best of our knowledge. The User must satisfy itself that it is appropriate to use the Product in accordance with the Information in the actual conditions under which the Product is intended to be used, and the Manufacturer and Seller do not guarantee the accuracy, completeness or appropriateness of the Information when the Product is used in those conditions. The provisions regarding Hempel's liability in its applicable conditions for sale, delivery and service shall apply to any and all claims arising out of or in connection with the use of the products recommended above, overleaf or otherwise.

Hempe's ProSale System 2.6.17 (Build 865) User name: Arfan Caballero
Printed at: 12.09.2014 14:09 Department name: TSD
Created/Last modified: 12.09.2014 14:05 USACA0624L Page: 7
Quality Code: Environment: Severe
HEMPADUR MULTI-STRENGTH 45751/
HEMPADUR MULTI-STRENGTH 45753

Medium to high temperatures: 45751: BASE 45755 with CURING AGENT 97652
Low to medium temperatures: 45753: BASE 45755 with CURING AGENT 98750

Description:
HEMPADUR MULTI-STRENGTH 45751/45753 is a self-priming, two-component, high-build, epoxy-polyamide/amine paint which cures to an abrasion and corrosion resistant coating. Applicable by standard heavy duty airless spray equipment.

Recommended use:
As a heavy duty coating for areas exposed to abrasion and aggressive corrosive climate such as ramps, ship hulls and holds of bulk carriers.
As a ballast tank coating for special purposes such as chemical carriers carrying hot cargos and other purposes where “pure epoxy coating” is requested.
As a finishing coat where a cosmetic appearance is of less importance.
HEMPADUR MULTI-STRENGTH 45753 is intended for use in warm climates.

Service temperatures:
Dry exposure only: Maximum 140°C/284°F (See REMARKS overleaf)
Ballast water service: Resists normal ambient temperatures at sea*
Other water service: 50°C/122°F (no temperature gradient)
Other liquids: Contact HEMPEL

*Avoid long-term exposure to negative temperature gradients.

Certificates/Approvals:
Tested for non-contamination of grain cargo at the Newcastle Occupational Health, Great Britain. Approved by Lloyd's Register of Shipping as a recognized corrosion control coating. Approved as a ballast tank coating by Germanischer Lloyd, Germany.
HEMPADUR MULTI-STRENGTH 45753 has been classified S1 by DNV, Norway. Recognized by Lloyd's Register of Shipping as a low friction surface coating for ships navigating in first year ice conditions. Conforms with Norsok M-501, system no. 7.
HEMPADUR MULTI-STRENGTH 45753 has been tested by Teknologisk Institut AS, Norway, and approved for internal use in pipe lines for water power generation according to NS 5417.

Applications: Part of Group Assortment. Local availability subject to confirmation.

Physical constants:

<table>
<thead>
<tr>
<th>Product</th>
<th>45751</th>
<th>45753</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version; mixed product:</td>
<td>45751</td>
<td>45753</td>
</tr>
<tr>
<td>Colours/ Shade nos:</td>
<td>Grey/12340 - Red/50630</td>
<td>Grey/12340 - Red/50630</td>
</tr>
<tr>
<td>Finish:</td>
<td>Semi-gloss</td>
<td>Semi-gloss</td>
</tr>
<tr>
<td>Volume solids, %:</td>
<td>79 ± 1</td>
<td>79 ± 1</td>
</tr>
<tr>
<td>Theoretical spreading rate:</td>
<td>4.0 m²/litre - 200 micron</td>
<td>4.0 m²/litre - 200 micron</td>
</tr>
<tr>
<td>Flash point:</td>
<td>27°C/81°F</td>
<td>27°C/81°F</td>
</tr>
<tr>
<td>Specific gravity:</td>
<td>1.6 kg/litre - 13.4 lbs/US gallon</td>
<td>1.6 kg/litre - 13.4 lbs/US gallon</td>
</tr>
<tr>
<td>Dry to touch:</td>
<td>7 hours at 20°C/68°F</td>
<td>8-10 hours at 10°C/50°F</td>
</tr>
<tr>
<td>Fully cured:</td>
<td>7 days at 20°C/68°F</td>
<td>14 days at 10°C/50°F</td>
</tr>
<tr>
<td>V.O.C.:</td>
<td>260 g/litre - 2.2 lbs/US gallon</td>
<td>245 g/litre - 2.0 lbs/US gallon</td>
</tr>
</tbody>
</table>

Application details:

<table>
<thead>
<tr>
<th>Product</th>
<th>45751</th>
<th>45753</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixing ratio:</td>
<td>4:1 by volume</td>
<td>3 : 1 by volume</td>
</tr>
<tr>
<td>Application method:</td>
<td>Airless spray</td>
<td>Airless spray</td>
</tr>
<tr>
<td>Thinner (max. vol.):</td>
<td>06450 (5%) (See PRECEDING COAT overleaf and separate APPLICATION INSTRUCTIONS)</td>
<td>06450 (5%)</td>
</tr>
<tr>
<td>Pot life:</td>
<td>1 hour (20°C/68°F)</td>
<td>1 hour (20°C/68°F)</td>
</tr>
<tr>
<td>Nozzle orifice:</td>
<td>.021&quot;-.023&quot;</td>
<td>.021&quot;-.023&quot;</td>
</tr>
<tr>
<td>Nozzle pressure:</td>
<td>250 bar/3600 psi</td>
<td>250 bar/3600 psi</td>
</tr>
<tr>
<td>Cleaning of tools:</td>
<td>HEMPEL'S TOOL CLEANER 59910</td>
<td>HEMPEL'S TOOL CLEANER 59910</td>
</tr>
<tr>
<td>Indicated film thickness, dry:</td>
<td>200 micron/8 mils</td>
<td>200 micron/8 mils</td>
</tr>
<tr>
<td>Indicated film thickness, wet:</td>
<td>250 micron/10 mils</td>
<td>250 micron/10 mils</td>
</tr>
<tr>
<td>Recoat interval, min:</td>
<td>6 hours (20°C/68°F)</td>
<td>12 hours (10°C/50°F)</td>
</tr>
<tr>
<td>Recoat interval, max:</td>
<td>See REMARKS overleaf</td>
<td>See REMARKS overleaf</td>
</tr>
</tbody>
</table>

Safety:
Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Material Safety Data Sheets and follow all local or national safety regulations. Avoid inhalation, avoid contact with skin and eyes, and do not swallow. Take precautions against possible risks of fire or explosions as well as protection of the environment. Apply only in well ventilated areas.
HEMPADUR MULTI-STRENGTH 45751/45753

**SURFACE PREPARATION:**

New steel:
"Heavy duty use": Abrasive blasting to min. Sa 2½ with a surface profile corresponding to Rugotest No. 3, min. BN10, Keane-Tator Comparator 3.0 G/S, or ISO Comparator Rough Medium (G). Oil and grease must be removed with suitable detergent, salts and other contaminants by (high pressure) fresh water hosing prior to blasting. After blasting, clean the surface carefully from abrasive and dust.

Ballast tanks: For PSPC type approved coating, consult separate APPLICATION INSTRUCTIONS - BALLAST TANKS for HEMPADUR MULTI-STRENGTH 45753.

Stainless steel: (Ballast tanks in chemical carriers) to be abrasive blasted to a uniform, sharp, dense profile, ISO Comparator Medium (G), corresponding to Rz minimum 50 micron. Any salts, grease, oil, etc. to be removed before abrasive blasting is commenced.

**Repair and maintenance:** The actual purpose and conditions may make other types and degrees of surface preparation than the above described relevant. Reference is made to separate application instructions.

**APPLICATION CONDITIONS:**

Use only where application and curing can proceed at temperatures above -10°C/14°F for HEMPADUR MULTI-STRENGTH 45753 and above 10°C/50°F for HEMPADUR MULTI-STRENGTH 45751. The temperature of the paint itself should be above 15°C/59°F, preferably above 20°C/68°F for HEMPADUR MULTI-STRENGTH 45751, for proper application. Apply only on a dry and clean surface with a temperature above the dew point to avoid condensation. Relative humidity max. 90%. In confined spaces provide adequate ventilation during application and drying.

**PRECEDING COAT:**

None, but HEMPADUR 15590 can be used as a "blast primer" for HEMPADUR MULTI-STRENGTH 45751. HEMPADUR MULTI-STRENGTH 45753 can be used as a "blast primer" for HEMPADUR MULTI-STRENGTH 45753 when diluted 25-30% with HEMPEL'S THINNER 08450.

**SUBSEQUENT COAT:**

None, HEMPADUR or HEMPATHANE-paint as per specification, depending on area of use.

**REMARKS:**

- VOC - EU directive 2004/42/EC:

<table>
<thead>
<tr>
<th>45751</th>
<th>45753</th>
</tr>
</thead>
<tbody>
<tr>
<td>As supplied</td>
<td>5 vol. % thinning</td>
</tr>
<tr>
<td>260</td>
<td>250</td>
</tr>
<tr>
<td>As supplied</td>
<td>5 vol. % thinning</td>
</tr>
<tr>
<td>245</td>
<td>275</td>
</tr>
</tbody>
</table>

VOC:

For VOC of other shades, please refer to Safety Data Sheet.

The curing agent 98750 has a tendency to become darker at storage. This has no influence on performance, but may influence the shade of the mixed product.

Some certificates have been issued under the former quality numbers 45750 or 4575. HEMPADUR MULTI-STRENGTH 45751 is identical with the former 45750 except that mixing ratio and thixotropy properties have been adjusted to specific demands of application, for instance dual feed two component spray equipment and supply in 1000 litres paint containers.

The natural tendency of epoxy coatings to chalk in outdoor exposure and to become more sensitive to mechanical damage and chemical exposure at elevated temperatures is also reflected in this product.

Film thicknesses:

May be specified in another film thickness than indicated depending on purpose and area of use. This will alter spreading rate and may influence drying time and recoating interval. Normal range dry is 150-250 micron/6-10 mils. It is recommended to use heavy airless spray equipment with a pump transmission rate of 60:1 (approximately), and a theoretical output of min. 12 litres per minute.

Curing agent:

Curing agents 97652 and 98750 are hazy. This is intended and has no negative influence on the performance.

**Issued:** December 2007

Page 2 of 3 Product Data Sheet
HEMADUR MULTI-STRENGTH 45751/45753

Recoating: Recoating intervals related to later conditions of exposure:

<table>
<thead>
<tr>
<th>HEMADUR</th>
<th>Curing agent 97652</th>
<th>Curing agent 98750</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface temp.</td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>20°C/68°F</td>
<td>Atmospheric</td>
<td>Medium</td>
</tr>
<tr>
<td>10°C/50°F</td>
<td>Atmospheric</td>
<td>Medium</td>
</tr>
<tr>
<td>Recoated with</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEMADUR</td>
<td>4 hours</td>
<td>5 hours</td>
</tr>
<tr>
<td>HEMPARANE Topcoat</td>
<td>4 hours</td>
<td>5 hours</td>
</tr>
</tbody>
</table>

* and heavy wear - eg bulk cargo holds and fender areas. If such areas are to be topcoated with HEMPARANE, same max as for atmospheric/severe apply. The long maximum recoating interval for HEMADUR will be reduced if the coating is more than just scarcely exposed to direct sunshine before recoating. If the interval is exceeded, roughening of surface is necessary to ensure intercoat adhesion.

Thinning: Normally not to be diluted.

Note: HEMADUR MULTI-STRENGTH 45751/45753 is for professional use only.

ISSUED BY: HEMPEL A/S - 457512340C0007/4575312340C0005

This Product Data Sheet supersedes those previously issued. For explanations, definitions and scope, see “Explanatory Notes” in the HEMPEL Book.

Data, specifications, directions and recommendations given in this data sheet represent only test results or experience obtained under controlled or specially defined circumstances. Their accuracy, completeness or appropriateness under the actual conditions of any intended use of the Products therein must be determined exclusively by the Buyer and/or User. The Products are supplied and all technical assistance is given subject to HEMPEL’s GENERAL CONDITIONS OF SALES, DELIVERY AND SERVICE, unless otherwise expressly agreed in writing. The Manufacturer and Seller disclaim, and Buyer and/or User waive all claims involving, any liability, including but not limited to negligence, except as expressed in said GENERAL CONDITIONS for all results, injury or direct or consequential losses or damages arising from the use of the Products as recommended above, on the overleaf or otherwise.

Product data are subject to change without notice and become void five years from the date of issue.
HEMPASIL NEXUS 27302
FOULING RELEASE TIECOAT
BASE 27309 with CURING AGENT 98100 and ADDITIVE 99701

Description:
HEMPASIL NEXUS 27302 is a high solid three component silicone based product.

Recommended use:
As a tiecoat for the HEMPASIL FOULING RELEASE System, securing adhesion between the antifouling system and the Hempasill Fouling Release topcoat.

Availability:
Part of Group Assortment. Local availability subject to confirmation.

PHYSICAL CONSTANTS:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour/Shade nos:</td>
<td>Light red 55001</td>
</tr>
<tr>
<td>Finish:</td>
<td>Semi-gloss</td>
</tr>
<tr>
<td>Volume solids, %:</td>
<td>70 (see REMARKS overleaf)</td>
</tr>
<tr>
<td>Theoretical spreading rate:</td>
<td>6.8 m²/litre - 120 micron</td>
</tr>
<tr>
<td></td>
<td>234 sq.ft./US gallon - 4.8 mils</td>
</tr>
<tr>
<td>Flash point:</td>
<td>30°C/86°F</td>
</tr>
<tr>
<td>Specific gravity:</td>
<td>1.3 kg/litre - 10.8 lbs/US gallon</td>
</tr>
<tr>
<td>Dry to touch:</td>
<td>2 hours at 20°C/68°F</td>
</tr>
<tr>
<td>Fully cured:</td>
<td>7 days at 20°C/68°F</td>
</tr>
<tr>
<td>V.O.C.:</td>
<td>265 g/litre - 2.3 lbs/US gallon</td>
</tr>
<tr>
<td>Shelf life:</td>
<td>1 year (25°C/77°F) from time of production.</td>
</tr>
<tr>
<td></td>
<td>Depending on storage conditions, mechanical stirring may be necessary before usage.</td>
</tr>
<tr>
<td></td>
<td>If the shelf life is exceeded please contact HEMPEL for further advice.</td>
</tr>
</tbody>
</table>

The physical constants stated are nominal data according to the HEMPEL Group's approved formulas. They are subject to normal manufacturing tolerances and where stated, being standard deviation according to ISO 3534-1.

APPLICATION DETAILS:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixing ratio:</td>
<td>Shade 55001: Base 27309: Curing Agent 98100: Additive 99701 14.8 : 4.2 : 1 by volume (See REMARKS overleaf)</td>
</tr>
<tr>
<td>Application method:</td>
<td>Airless spray Brush/roller (touch-up) (see REMARKS overleaf)</td>
</tr>
<tr>
<td>Thinner:</td>
<td>No thinning (see REMARKS overleaf)</td>
</tr>
<tr>
<td>Nozzle orifice:</td>
<td>.019&quot;-.021&quot;</td>
</tr>
<tr>
<td>Nozzle pressure:</td>
<td>150 bar/2200 psi</td>
</tr>
<tr>
<td></td>
<td>(Airless spray data are indicative and subject to adjustment)</td>
</tr>
<tr>
<td>Cleaning of tools:</td>
<td>THINNER 08080 (see REMARKS overleaf)</td>
</tr>
<tr>
<td>&quot;Pot life&quot;:</td>
<td>1 hour (20°C/68°F) (see REMARKS overleaf)</td>
</tr>
<tr>
<td>Indicated film thickness, dry:</td>
<td>120 micron/4.8 mils</td>
</tr>
<tr>
<td>Indicated film thickness, wet:</td>
<td>1.76 micron/7 mils</td>
</tr>
<tr>
<td>Recoat interval, min:</td>
<td>6 hours (20°C/68°F) (see REMARKS overleaf)</td>
</tr>
<tr>
<td>Recoat interval, max:</td>
<td>24 hours (20°C/68°F)</td>
</tr>
</tbody>
</table>

Safety:
Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Material Safety Data Sheets and follow all local or national safety regulations. Avoid inhalation, avoid contact with skin and eyes, and do not swallow. Take precautions against possible risks of fire or explosions as well as protection of the environment. Apply only in well ventilated areas.
HEMPASIL NEXUS 27302

SURFACE PREPARATION: New construction: According to painting specification/product data sheet for the specified HEMPADUR system. Maintenance, old F/R systems: Possible spot repair with specified HEMPADUR system followed by spot application of HEMPADUR NEXUS 27302. In any of the above-mentioned cases, a detailed working specification is available upon request.

APPLICATION CONDITIONS: Use only where application can proceed at temperatures above 10°C/50°F. The temperature of the surface and that of the paint itself must also be above this limit. Apply only on a surface with a temperature above the dew point to avoid condensation. The surface should be clean and dry. In confined spaces provide adequate ventilation during application and drying.

PRECEDING COAT: HEMPADUR according to specification.

SUBSEQUENT COAT: HEMPASIL FOULING RELEASE COATING according to specification.

REMARKS: It is of the utmost importance that thorough protection and cleaning procedures are followed before and after application respectively. It is advisable to apply HEMPADUR system after all other exterior painting is complete. This is to avoid silicone contamination of other painted surfaces. Before application cover all surfaces surrounding the areas to be applied with plastic sheeting to avoid overspray. After application clean all equipment thoroughly, before re-using equipment. See below.

Volume solids: The stated value is the theoretical volume solids: solid content of the mixed product. Due to the chemical reaction in the mixture the practical volume solid will be approx. 5% lower than indicated.

Mixing: Add ADDITIVE 99701 to BASE 27309 while stirring, immediately after add CURING AGENT 98100 and mix.

"Pot life": The pot life is 1 hour at 20°C/68°F. No change in the paint's physical properties (e.g. viscosity increase) is apparent when this time is exceeded. It is important that the paint is no longer used as its adhesion properties to the preceding coat are dramatically reduced after that time.

Application method: A well executed spray application is necessary. This paint material has special application properties and it is recommended first to make a small-scale application to get familiar with the properties.

Thinning: Not recommended. In exceptional cases use THINNER 08080 (max 5 vol.%).

Recoating by itself: HEMPASIL NEXUS 27302 must be applied in one coat.

In case HEMPADUR NEXUS 27302 has to be recoated by itself, application must be wet.

Weather conditions: Please refer to application manual.

Cleaning of tools: Very thorough cleaning with THINNER 08080 is necessary. DISPOSE OF CLEANING SOLVENTS AFTER USE. DO NOT RE-USE SOLVENTS AFTER CLEANING.

Storage of cans: Must be stored under absolutely dry conditions, protect against seeping humidity.

Note: HEMPADUR NEXUS 27302 is for professional use only.

ISSUED BY: HEMPEL A/S • 273025001CR001

This Product Data Sheet supersedes those previously issued. For explanations, definitions and scope, see "Explanatory Notes" in the HEMPEL Book. Data, specifications, directions and recommendations given in this data sheet represent only test results or experience obtained under controlled or specially defined circumstances. Their accuracy, completeness or appropriateness under the actual conditions of any intended use of the Products herein must be determined exclusively by the Buyer and/or User. The Products are supplied and all technical assistance is given subject to HEMPEL's GENERAL CONDITIONS OF SALES, DELIVERY AND SERVICE, unless otherwise expressly agreed in writing. The Manufacturer and Seller disclaim, and Buyer and/or User waive all claims involving, any liability, including but not limited to negligence, except as expressed in said GENERAL CONDITIONS for all results, injury or direct or consequential losses or damages arising from the use of the Products as recommended above, on the overleaf or otherwise. Product data are subject to change without notice and become void five years from the date of issue.

Issued: July 2009   Page 2 of 2  Product Data Sheet
HEMPASIL X3 87500
BASE 87509 - HEMPASIL CROSSLINKER 98950
FOULING RELEASE COATING

Description:
HEMPASIL X3 is a third generation fouling release coating with high solids content.
The product is based on silicone, is biocide free and cures after addition of HEMPASIL CROSSLINKER 98950.
It provides a smooth, low surface energy repellent surface with unique fouling release properties. A hydro gel micro layer prevents fouling organisms firmly adhering while the silicone polymers facilitate self-cleaning. HEMPASIL X3 therefore possesses a high fuel saving potential. Under extended static conditions (idle periods) the coating may accumulate some fouling.

Recommended use:
For vessels with service speeds above 8 knots.

Availability:
Part of Group Assortment. Local availability subject to confirmation.

PHYSICAL CONSTANTS:

Colour/Shade nos.:
Red/59151, Blue/30170, Black/19990

Finish:
Glossy

Volume solids, %:
71.1

Theoretical spreading rate:
4.7 m²/litre - 150 micron 192 sq.ft./US galion - 6 mils

Flash point:
28°C/82°F

Specific gravity:
1.0 kg/litre - 8.3 lbs/US gallon

Dry to touch:
3 hours at 20°C/68°F

Fully cured:
7 days at 20°C/68°F

V.O.C.:
265 g/litre - 2.2 lbs/US gallon

Shelf life:
1½ years (25°C/77°F) from time of production. Depending on storage conditions, mechanical stirring may be necessary before usage.

If the shelf life is exceeded please contact HEMPEL for further advice.

The physical constants stated are nominal data according to the HEMPEL Group's approved formulas. They are subject to normal manufacturing tolerances and where stated, being standard deviation according to ISO 3534-1.

APPLICATION DETAILS:

Mixing ratio for 87500:
Base 87509 : CROSSLINKER 98950
17.8:2.2 by volume

Application method:
Airless spray
Brush (touch-up) (see REMARKS overleaf)

Thinier (max. vol.):
No thinning (see REMARKS overleaf)

Nozzle orifice:
.015"-.021"

Nozzle pressure:
150 bar/2200 psi

Cleaning of tools:
THINNER 08080

Pot life:
2 hours (20°C/68°F) after addition of HEMPASIL CROSSLINKER 98950, clear 00000

Indicated film thickness, dry:
150 micron/ 6 mils

Indicated film thickness, wet:
225 micron/ 9 mils

Recoat interval, min:
6 hours (20°C/68°F)

Safety:
Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Material Safety Data Sheets and follow all local or national safety regulations. Avoid inhalation, avoid contact with skin and eyes, and do not swallow. Take precautions against possible risks of fire or explosions as well as protection of the environment. Apply only in well ventilated areas.
HEMPASIL 87500

APPLICATION CONDITIONS:
Use only where application can proceed at temperatures above 10°C/50°F. The temperature of the surface and that of the paint itself must also be above this limit. Apply only on a surface with a temperature above the dew point to avoid condensation. Relative humidity of the air between min. 30% and max. 85%.
The surface should be clean and dry.
The special application properties do furthermore necessitate extra consideration as to possible windy weather. The on-site representative from Hempel is to be consulted.
In confined spaces provide adequate ventilation during application and drying.

PRECEDING COAT:
HEMPASIL NEXUS 27302 in light red 55001 or according to specification.

SUBSEQUENT COAT:
None.

REMARKS:
It is of the utmost importance that thorough protection and cleaning procedures are followed before and after application respectively. It is advisable to apply HEMPASIL SYSTEM after all other exterior painting is complete. This is to avoid silicone contamination of other painted surfaces. Before application cover all surfaces surrounding the areas to be applied with plastic sheeting to avoid overspray. After application clean all equipment very thoroughly. See below.

Application method:
A well executed spray application is necessary. This paint material has special application properties and it is recommended first to make a small-scale application to get familiar with the properties.

Thinning:
Not recommended. In exceptional cases use THINNER 08080 (max. 5 vol%).

Recommended number of coats:
One coat normally recommended.

Cleaning of tools:
Very thorough cleaning with THINNER 08080 is necessary.

Detailed Instructions:
Will be available in connection with separate painting specifications.

Undocking:
Minimum 24 hours (20°C/68°F). At temperatures below 15°C/59°F minimum 48 hours.

Storage of cans:
Must be stored under absolutely dry conditions, protect against seeping humidity.

Note:
HEMPASIL X3 87500 is for professional use only.

ISSUED BY:
HEMPEL A/S - 8750059151CR001

This Product Data Sheet supersedes those previously issued.
For explanations, definitions and scope, see "Explanatory Notes" in the HEMPEL Book.
Data, specifications, directions and recommendations given in this data sheet represent only test results or experience obtained under controlled or specially defined circumstances. Their accuracy, completeness or appropriateness under the actual conditions of any intended use of the Products herein must be determined exclusively by the Buyer and/or User.
The Products are supplied and all technical assistance is given subject to HEMPEL's GENERAL CONDITIONS OF SALES, DELIVERY AND SERVICE, unless otherwise expressly agreed in writing. The Manufacturer and Seller disclaim, and Buyer and/or User waive all claims involving, any liability, including but not limited to negligence, except as expressly in said GENERAL CONDITIONS for all results, injury or direct or consequential losses or damages arising from the use of the Products as recommended above, on the overleaf or otherwise.
Product data are subject to change without notice and become void five years from the date of issue.
HEMATHANE HS 55610
BASE 55619 with CURING AGENT 97050

Description: HEMPATHANE HS 55610 is a two-component polyurethane topcoat, cured with aliphatic isocyanate, with good gloss and colour retention. Contains zinc phosphate.

Recommended use: As a VOC-compliant, high-build finishing coat for protection of structural steel in corrosive environment.
May be specified as a one coat “Direct To Metal” system in environments classified as C2 and C3.

Service temperatures: Maximum, dry exposure only: 120°C/248°F (see REMARKS overleaf)

Availability: Part of Group Assortment. Local availability subject to confirmation.

PHYSICAL CONSTANTS:

Colours/Shade nos: White/10000*
Finish: Glossy
Volume solids, %: 65 ± 1
Theoretical spreading rate: 6.5 m²/litre - 100 micron
281 sq.ft./US gallon - 4 mils
Flash point: 31°C/88°F
Specific gravity: 1.4 kg/litre - 11.7 lbs/US gallon
Surface dry: 3 (approx.) hours at 20°C/68°F (ISO 1517)
Dry to touch: 5 (approx.) hours at 20°C/68°F
Fully cured: 7 days at 20°C/68°F
V.O.C.: 330 g/litre - 2.7 lbs/US gallon

*Wide range of colours available via Hempel's MULTI-TINT system.

The physical constants stated are nominal data according to the HEMPEL Group's approved formulas. They are subject to normal manufacturing tolerances and where stated, being standard deviation according to ISO 3534-1.

APPLICATION DETAILS:

Mixing ratio for 55610: Base 55619 : Curing agent 97050 7 : 1 by volume

Application method: Airless spray (see REMARKS overleaf) Brush (see REMARKS overleaf)

Thinner (max.vol.): 08080 (5%) 08080 (5%)

Pot life: 2 hours (20°C/68°F)

Nozzle orifice: .017"-.021"

Nozzle pressure: 175 bar/2540 psi

Cleaning of tools: THINNER 08080/08880

Indicated film thickness, dry: 100 micron/4 mils (see REMARKS overleaf)

Indicated film thickness, wet: 150 micron/6 mils

Recoat interval, min: 16 hours (20°C/68°F)
Recoat interval, max: None (see REMARKS overleaf)

Safety: Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Material Safety Data Sheets and follow all local or national safety regulations. Avoid inhalation, avoid contact with skin and eyes, and do not swallow. Take precautions against possible risks of fire or explosions as well as protection of the environment. Apply only in well ventilated areas.

HEMPEL
Product Data Sheet

Issued: September 2010  Page 1 of 2
HEMPATHANE HS 55610

SURFACE PREPARATION: For one coat, direct to metal as per relevant painting specification.

APPLICATION CONDITIONS: The surface must be completely clean and dry at the time of application, and its temperature must be above the dew point to avoid condensation. Minimum temperature for curing is -10°C/14°F.

At the freezing point and below, be aware of the risk of ice on the surface which will hinder the adhesion. High humidity and/or condensation during application and the following 24 hours (20°C/68°F) may adversely affect the film formation.

In confined spaces provide adequate ventilation during application and drying.

PRECEDING COAT: HEMPADUR FAST DRY 15560, HEMPADUR MASTIC 45880/45881 or according to specification.

SUBSEQUENT COAT: None.

REMARKS: At service temperatures above 100°C/212°F HEMPATHANE HS 55610 will become more soft. Furthermore, discoloration may occur.

Colours: Certain lead-free red and yellow colours may discolour when exposed to chlorine-containing atmosphere.

To obtain full opacity, an extra coat may be necessary, especially for certain lead-free colours in eg red, orange, yellow and green.

Stripe coating: When specified as a one coat “Direct to Metal”-system 100 micron/4 mils must be applied. In addition follow “Good Painting Practice” and apply stripe coating before the spray application on areas difficult to cover property by spray application.

Film thicknesses: May be specified in another film thickness than indicated depending on purpose and area of use. Normal range dry is minimum 50 micron/2 mils (diluted) and minimum 75 micron/3 mils (undiluted), maximum 125 micron/5 mils. This will alter spreading rate and may influence drying time and recoat interval.

Recoat Interval: Maximum recoating interval: A completely clean surface is mandatory to ensure intercoat adhesion, especially at long recoat intervals. Any dirt, oil, and grease have to be removed. e.g. with suitable detergent followed by (high pressure) fresh water cleaning. Salts to be removed by fresh water hosing.

To check an adequate quality of the surface cleaning a test patch is recommended before actual recoating.

Notes: CURING AGENT 97050 is sensitive to moisture. Store in a dry place and keep the can tightly closed until use. Open curing agent cans with caution as overpressure might exist. Even small traces of water in the mixed paint will reduce the pot life and result in film defects.

HEMPATHANE HS 55610 is for professional use only.

Issued: September 2010 Page 2 of 2 Product Data Sheet
## PRODUCT INFORMATION

### SEAGUARD® 5000 HS EPOXY

**Part A** N11B350 **Black**  **Part A** N11W350 **Off White**  
**Part A** N11R350 **Red**  **Part A** N11G350 **Green**  
**Part A** N11A350 **Buff**  **Part A** N11H350 **Gray**  
**Part B** N11V350 **HARDENER**

### PRODUCT DESCRIPTION

SEAGUARD 5000 HS EPOXY is a high performance and high solids, polyamine cured epoxy that is designed to be used as a part of an anticorrosive system for marine applications, or as a lining system for fuel, brine, ballast and non-potable water tanks.

- Complies with IMO Performance Standard for Protective Coatings SOLAS REGULATIONS II-1/3-2 and Xll/6.3
- Corrosion resistant
- Outstanding adhesion
- Qualified to MIL-PRF-24647 for underwater hull
- Qualified to MIL-PRF-23236 for ballast tanks and fuel tanks

### PRODUCT CHARACTERISTICS

**Finish:** Low Sheen  
**Color:** Black, Off White, Red Deck, Green, Gray, Buff  
**Volume Solids:** 73% ± 2% mixed  
**Weight Solids:** 79% ± 2% mixed  
**VOC (EPA Method 24):** <250 g/L; 2.08 lb/gal  
**Mix Ratio:** 1:1 by volume (2 components)

### Recommended Spreading Rate per coat:

<table>
<thead>
<tr>
<th>Wet mils (microns)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.0 (175)</td>
<td>10.0 (250)</td>
<td></td>
</tr>
<tr>
<td>5.0 (125)</td>
<td>7.0 (175)</td>
<td></td>
</tr>
<tr>
<td>Coverage sq ft/gal (m²/L)</td>
<td>167 (4.1)</td>
<td>234 (5.7)</td>
</tr>
<tr>
<td>Theoretical coverage sq ft/gal (m²/L) @ 1 mil (25 microns)</td>
<td>1168 (28.6)</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

### Drying Schedule @ 7.0 mils wet (175 microns):

- To touch: 8 hours  
- To recoat: minimum: 24 hours  
- To cure: 20 days

*Time weeks maximum for alkyd and urethane topcoats. If maximum recoat time is exceeded, abrades surface before recoating.

### Shelf Life:

36 months, unopened

### Flash Point (ADMIX):

110°F (43°C) PMCC

### REDUCER/CLEAN UP:

| Above 80°F (27°C): | R7K130 (all temperatures) |
| Below 80°F (27°C): | R7K100 |

### PERFORMANCE CHARACTERISTICS:

**Substrate:** Steel  
**Surface Preparation:** SSPC-SP10/NACE 2  
**System Tested:**  
2 cts. SeaGuard 5000 HS Epoxy @ 5.0 mils (125 microns) dft/ct

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Test Method</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent Resistance</td>
<td>ASTM D1308</td>
<td>Passed</td>
</tr>
</tbody>
</table>

Qualified to MIL-PRF-23236, Type VI, Class 5 and 7, Grade C  
Qualified to MIL-PRF-24647, Type I, Class 1 and 2, Grade A and B, Application 1 and 4  
Qualified to MIL-PRF-24647, Type II, Class 1, Grade B, Application 1, 2, 3 and 4

Tested by Det Norske Veritas (DNV). According to DNV Procedure, testing and classification of ballast tank coatings, REV-02. Tested to the DNV Procedure over a Zinc Shop Primer Steel.

Received Highest Obtainable rating B1

Epoxy coatings may darken or yellow following application and curing.

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continued on back


**SEAGUARD® 5000 HS EPOXY**

**PART A** N11B350 BLACK  
PART A N11R350 RED  
PART A N11H350 BUFF  
PART A N11W350 Off White  
PART A N11G350 Gray  
PART B N11Y350 Hardener

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**PRODUCT INFORMATION**

<table>
<thead>
<tr>
<th>RECOMMENDED SYSTEMS</th>
<th>Dry Film Thickness / ct.</th>
</tr>
</thead>
</table>
| Steel or Aluminum, immersion:  | 2 cts. SeaGuard 6000 HS Epoxy | 5.0-7.0 (125-175)  
| Steel or Aluminum, underwater hull:  | 2 cts. SeaGuard 6000 HS Epoxy | 5.0-7.0 (125-175)  
| Steel or Aluminum, atmospheric:  | 1-2 cts. Sherthane 2K | 2.0-4.0 (50-100)  
| or 1-2 cts. Polysiloxane XLE-80 HAPS Free | 5.0-7.0 (125-175)  
| or 1-2 cts. SeaGuard 1000 | 2.0-3.0 (50-75)  
| or 1-2 cts. Hi-Solids Polyurethane | 3.0-5.0 (75-125)  
| Galvanized, atmospheric:  | 1 cts. SeaGuard 6000 HS Epoxy | 4.0-7.0 (100-175)  
| or 1-2 cts. Sherthane 2K | 2.0-4.0 (50-100)  
| or 1-2 cts. Polysiloxane XLE-80 HAPS Free | 5.0-7.0 (125-175)  
| or 1-2 cts. SeaGuard 1000 | 2.0-3.0 (50-75)  
| or 1-2 cts. Hi-Solids Polyurethane | 3.0-5.0 (75-125)  

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**SURFACE PREPARATION**

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

**Minimum recommended surface preparation:**
- **Immersion:** Iron & Steel / Aluminum  
  SSPC-SP10/NACE 2.0 mil (50 microns) profile or  
  SSPC-SP12/NACE No. 5 - WJ-2M /  
  SC-2 with existing surface profile
- **Atmospheric:** Iron & Steel / Aluminum  
  minimum: Preferred  
  SSPC-SP23, SSPC-SP3  
  (50 microns) profile or  
  SSPC-SP17/NACE No. 5 - WJ-3M /  
  SC-2 with existing surface profile
- **Galvanizing:**  
  SSPC-SP1

**Surface Preparation Standards**

- **Part A**
  - **Condition of Surface**
    - SS-25/50:Sa2 Sa2 SP-6
    - SS-35/100:Sa3 Sa3 SSPC-SP7
    - SS-45/150:Sa4 Sa4 SSPC-SP10
  - **Preferred Surface Profile**
    - 2.5
  - **Preferred Temperature**
    - 35°F (1.7°C) minimum, 110°F (43°C) maximum (air, surface, and material)
  - **Relative Humidity**
    - At least 6°F (2.8°C) above dew point
  - **Relative Humidity**
    - 95% maximum

Refer to product Application Bulletin for detailed application information.

**TINTING**

Do not tint.

**APPLICATION CONDITIONS**

- **Temperature:** 35°F (1.7°C) minimum, 110°F (43°C) maximum (air, surface, and material)
- **Relative Humidity:** At least 6°F (2.8°C) above dew point
- **Relative Humidity:** 95% maximum

Refer to product Application Bulletin for detailed application information.

**ORDERING INFORMATION**

- **Packaging:**
  - **Part A:** 1 gallon (3.78L) and 5 gallon (18.9L) containers
  - **Part B:** 1 gallon (3.78L) and 5 gallon (18.9L) containers

**Weight:**
- **Part A:** 12.73 ± 0.2 lb/gal; 1.5 Kg/L
- **Part B:** 11.43 ± 0.2 lb/gal; 1.4 Kg/L
- **Mixed:** 12.08 ± 0.2 lb/gal; 1.45 Kg/L

**SAFETY PRECAUTIONS**

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

**WARRANTY**

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS. EXPRESSED OR IMPLIED, STATUTORY, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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**DISCLAIMER**

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

www.sherwin-williams.com/protective
APPLICATION BULLETIN

APPLICATION CONDITIONS

- Temperature: 35°F (1.7°C) minimum, 110°F (43°C) maximum (air, surface, and material) At least 5°F (2.8°C) above dew point
- Relative humidity: 85% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Reducer/Clean Up ..........Reducer #130, R7K130

Airless Spray
- Pressure ...................... 2400 psi
- Hose ......................... 1/4" ID
- Tip .............................. 0.17" - 0.31"
- Filter ......................... 60 mesh
- Reduction ................. As needed, up to 5% by volume

Brush
Brush ......................... Natural Bristle
Reduction .................. Not recommended

Roller
Cover .......................... 3/8" - 1/2" woven with solvent resistant core
Reduction .................. Not recommended

If specific application equipment is not listed above, equivalent equipment may be substituted.

Surface Preparation Standards

<table>
<thead>
<tr>
<th>Surface Condition</th>
<th>ISO 8501-1</th>
<th>Swedish Std. 1989</th>
<th>SSPC</th>
<th>NACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Metal</td>
<td>Sa3</td>
<td>Sa 3</td>
<td>SP1</td>
<td>1</td>
</tr>
<tr>
<td>Near White Metal</td>
<td>削3.5</td>
<td>Sa 3.5</td>
<td>SP10</td>
<td>2</td>
</tr>
<tr>
<td>Commercial Blast</td>
<td>Sa3</td>
<td>Sa 3</td>
<td>SP1</td>
<td>1</td>
</tr>
<tr>
<td>Blast-Off Blast</td>
<td>Sa4</td>
<td>Sa 4</td>
<td>SP1</td>
<td>1</td>
</tr>
<tr>
<td>Hand Tool Cleaning</td>
<td>Rusted</td>
<td>G02</td>
<td>SP1</td>
<td>1</td>
</tr>
<tr>
<td>Painted &amp; Rustad</td>
<td>Rusted</td>
<td>G02</td>
<td>SP1</td>
<td>1</td>
</tr>
<tr>
<td>Power Tool Cleaning</td>
<td>Rusted</td>
<td>G02</td>
<td>SP1</td>
<td>1</td>
</tr>
</tbody>
</table>
Protective & Marine Coatings

APPLICATION PROCEDURES
Surface preparation must be completed as indicated.
Mix contents of each component thoroughly with low speed power agitation. Make certain no pigment remains on the bottom of the cans. Then combine one part by volume of Part A with one part by volume of Part B. Thoroughly agitate the mixture with power agitation. Allow the material to sweat-in as indicated. Re-stir before using.

If reducer solvent is used, add only after both components have been thoroughly mixed, after sweat-in.

Apply paint at the recommended film thickness and spreading rate as indicated below:

**Recommended Spreading Rate per coat:**

<table>
<thead>
<tr>
<th>Wet mils (microns)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.0 (175)</td>
<td>10.0 (250)</td>
<td></td>
</tr>
<tr>
<td>Dry mils (microns)</td>
<td>5.0 (125)</td>
<td></td>
</tr>
<tr>
<td>-Coverage sq ft/gal (m²/L)</td>
<td>167 (4.1)</td>
<td>234 (5.7)</td>
</tr>
<tr>
<td>Theoretical coverage sq ft/gal (m²/L) @ 1 mil (25 microns)</td>
<td>1168 (28.6)</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

**Drying Schedule @ 7.0 mils wet (175 microns):**

<table>
<thead>
<tr>
<th>@ 35°F/1.7°C</th>
<th>50°F/10°C</th>
<th>77°F/25°C</th>
<th>110°F/43°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>To touch:</td>
<td>8 hours</td>
<td>5 hours</td>
<td>4 hours</td>
</tr>
<tr>
<td>To recoat:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>minimum:</td>
<td>24 hours</td>
<td>12 hours</td>
<td>6 hours</td>
</tr>
<tr>
<td>maximum*:</td>
<td>90 days</td>
<td>90 days</td>
<td>90 days</td>
</tr>
<tr>
<td>To cure:</td>
<td>20 days</td>
<td>14 days</td>
<td>7 days</td>
</tr>
</tbody>
</table>

*Two weeks maximum for alkyd and urethane topcoats.

If maximum recoat time is exceeded, abrade surface before recoating.

Drying time is temperature, humidity, and film thickness dependent.

Pot Life: 8 hours
Sweat-In-Time: None

Application of the anticorrosive coating shall occur while the epoxy is tacky. Refer to the Application Bulletin for the definition of "Tacky".

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

**CLEAN UP INSTRUCTIONS**

Clean spills and splatters immediately with Reducer #130, R7K130. Clean tools immediately after use with Reducer #130, R7K130. Follow manufacturer's safety recommendations when using any solvent.

**PERFORMANCE TIPS**

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, sagging, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

Excessive film build, poor ventilation, and cool temperatures may cause solvent entrapment and premature coating failure.

For Immersion Service: (if required) Holiday test in accordance with ASTM D5162 for steel, or ASTM D4787 for concrete.

Do not apply the material beyond recommended pot life.

Do not mix previously catalyzed material with new.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer #130, R7K130.

Material must be at least 50°F/10°C prior to catalyzing.

Application of the anticorrosive coating shall occur when the last coat of epoxy anticorrosive is still tacky. If the epoxy is hard, apply a tack coat of epoxy anticorrosive at 1-2 mils (25-50 microns) WFT over previously painted surfaces. "Tacky" is defined as that curing (drying) stage when a fingertip pressed lightly against the film leaves only a slight impression and none of the film sticks to the finger.

Application of solvent based alkyd coating, such as MIL-PRF-24635, shall be applied when the epoxy is "dry to the touch, but not fully cured." (For example prior to 7 days @ 77°F/25°C).

Refer to Product Information sheet for additional performance characteristics and properties.

**SAFETY PRECAUTIONS**

Refer to the MSDS sheet before use.
Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

**WARRANTY**

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANDABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

www.sherwin-williams.com/protective
PRODUCT INFORMATION

SEAGUARD® ABLATIVE ANTIFOULING COATING

P30RQ10 ................. Red
P30BQ12 ............... Black
P30LQ13 ................. Blue

PRODUCT DESCRIPTION

SEAGUARD ABLATIVE ANTIFOULING COATING is an advanced antifouling coating based on a polyamide polymer containing cuprous oxide. Recommended for the underwater surfaces of steel vessels operating in all coastal and oceanic waters. This product maintains an effective, bio-active surface during its entire life.

- Long Life
- Brush, roll, or spray application
- A tin-free ablative coating
- Complies with the requirements of MIL-PRF-24647

PRODUCT CHARACTERISTICS

Finish: Flat
Color: Red, Black, and Blue
Volume Solids: 65% ± 2%
VOC (EPA Method 24): <400 g/L; 3.33 lb/gal, maximum

Recommended Spreading Rate per coat:

<table>
<thead>
<tr>
<th>Wet mils (microns)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0 (100)</td>
<td>7.0 (175)</td>
<td></td>
</tr>
<tr>
<td>Dry mils (microns)</td>
<td>2.5 (63)</td>
<td>4.0 (100)</td>
</tr>
<tr>
<td>Coverage sq ft/gal (m²/L)</td>
<td>280 (6.4)</td>
<td>430 (10.5)</td>
</tr>
<tr>
<td>Theoretical coverage sq ft/gal (m²/L) @ 1 mil / 25 microns</td>
<td>1040 (25.5)</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 3.0 mils wet (75 microns):

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>30°F/1°C</td>
<td>32 hrs</td>
<td>16 hrs</td>
</tr>
<tr>
<td>50°F/10°C</td>
<td>18 hrs</td>
<td>4 hrs</td>
</tr>
<tr>
<td>70°F/21°C</td>
<td>4 hrs</td>
<td>2 hrs</td>
</tr>
<tr>
<td>85°F/29°C</td>
<td>4 hrs</td>
<td>2 hrs</td>
</tr>
<tr>
<td>100°F/38°C</td>
<td>4 hrs</td>
<td>2 hrs</td>
</tr>
</tbody>
</table>

50% RH

To recoat:
- minimum: 32 hrs
- maximum: 16 hrs

Undocking:
- minimum: 48 hrs
- maximum: 24 hrs

No maximum recoat time; however, any contamination must be removed by high pressure washing prior to applying the next coat.

*Undocking:
- Minimum: depends on the number of coats applied, film thickness, and temperature.
- Maximum: depends on the exposure conditions. Refer to Performance Tips section for details.

Shelf Life: 24 months, unopened

Store indoors at 40°F (4.5°C) to 100°F (38°C)

Flash Point: 72°F (22°C), SETA Flash

Reducer/Clean Up: VM&P Naphtha, R1K3

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SEAGUARD® ABLATIVE ANTIFOULING COATING

P30RQ10 ............... Red
P30BQ12 ................ Black
P30LQ13 .................. Blue

Product Information

Recommended Systems

<table>
<thead>
<tr>
<th>Dry Film Thickness / ct.</th>
<th>Miles</th>
<th>Microns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 cts. SeaGuard 5000 HS</td>
<td>4.0-7.0</td>
<td>(100-175)</td>
</tr>
<tr>
<td>1-3 cts. SeaGuard Ablative Antifouling</td>
<td>2.5-4.0</td>
<td>(63-100)</td>
</tr>
<tr>
<td>NOTE: Number of coats is dependent on specification, existing hull conditions, and intended service life.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Steel:

2 cts. SeaGuard Underwater Hull HS Epoxy
5.0-7.0 (125-175)

2 cts. SeaGuard Ablative Antifouling
2.5-4.0 (63-100)

NOTE: Number of coats is dependent on specification and intended service life.

Steel, keel to bottom of boottop:

1 ct. SeaGuard Underwater Hull HS Epoxy, red
5.0-7.0 (125-175)

1 ct. SeaGuard Underwater Hull HS Epoxy, gray
5.0-7.0 (125-175)

1 ct. SeaGuard Ablative Antifouling, red
2.5-4.0 (63-100)

1 ct. SeaGuard Ablative Antifouling, Lt Red
2.5-4.0 (63-100)

1 ct. SeaGuard Ablative Antifouling, red
2.5-4.0 (63-100)

Previously Painted:

1-3 cts. SeaGuard Ablative Antifouling
2.5-4.0 (63-100)

NOTE: Number of coats is dependent on specification, existing hull conditions, and intended service life.

Surface Preparation

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Minimum recommended surface preparation:

Iron & Steel, bare: SSPC-SP10/NACE 2
(For antifouling primer coat)

Previously Painted: Clean, dry, sound

Tinting

Do not tint.

Application Conditions

- Maximum application temperature is 120°F (49°C)
- Surface temperature must be at least 5°F (2.8°C) above the dew point
- No surface ice, moisture, or condensation may be allowed on the surface during application

Ordering Information

Packaging: 5 gallon (18.9L) containers

Weight: 18.5 ± lbs/gal; 2.22 Kg/L

Safety Precautions

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

Warranty

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accordance with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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## Application Bulletin

### Surface Preparations

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

**Iron & Steel, bare**

Minimum surface preparation is Near White Blast Cleaning per SSPC-SP6/NACE 3. Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Remove all weld spatter and round all sharp edges. Prime any bare steel within 8 hours or before flash rusting occurs, with the appropriate anticorrosive primer. See recommended systems or contact your Sherwin-Williams Marine Representative.

Previously Painted Antifouling Surfaces

Remove possible oil, grease, etc. with suitable detergent. Rinse using high pressure, fresh water cleaning, which will also remove any weak, outer layer of leached antifouling. Allow the surface to dry before overcoating. Whether or not to use a sealer coat over an existing antifouling depends on the type and condition of the existing antifouling.

### Application Conditions

- Maximum application temperature is 120°F (49°C)
- Surface temperature must be at least 5°F (2.8°C) above the dew point
- No surface ice, moisture, or condensation may be allowed on the surface during application

### Application Equipment

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

**Reducer/Clean-Up**

- **Airless Spray**
  - Pressure: 3800 psi
  - Hose: 3/8" ID
  - Tip: .023" - .027"
  - Filter: 100 mesh
  - Reduction: as needed up to 5% by volume

- **Brush**
  - Brush: Natural Bristle
  - Reduction: as needed up to 5% by volume

- **Roller**
  - Cover: 3/8" woven with solvent resistant core
  - Reduction: as needed up to 5% by volume

If specific application equipment is not listed above, equivalent equipment may be substituted.

### Surface Preparation Standards

<table>
<thead>
<tr>
<th>Condition of Surface</th>
<th>ISO 8501-1</th>
<th>Swedish Std.</th>
<th>SSPC</th>
<th>NACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Metal</td>
<td>B3.5</td>
<td>Sa 3</td>
<td>SP 2</td>
<td>1</td>
</tr>
<tr>
<td>Near White Metal</td>
<td>B2.5</td>
<td>Sa 2.5</td>
<td>SP 5</td>
<td>2</td>
</tr>
<tr>
<td>Commercial Blast</td>
<td>B2</td>
<td>Sa 2</td>
<td>SP 10</td>
<td>3</td>
</tr>
<tr>
<td>Brush-Off Blast</td>
<td>B1</td>
<td>Sa 1</td>
<td>SP 6</td>
<td>4</td>
</tr>
<tr>
<td>Hand Tool Cleaning</td>
<td>Rusted</td>
<td>Rusted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Tool Cleaning</td>
<td>Rusted</td>
<td>Rusted</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[continued on back]
Mixing Instructions: Mix paint thoroughly with low speed power agitation prior to use. Make sure there is no settling on the bottom of the can.

Apply paint at the recommended film thickness and spreading rate as indicated below:

<table>
<thead>
<tr>
<th>Spreading Rate per Coat</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet mls (microns)</td>
<td>4.0 (100)</td>
<td>7.0 (175)</td>
</tr>
<tr>
<td>Dry mls (microns)</td>
<td>2.5 (63)</td>
<td>4.0 (100)</td>
</tr>
<tr>
<td>Coverage sq ft/gal</td>
<td>250 (6.4)</td>
<td>430 (10.5)</td>
</tr>
<tr>
<td>Theoretical coverage sq ft/gal</td>
<td>1040 (25.5)</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 5.0 mils wet (125 microns):

- 30°F/1°C: 32 hrs
- 50°F/10°C: 16 hrs
- 70°F/21°C: 8 hrs
- 85°F/29°C: 4 hrs
- 100°F/38°C: 2 hrs

50% RH

To recoat:
- Minimum: 32 hrs
- Maximum: 72 hrs

Undocking:
- Minimum: 48 hrs
- Maximum: 72 hrs

No maximum recoat time; however, any contamination must be removed by high pressure washing prior to applying the next coat.

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with VM&P Naphtha, R1K3. Clean tools immediately after use with VM&P Naphtha, R1K3. Follow manufacturer's safety recommendations when using any solvent.

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Contact your Sherwin-Williams representative to obtain the most recent Product Data Sheet and Application Bulletin.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

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WARRANTY

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SEAGUARD VOID COAT LT
WATER BASED BARGE COATING
LOW TEMPERATURE VERSION
P31A15

PRODUCT INFORMATION

PRODUCT DESCRIPTION
SEAGUARD VOID COAT LT is a premium grade, single component, water based coating containing no HAPS and very low VOC. This coating is a modified version of the Seaguard Void Coat. The coating has been modified for application in low temperature conditions. This coating is intended for application to buoyancy and bilge tanks in fresh and salt water barges/vessels. Because the coating contains antibacterial components it should not be used to line tanks that will be utilized for potable water.

PRODUCT CHARACTERISTICS

<table>
<thead>
<tr>
<th>Finish:</th>
<th>Semi-Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>Gray</td>
</tr>
<tr>
<td>Volume Solids:</td>
<td>65%</td>
</tr>
<tr>
<td>Weight Solids:</td>
<td>72%</td>
</tr>
<tr>
<td>VOC (less water):</td>
<td>0.5 lb/gal</td>
</tr>
</tbody>
</table>

Theoretical Coverage @ 5 mils dry:
208 sq. feet per gallon (100% transfer efficiency)

Drying Schedule @ 10.0 mils wet @ 50% RH:
@ 20°F
To touch: 2 hours
To cure: 24 hours
Drying time is temperature, humidity, and film thickness dependent.

Shelf Life: 12 months
Flash Point: 110°F
Reducer/Clean up: No reduction required. Clean up with water.

RECOMMENDED USES

- Highly resistant to tobacco juicing
- Can be applied in cold winter temperatures
- Extreme corrosion protection
- HAPS free
- High film build capability
- Suitable for severe atmospheric corrosion protection
- Little or no pretreatment required
- Resistant to high pressure steam cleaning
- Effective in Fresh and Salt Water Barges/Vessels
- Well filtered before packaging with the consequence that an entire barge can be coated without once stopping to unclog the spray tip

PERFORMANCE CHARACTERISTICS

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Test Method</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosion Resistance</td>
<td>ASTM B117</td>
<td>Passes (336 hours)</td>
</tr>
<tr>
<td>Direct Impact Resistance</td>
<td>ASTM D2794</td>
<td>160 in. lbs.</td>
</tr>
<tr>
<td>High Temperature Resistance</td>
<td></td>
<td>Dry film will not flow</td>
</tr>
<tr>
<td>Reverse Impact Resistance</td>
<td>ASTM D2794</td>
<td>20 in. lbs.</td>
</tr>
<tr>
<td>Salt Water Immersion</td>
<td>ASTM D870-97</td>
<td>Passes (336 hours)</td>
</tr>
<tr>
<td>Tobacco Juicing</td>
<td></td>
<td>Staining of film applied to wet steel in 95% humidity Pass</td>
</tr>
</tbody>
</table>

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PRODUCT INFORMATION

RECOMMENDED SYSTEMS

| Steel, alkyd primer: | 1 ct. Seaguard Void Coat LT | 5.0-10.0 |

(Airless spray application is recommended using 30:1 ratio or greater with .017 - .037 tip.)

SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

This product is thixotropic similar to ketchup, mixing may be required to provide optimum flow characteristics. If the product has been exposed to extremely cold temperatures, mixing may be necessary to restore product to a flowable liquid. Mixing is recommended prior to use.

TINTING

Tinting not recommended.

APPLICATION CONDITIONS

Temperature: air and surface: 20°F minimum, 120°F maximum (heater and dehumidifier are often utilized)

Relative humidity: At least 5°F above dew point

ORDERING INFORMATION

Packaging: 5, 55, and 330 gallon containers

Weight per gallon: 10.4 ± 0.2 lb

SAFETY PRECAUTIONS

- Refer to the MSDS sheet before use.
- Protect from freezing
- Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

FOR INDUSTRIAL USE ONLY

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

www.sherwin-williams.com/protective
ACROLON™ 218 HS
ACRYLIC POLYURETHANE

PRODUCT INFORMATION

PART A B65-600 GLOSS SERIES
PART A B65-650 SEMI-GLOSS SERIES
PART B B65V600 HARDENER

PROPERTIES OF USES

Specifically formulated for in-shop applications.
For use over prepared metal and masonry surfaces in industrial environments such as:
- Structural steel • Tank exteriors
- Rail cars and locomotives • Pipelines
- Conveyors • Ships
- Bridges
- Wind towers - onshore and offshore
- Offshore platforms - exploration and production
- Suitable for use in USDA inspected facilities
- Conforms to AWWA D102 Outside Coating Systems #4 (OCS-4), #5 (OCS-5) & #6 (OCS-6)
- Acceptable for use in high performance architectural applications
- Acceptable for use over Stampede 1 and Stampede 1F Cahing
- A component of INFINITANK
- Over FIRETEX hydrocarbon systems
- Suitable for use in the Mining & Minerals Industry

PERFORMANCE CHARACTERISTICS

Substrate: Steel
Surface Preparation: SSPC-SP10/NACE 2
System Tested: 1 ct. Macropoxy 646 @ 6.0 mils (160 microns) dft
1 ct. Acrolon 218 HS Gloss @ 4.0 mils (100 microns) dft
*unless otherwise noted below

Test Name Test Method Results
Abrasion ASTM D4060, CS17 wheel, 1000 cycles, 1 lb load 43 mg loss
Adhesion ASTM D4541 129 psf
Corrosion ASTM D5894, 27 cycles, 9072 hours Rating 10 per ASTM D610, for rusting; Rating 10 per ASTM D714, for blistering
Direct Impact ASTM D2794 50 in. lb.
Dry Heat Resistance ASTM D2485, Method A 200°F (93°C)
Flexibility ASTM D522, 180° bend, 1/8 in mandrel Passes
Humidity Resistance ASTM D4565, 100°F (38°C), 1500 hours Rating 10 per ASTM D610, for rusting; Rating 10 per ASTM D714, for blistering
Pencil Hardness ASTM D3363 3H
Salt Fog Resistance ASTM B117, 15,000 hours Rating 10 per ASTM D610, for rusting; Rating 10 per ASTM D714, for blistering

Meets the requirements of SSPC Paint No. 36, Level 3 for white and light colors. Dark colors may require a clear coat.
Complies with ISO 12544-5 C5I and C5M requirements.

Footnotes:
1 Finish coat only tested
2 Primer Zino-Clad II Plus
Intermediate Macropoxy 646
Finish Acrolon 218 HS
3 Primer Zino-Clad III HS

Revised: September 5, 2014

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**ACROLON™ 218 HS ACRYLIC POLYURETHANE**

**PRODUCT INFORMATION**

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Gloss Series</th>
<th>Semi-Gloss Series</th>
<th>Hardener</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B65-600</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>B65-650</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>B65V600</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**RECOMMENDED SYSTEMS**

<table>
<thead>
<tr>
<th>Steel</th>
<th>Dry Film Thickness / ct.</th>
<th>Mils</th>
<th>Microns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ct. Macroxy 646</td>
<td>5.0-10.0</td>
<td>125-250</td>
<td></td>
</tr>
<tr>
<td>1-2 cts. Acrolon 218 HS Polyurethane</td>
<td>3.0-6.0</td>
<td>75-150</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Steel</th>
<th>Dry Film Thickness / ct.</th>
<th>Mils</th>
<th>Microns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ct. Zinc Clad II Plus</td>
<td>3.0-5.0</td>
<td>75-125</td>
<td></td>
</tr>
<tr>
<td>1 ct. Macroxy 646</td>
<td>5.0-10.0</td>
<td>125-250</td>
<td></td>
</tr>
<tr>
<td>1-2 cts. Acrolon 218 HS Polyurethane</td>
<td>3.0-5.0</td>
<td>75-150</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Steel</th>
<th>Dry Film Thickness / ct.</th>
<th>Mils</th>
<th>Microns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ct. Zinc Clad IV</td>
<td>3.0-5.0</td>
<td>75-125</td>
<td></td>
</tr>
<tr>
<td>1-2 cts. Acrolon 218 HS Polyurethane</td>
<td>3.0-6.0</td>
<td>75-150</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Steel</th>
<th>Dry Film Thickness / ct.</th>
<th>Mils</th>
<th>Microns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ct. Epoxy Mastic Aluminum II</td>
<td>3.0-5.0</td>
<td>75-150</td>
<td></td>
</tr>
<tr>
<td>1-2 cts. Acrolon 218 HS Polyurethane</td>
<td>3.0-6.0</td>
<td>75-150</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Steel</th>
<th>Dry Film Thickness / ct.</th>
<th>Mils</th>
<th>Microns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ct. Recoatable Epoxy Primer</td>
<td>4.0-6.0</td>
<td>100-150</td>
<td></td>
</tr>
<tr>
<td>1-2 cts. Acrolon 218 HS Polyurethane</td>
<td>3.0-6.0</td>
<td>75-150</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concrete/Masonry</th>
<th>Dry Film Thickness / ct.</th>
<th>Mils</th>
<th>Microns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ct. Kem CatI-Coat HS Epoxy Filler/Sealer</td>
<td>10.0-20.0</td>
<td>250-500</td>
<td></td>
</tr>
<tr>
<td>1-2 cts. Acrolon 218 HS Polyurethane</td>
<td>3.0-6.0</td>
<td>75-150</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aluminum/Galvanizing</th>
<th>Dry Film Thickness / ct.</th>
<th>Mils</th>
<th>Microns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ct. DTM Wash Primer</td>
<td>0.7-1.3</td>
<td>18-32</td>
<td></td>
</tr>
<tr>
<td>1-2 cts. Acrolon 218 HS Polyurethane</td>
<td>3.0-6.0</td>
<td>75-150</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ISO 12944 C5M System:</th>
<th>Dry Film Thickness / ct.</th>
<th>Mils</th>
<th>Microns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ct. Zinc Clad III HS</td>
<td>3.0-5.0</td>
<td>75-125</td>
<td></td>
</tr>
<tr>
<td>1 ct. Tower Guard Epoxy</td>
<td>5.0-11.5</td>
<td>125-287.5</td>
<td></td>
</tr>
<tr>
<td>1 ct. Acrolon 218 HS Polyurethane</td>
<td>3.0-6.0</td>
<td>75-150</td>
<td></td>
</tr>
</tbody>
</table>

**SURFACE PREPARATION**

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:
- **Iron & Steel:** SSPC-SP6/NACE 3, 1-2 mil (25-50 micron) profile
- **Galvanizing:** SSPC-SP1
- **Concrete & Masonry:** SSPC-SP13/NACE 5, or ICRI No. 310.2R, CSP 1-3

**Semi-Gloss Series**

<table>
<thead>
<tr>
<th>Surface</th>
<th>Condition of ISO 8501-1 Swedish Std.</th>
<th>Finish Coat for FIRETEX Hydrocarbon Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel</td>
<td>Steel: SSPC-SP6/NACE 3, 1-2 mil</td>
<td>Mixed, may vary with color</td>
</tr>
<tr>
<td></td>
<td>Galvanizing: SSPC-SP1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Concrete &amp; Masonry: SSPC-SP13/NACE 5, or ICRI No. 310.2R, CSP 1-3</td>
<td></td>
</tr>
</tbody>
</table>

**Tinting**

Tint Part A with Maxitoner Colorants.
- Extra white tints at 100% tint strength
- Ultradeep base tints at 150% tint strength

Five minutes minimum mixing on a mechanical shaker is required for complete mixing of color.

**APPLICATION CONDITIONS**

- Temperature: 35°F (1.7°C) minimum, 120°F (49°C) maximum (air and surface)
- Humidity: 40°F (4.5°C) minimum, 120°F (49°C) maximum (material)
- Relative humidity: 60% maximum

Refer to product Application Bulletin for detailed application information.

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Packaging</th>
<th>1 gallon (3.78L)</th>
<th>5 gallon (18.9L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part A</td>
<td>.66 gal (2.5L)</td>
<td>4.29 gal (16.2L)</td>
</tr>
<tr>
<td>Part B</td>
<td>14 gal (53.3L)</td>
<td>.71 gal (2.7L)</td>
</tr>
</tbody>
</table>

**SAFETY PRECAUTIONS**

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

**WARRANTY**

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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PROTECTIVE & MARINE COATINGS

APPLICATION BULLETIN

Surface Preparations

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Commercial Blast Cleaning per SSPC-SP6/NACE 3. For better performance, use Near White Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (1-2 mils / 25-50 microns). Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Galvanized Steel
Allow to weather a minimum of six months prior to coating. Solvent Clean per SSPC-SP1. When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-S7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned or before flash rusting occurs. Primer required.

Concrete and Masonry
For surface preparation, refer to SSPC-SP13/NACE 8, or ICRI No. 310.2R, CSP 1-3. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days at 75°F (24°C). Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement and hardeners. Fill bug holes, air pockets and other voids with Steel-Beam FT910. Primer required.

Follow the standard methods listed below when applicable:
ASTM D4258 Standard Practice for Cleaning Concrete.
ASTM D4259 Standard Practice for Ablading Concrete.
ASTM D4260 Standard Practice for Etching Concrete.
ASTM F1669 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete.
SSPC-SP 13/NACE 6 Surface Preparation of Concrete.
ICRI No. 310.2R Concrete Surface Preparation.

Surface Preparation Standards

<table>
<thead>
<tr>
<th>Surface Treatment</th>
<th>ISO-SB001-A1</th>
<th>SIS255903</th>
<th>SSPC</th>
<th>NACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Metal</td>
<td>Sa 3</td>
<td>Sa 3</td>
<td>SSPC 3</td>
<td>NACE 1</td>
</tr>
<tr>
<td>Near White Metal</td>
<td>Sa 2</td>
<td>Sa 2.5</td>
<td>SSPC 3</td>
<td>NACE 3</td>
</tr>
<tr>
<td>Commercial Blast</td>
<td>Sa 2</td>
<td>Sa 2.5</td>
<td>SSPC 3</td>
<td>NACE 4</td>
</tr>
<tr>
<td>Hand Tool Cleaning</td>
<td>Sa 1</td>
<td>Sa 3</td>
<td>SSPC 7</td>
<td>NACE 4</td>
</tr>
<tr>
<td>Power Tool Cleaning</td>
<td>Sa 1</td>
<td>Sa 2</td>
<td>SSPC 8</td>
<td>NACE 4</td>
</tr>
<tr>
<td>Pitted &amp; Rusted</td>
<td>Sa 1.2</td>
<td>Sa 2.5</td>
<td>SSPC 8</td>
<td>NACE 4</td>
</tr>
<tr>
<td>Rusted</td>
<td>Sa 1.2</td>
<td>Sa 2.5</td>
<td>SSPC 8</td>
<td>NACE 4</td>
</tr>
</tbody>
</table>

APPLICATION CONDITIONS

Temperature: 35°F (1.7°C) minimum, 120°F (49°C) maximum (air and surface)
40°F (4.5°C) minimum, 120°F (49°C) maximum (material)
At least 5°F (2.8°C) above dew point

Relative humidity: 85% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Reducer/Clean Up:
Spray: Reducer R7K15, MEK R6K10, or R7K111
Brush/Roll: Reducer #132, R7K132, or R7K111

If reducer is used, reduce at time of catalyzer.

Airless Spray
Pressure: 2500 - 2800 psi
Hose: 3/8" ID
Tip: .013" - .017"
Filter: 60 mesh
Reduction: As needed up to 10% by volume with R7K15 or R7K111, or up to 9% with MEK, R6K10

Conventional Spray
Gun: Binks 95
Cap: 63P
Atomization Pressure: 50 - 70 psi
Fluid Pressure: 20 - 25 psi
Reduction: As needed up to 10% by volume with R7K15 or R7K111, or up to 9% with MEK, R6K10

Brush
Brush: Natural Bristle
Reduction: As needed up to 10% by volume

Roller
Cover: 3/8" woven with solvent resistant core
Reduction: As needed up to 10% by volume

If specific application equipment is not listed above, equivalent equipment may be substituted.

* Note: Reducing more than maximum recommended level will result in VOC exceeding 340g/L

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ACROLOM™ 218 HS
ACRYLIC POLYURETHANE

PART A: B65-600 GLOSS SERIES
PART A: B65-650 SEMI-GLOSS SERIES
PART B: B65V600 HARDENER

APPLICATION BULLETIN

APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Mix contents of each component thoroughly with power agitation. Make certain no pigment remains on the bottom of the can. Then combine six parts of Part A with one part by volume of Part B (premeasured components). Thoroughly agitate the mixture with power agitation. Re-stir before using.

If reducer is used, add only after both components have been thoroughly mixed.

Apply at the recommended film thickness and spreading rate as indicated below:

<table>
<thead>
<tr>
<th>Recommended Spreading Rate per coat:</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet mils (microns)</td>
<td>4.5 (112.5)</td>
<td>9.0 (225)</td>
</tr>
<tr>
<td>Dry mils (microns)</td>
<td>3.0 (75)</td>
<td>6.0 (150)</td>
</tr>
<tr>
<td>Coverage sq ft/gal (m²/L)</td>
<td>175 (4.3)</td>
<td>346 (8.5)</td>
</tr>
<tr>
<td>Theoretical coverage sq ft/gal (m²/L) @ 1 mil/25 microns dry</td>
<td>1040 (25.5)</td>
<td></td>
</tr>
</tbody>
</table>

NOTES: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 6.0 mils wet (150 microns):

<table>
<thead>
<tr>
<th>Temperature</th>
<th>To touch</th>
<th>To handle</th>
<th>To recoat:</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ 35°F/1.7°C</td>
<td>4 hours</td>
<td>18 hours</td>
<td>minimum: 18 hours</td>
</tr>
<tr>
<td>@ 77°F/25°C</td>
<td>30 minutes</td>
<td>6 hours</td>
<td>maximum: 3 months</td>
</tr>
<tr>
<td>@ 120°F/49°C</td>
<td>20 minutes</td>
<td>4 hours</td>
<td></td>
</tr>
</tbody>
</table>

NOTES: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Paint temperature must be at least 40°F (4.5°C) minimum.

Apply coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer #132, R7K132. Clean tools immediately after use with Reducer #132, R7K132. Follow manufacturer's safety recommendations when using any solvent.

Performance Tips:

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

Do not apply the material beyond recommended pot life.

Do not mix previously catalyzed material with new.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer #15, R7K15 or MEK, R8K10.

Mixed coating is sensitive to water. Use water traps in application.

Quick-Thane Urethane Accelerator is acceptable for use. See data page 5.97 for details.

E-Z Roll Urethane Defoamer is acceptable for use. See data page 5.99 for details.

Refer to Product Information sheet for additional performance characteristics and properties.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

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WARRANTY

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Amercoat 235
Multi Purpose Epoxy Coating

Product Data/
Application Instructions

- Salt and fresh water resistant
- High performance, self priming multi-purpose epoxy
- Can be applied over mechanically cleaned steel and suitably prepared concrete
- Adheres to most types of existing coating systems
- Cures even below 0°C
- If required Amercoat 235 can be overcoated with a wide range of topcoats
- Fast dry, can be recoated after 4 hours

Typical Uses
Specially formulated as a high performance coating for marine and industrial facilities, ballast tanks, bilges, wet voids and draining pipes, above and below water hulls. On steel and concrete structures in industrial facilities, bridges, tank exteriors, containers, oil tanks, piping, roofs and other areas subject to moisture, high humidity, marine weathering and other exposure. Amercoat 235 has good resistance to splash, spillage and fumes of acids, alkalies, solvents, fresh and salt water

Approvals and Certificates
Classified by Maritime, as class B1 for use in ballast water tanks. Approved by Lloyd's Register as a ballast tank coating. Passes the requirements for ballast tanks to MIL-P-23236B (SM), type I and IV Class 2. USDA approval for incidental food contact. Approved by Canada Health and Welfare for railcars, dry food and fish holds (all white and buff only). Meets the requirements of STG guideline 2220 regarding compatibility with cathodic protection.

Outstanding Characteristics
Amercoat 235 can be used as a high performance maintenance coating with excellent adhesion to a wide range of existing coatings. For corroded areas, Amercoat 235 can be applied to mechanically cleaned surfaces. Adhesion is excellent to a wide variety of substrates, including concrete, aluminium and galvanized surfaces. Amercoat 235 has excellent application characteristics. It can be applied by conventional and airless spray equipment, brush or roller.

Physical Data

<table>
<thead>
<tr>
<th>Finish</th>
<th>semi-gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colours</td>
<td>limited number of colours *</td>
</tr>
<tr>
<td>Components</td>
<td>2</td>
</tr>
<tr>
<td>Mixing ratio (by volume)</td>
<td>resin 4 parts, cure 1 part</td>
</tr>
<tr>
<td>Curing mechanism</td>
<td>solvent release and chemical reaction between components</td>
</tr>
<tr>
<td>Volume solids</td>
<td>66% (ISO 3233)</td>
</tr>
<tr>
<td>VOC**</td>
<td>EC 505 1999/13/EC 228 mg/l (301 g/l), UK 166/2429(02) Appendix 3 252 g/l (2.4 lb/gal)</td>
</tr>
<tr>
<td>Dry film thickness</td>
<td>100 - 200 μm per coat</td>
</tr>
<tr>
<td>Number of coats</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Calculated coverage</td>
<td>6.8 m²/l at 100 µm</td>
</tr>
<tr>
<td></td>
<td>3.4 m²/l at 200 µm</td>
</tr>
</tbody>
</table>

Allow for application losses, surface irregularities, etc.

Specific gravity approx. 1.2 kg/l depending on colour (mixed product)

Flash points (Closed Cup) resin 28°C/82°F, cure 41°C/106°F, Thinner 21-06 24°C/75°F

Chemical Resistance: environment suitability of Amercoat 235

<table>
<thead>
<tr>
<th>Substance</th>
<th>Splash and spillage</th>
<th>Fumes and weathering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acidic</td>
<td>Fair</td>
<td>Good</td>
</tr>
<tr>
<td>Alkaline</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
<tr>
<td>Solvents</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
<tr>
<td>Salt solutions</td>
<td>Good</td>
<td>Very Good</td>
</tr>
<tr>
<td>Acidic neutral</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
<tr>
<td>Alkaline neutral</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
<tr>
<td>Water</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

This chart is only a guide to show typical resistance of Amercoat 235. Contact your PPG representative for your specific requirements.

*Surface deterioration may occur on exposure to outside weathering, UV light, elevated temperatures or chemicals; however, product performance is not affected.

** VOC figures are quoted according to both the EC directive 1999/13/EC which are theoretically calculated figures and the UK FG823(02) Appendix 3 which are practically determined figures.

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Page 1 of 4 Revision date: 09-28-2009
Amercoat 235

Topcoating
If a further topcoat is required a wide range of different types is available. Contact your PPG representative for specific recommendations.

Application Data Summary
For complete information on procedures, equipment and safety precautions, see application instructions. Like all high performance coatings, Amercoat 235 must be applied as recommended to obtain the maximum protection for which this coating is formulated. SURFACE PREPARATION - Abusive blasting, or mechanical cleaning, depending on conditions. Existing coatings must be sound adhering and properly cleaned before applying Amercoat 235 as a maintenance topcoat. EQUIPMENT - Standard industrial spray equipment, either airless or conventional, brush or roller. When applied by brush or roller additional coats may be required to reach specified dry film thickness.

Surface Preparation
Coating performance in general, is proportional to the degree of surface preparation. Abrasive blasting is usually the most effective and economical method. For circumstances where this is impossible or impractical, Amercoat 235 can be applied over mechanically cleaned surfaces.

STEEL, NON-IMMERSION - Amercoat 235 can be applied over mechanically cleaned surfaces. Remove water, salt, dirt, oil, loose rust and all rust scale. It is recommended to treat all surfaces with Amercoat 88 cleaner followed by high pressure water wash. Power tool clean in accordance with St 3 or SSPC SP-3 or hand tool clean in accordance with St 2 or SSPC SP-2. Water blasting is also acceptable. If possible, abrasive blasting to St 3/SSPC SP-3 is preferred. Amercoat 235 can be applied over damp structures, but condensation on top of the wet coating must be avoided.

STEEL, IMMERSION - Remove water, salt, dirt, oil, loose rust and all rust scale. It is recommended to treat all surfaces with Amercoat 88 cleaner followed by high pressure water wash. Blast to achieve Sa 2½ or SSPC SP-10. If blasting is impossible or impractical, surface preparation by power tool cleaning St 3 / SSPC SP-3 or high pressure water blast cleaning to D VIS WJ 3L is acceptable.

CONCRETE - Surfaces must be cured, clean, dry and free of non adherent coatings and disintegrated or chalky materials. EXISTING COATINGS - Amercoat 235 may be used over most types of properly cleaned, tightly adhering coatings. In case existing coating system is unknown or based on conventional binders a test patch is recommended.

Application Equipment
The following equipment is listed as a partial guide and suitable equipment from other manufacturers may be used. Adjustments of pressure and change of tip size may be needed to achieve the proper spray characteristics.

AIRLESS SPRAY - Standard airless spray equipment, such as Graco Bulldog Hydra or larger with a 0.53 mm (0.021 inch) fluid tip or larger.

CONVENTIONAL SPRAY - Industrial equipment such as De Vilbiss MBC or JGA or Binks 16 or 62 spray gun. Air pressure and fluid pressure in the main air supply line, a pressure material pot with mechanical agitator and separate regulators for air and fluid pressure are recommended.

MIXER - Use power mixer powered by an air motor or explosion proof electric motor.

BRUSH OR ROLLER - Use clean, short bristled brush or medium nap roller. Application by brush or roller will require at least 2 coats to achieve 125 µm dry film thickness.

Application Data
Substrate ........................................ steel, concrete or tightly adhering existing coatings

Application methods ................................ by airless or conventional spray, brush or roller

Environmental conditions
Air temperature .................................. -18 to 60°C 0 to 122°F
Surface temperature .............................. -18 to 60°C 0 to 140°F

The surface temperature must be at least 3°C/5°F above the dew point to prevent moisture condensation.

Potlife (at 20°C/68°F) ............................. 5 hours

Induction time (at 20°C/68°F) .................. 15 minutes

Drying Times (at 125 µm dft, °C/°F) 10/50 20/68 30/66

dry through (hours) ......................... 12 10 7

cured fully (days) ............................... 7 6 5

dry to recoat (hours) ......................... 6 4 3

Maximum recoat time with epoxies is 4 weeks and with Amercoat 450S it is one week.

Maximum recoating/topcoating times are dependent on temperature, degree of weathering, type of topcoat and service conditions of the complete coating system. Consult your PPG representative for specific recommendations. Drying times are dependent on temperature, ventilation and film thickness.

Thinner/cleaner .................................. Thinner 21-06

* Brush or roller application may require additional costs.
Amercoat 235

Application Procedure
Amercoat 235 is packaged in two components in the proper proportions which must be mixed together before use.

1. Flush equipment with recommended cleaner before use.
2. Stir both resin and cure to an even consistency with a power mixer.
3. Add cure to resin and continue stiring for 5 minutes. Note: since the pot-life is limited and shortened by high temperatures, do not mix more material than will be used within pot-life (5 hours at 20°C/68°F).
4. For conventional spray, thin only as needed for workability with no more than 10% by volume of recommended thinner. Thinning is normally not needed for airless spray.
5. Stir during application to maintain uniformity of material. Apply a wet coat in even parallel passes. Overlap each pass 50% to avoid bare areas, pinholes or holidays. Give special attention to corners, welds, rough areas, edges.
6. Normal recommended dry film thickness per coat is 100 to 200 µm. Maximum dry film thickness per coat should not exceed 250 µm per coat.
7. The application of a wet film thickness of 150 to 300 µm will normally provide 100 to 200 µm of dry film. When applied by brush or roller two or more coats will be necessary to achieve recommended dry film thickness.
8. Check thickness of dry coating with a non destructive dry film thickness gauge such as Mikrotest or Elcometer. If less than specified thickness, apply additional material as needed.
9. Small damaged or bare areas and random pinholes or holidays can be touched up by brush. Clean all equipment with recommended cleaner immediately after use or at least at the end of each working day or shift. When left in spray equipment, Amercoat 235 will cure and cause clogging.

Shipping Data
Packaging
resin ........................................ 16 l in 20 l can
cure ........................................ 4 l in 5 l can

Shipping weight
resin ........................................ approx. 21 kg
cure ........................................ approx. 5 kg

Shelf life
1 year from shipment date when stored indoors in unopened, original containers at 5 to 40°C (41 – 104°F)
Amercoat 235

Safety
Since improper use and handling can be hazardous to health and cause of fire or explosion, safety precautions included with Product Data/Application Instruction and Material Safety Data Sheet must be observed during all storage, handling, use and drying periods.

Warranty
PPG warrants its products to be free from defects in material and workmanship. PPG's sole obligations and Buyer's exclusive remedy in connection with the products shall be limited, at PPG's option, to either replacement of products not conforming this warranty or credit to Buyer's account in the invoiced amount of the non-conforming products. Any claim under this warranty must be made by Buyer to PPG in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the delivery date, whichever is earlier. Buyer's failure to notify PPG of such non-conformance as required herein shall bar Buyer from recovery under this warranty.

PPG makes no other warranties concerning the product. No other warranties, whether express, implied or statutory, such as warranties of merchantability or fitness particular purpose, shall apply. In no event shall PPG be liable for consequential or incidental damages.

Any recommendations or suggestion relating to the use of the products made by PPG, whether in its technical literature, or response to specific enquiry, or otherwise, is based on data believed to be reliable; however, the products and information are intended for use by Buyer's having requisite skill and knowledge in the industry, and therefore it is Buyer to satisfy itself of the suitability of the products for its own particular use and it shall be deemed that Buyer has done so, as its sole discretion and risk. Variation in environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results.

Limitation of Liability
PPG's liability on any claim of any kind, including claims based upon PPG's negligence or strict liability, for any loss or damage arising out of, connected with, or resulting from the use of the products, shall in no case exceed the purchase price allocable to the products or part thereof which give rise to the claim, in no event shall PPG be liable for consequential or incidental damages.

Due to PPG's policy of continuous product improvement, the information contained in this Product Data/Application Instructions sheet is subject to change without notice. It is the Buyer's responsibility to check that this issue is current prior to using the product. For the most up-to-date Product Data/Application Instructions always refer to the PPG Protective & Marine Coatings website at www.ppgpmc.com

To avoid any confusion that may arise through translation into other languages, the English version of the Product Data/Application Instructions will be the governing literature and must be referred to in case of deviations with product literature in other languages.

Condition of Sale
All our transactions are subject to our Terms and Conditions of Sale.
PPG Amercoat®

Amercoa® 214

MARINE ANTIFOULING PAINT

FOR USE IN COMMERCIAL SHIPYARDS ONLY

EPA Reg. No. 7313-18
EPA Est. No. 7313-AR-1

Active Ingredient:
Curapore Cupoxide ............... 47.99%
Other Ingredients .................. 52.01%
Total ................................ 100.00%
Copper as metallic ............. 42.9%

Contains Petroleum Distillates

KEEP OUT OF REACH OF CHILDREN

WARNING
See other precautions on side panel and MSDS.

AT214-91/05 Black 5 US Gallons / 18.93 L

PRECAUTIONARY STATEMENTS

Hazard to humans and domestic animals:

WARNING - Causes severe eye irritation. May cause moderate skin irritation. May be harmful if absorbed through the skin. Protrude or exposed contact may cause an allergic skin reaction. Wear protective eyeglasses, nose, and mask. Wear rubber gloves and protective clothing when handling. Move to fresh air if you feel unwell. Call a physician immediately for treatment. An allergic skin reaction may be treated with cool compresses.

FIRST AID

If Inhaled: Get patient into fresh air. If patient remains unconscious, give artificial respiration. If employee or foreign object is breathing difficulties, give artificial respiration and ventilate carefully to keep patient warm. If patient is comatose or not breathing, give artificial respiration and call 911 or an ambulance. Do not give anything by mouth to an unconscious person.

If Swallowed: Do not induce vomiting. Give activated charcoal and consult a physician.

If Skin Irritated: Wash the skin with soap and water. Do not allow contact with eyes. Do not allow contact with skin. Do not allow contact with eyes. Do not allow contact with mouth. Do not allow contact with nostrils.

If Eyes Irritated: Wash eyes immediately with plenty of water for 15-30 minutes. Remove contact lenses, if present, after the first 5 minutes. Use continuous irrigation. Call a poison control center or doctor for treatment advice.

If on Skin or Clothing: Take off contaminated clothing. Flush skin immediately with plenty of water for 15-30 minutes. Call a poison control center or doctor for treatment advice.

STORAGE AND DISPOSAL

Keep container closed when not in use. Store in cool, dry, well-ventilated area. Do not contaminate water, land or air by improper disposal. Petroleum Distillates. Petroleum wastes are toxic. Proper disposal of this product is a matter of Federal Law. If this product cannot be disposed of by use, according to local regulations, contact your State or Federal Environmental Agency of Reginal (RHP) Office. Waterhers Waste Disposal (SWDR) (or equivalent). Reert for sorovalization or removal. Ensure the disposal of waste solvents is in accordance with the local regulations. Do not remove if used. If other procedures approved by State and local authorities.

Manufactured by

PPG Industries, Inc., PPG Architectural Finishes, Inc., One PPG Place, Pittsburgh, PA 15277

Emergency Telephone Number 1-800-1-444-6575

AT214-91/05 Black 5 US Gallons / 18.93 L

LIMITED WARRANTY

PPG warrants your satisfaction with the performance properties of this product if properly applied in a properly prepared surface as recommended by PPG Industries. PPG MAKES NO OTHER EXPRESS WARRANTIES. IN THE EVENT THE PRODUCT FAILS TO CONFORM TO THIS WARRANTY, PPG, AS THE SOLE LEGAL LIABILITY, AND EACH OF ANY SELLER OR DISTRIBUTOR, WHETHER OR NOT EXPRESS OR IMPLIED, OR CONSEQUENTIAL DAMAGES, WILL, AT YOUR OPTION, REPAIR OR REPLACE THE PRODUCT OR RETURN THE PURCHASE PRICE - SUBJECT TO COST OF LABOR FOR THE APPLICATION OF ANY PRODUCT SPECIFICALLY APPLIED. YOU MUST PROVE PROOF OF PURCHASE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. TO MAKE A CLAIM UNDER THIS WARRANTY, CONTACT THE STORE WHERE YOU PURCHASED THE PRODUCT OR, PPG Industries Inc., One PPG Place, Pittsburgh, PA 15222.

APPLICATION EQUIPMENT - Can be applied by brush, roller, airless sprayer, or conventional air spray equipment.

APPLICATION INSTRUCTIONS

1. When applying antifouling coatings over epoxy antifouling coatings, apply the first coat of antifouling while the epoxy antifouling is tack dry, but still soft to touch, pressure. If the epoxy in too fast, apply a thinner that of epoxy and apply the antifouling after the epoxy in tack dry but still soft to touch. Failure to apply the antifouling coating while the epoxy of antifouling soft may result in poor adhesion of the antifouling coating and eventual delamination.

2. Clean all application equipment with 1-13 thinner.

3. From the material thoroughly and continuously during application, to prevent pigment separation.

4. This only for workability - no more than 1 V (1000 rpm) per minute material.

5. Apply a wet coat in even brush or a sprayer to ensure passing, building the wet film thickness to achieve the recommended dry film thickness. Allow 4 hours dry time at 77°F (250°C) between coats. Allow 5 hours dry time at 77°F (250°C) before launching.

6. Clean equipment immediately after use with thinner.

PHOTOGRAPHIC RESISTIVE PER SCOCHOP RULE 192
This is 1 year from date of shipment.
DATE: Paint, UN1390
VOC: 500 ml (13.3 lb/ gal)
Temperature 1-13 (20°C)
45 ft³ (1.6 lb/ gal)
Incompatible with benzene.
NOTE: This product contains a chemical known to the state of California to cause cancer.
AMERCOAT® 450H

DESCRIPTION
Gloss Acrylic Aliphatic Polyurethane Topcoat

PRINCIPAL CHARACTERISTICS
- High gloss topcoat with unlimited recoatability
- Outstanding weather resistance with excellent color and gloss retention
- VOC compliant
- Hard, flexible, and abrasion resistant
- Cures through a wide temperature range

COLOR AND GLOSS
Gloss
Standard Color Offering, Safety Colors, Custom Colors

BASIC DATA
Volume solids 67% ± 3%
VOC 2.6 lbs/gal (311 g/L)
Recommended Dry film thickness (per coat) 2 - 3 mils* (50 - 75 microns)
* Product is acceptable at higher film builds and may be applied up to 5 mils dry film thickness using multiple wet passes. A flash off time may be required in some circumstances.

Theoretical Spread Rate
@ 1 mils dft 1074 ft²/gal
@ 2 mils dft 537 ft²/gal
* Film build of 4-5 mils may require two wet coats.

Components
2

Dry Temperature Resistance*
Continuous — 200°F
Intermittent — 250°F (<5% of the time, max 24 hours)
* Color will drift at elevated temperatures

Shelf Life
2 years from date of manufacture
* when stored in original sealed containers in dry conditions between 40-100°F

SURFACE PREPARATION
Coating performance is proportional to the degree of surface preparation. Refer to the application instructions for specific primers and intermediate coats for application and curing procedures. Ensure epoxies are free from amine blush prior to overcoating. All previous coats must dry and free of contaminants. Adhere to all minimum and maximum topcoat times for specific primers and intermediate coats. Aged epoxy coatings may require abrading prior to applying Amercoat 450H.

ENVIRONMENTAL CONDITIONS
Ambient temperatures 20°F to 120°F (-6°C to 49°C)
Surface temperature must be at least 5°F above dew point temperature.
Material temperatures 40°F to 90°F (5°C to 32°C)
Relative humidity 85% maximum
Surface temperature 20°F to 120°F (-6°C to 49°C)
General air quality Area should be sheltered from airborne particulates and pollutants. Ensure good ventilation during application and curing. Provide shelter to prevent wind from affecting spray patterns.

INSTRUCTIONS FOR USE
Mixing ratio by volume 4 parts base to 1 part hardener
Pre-mix base component with a pneumatic air mixer at moderate speeds to homogenize the container. Add hardener to base and agitate with a power mixer for 1-2 minutes until completely dispersed.

Pot life

<table>
<thead>
<tr>
<th></th>
<th>50°F</th>
<th>70°F</th>
<th>90°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 hours</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**AMERCOAT 450H**

**Airless spray**
28:1 pump or larger, 0.013-0.015 fluid tip
Can be applied with plural component equipment

**Air spray**
Thin up to 20%, standard conventional equipment, 0.070" fluid orifice. A moisture and oil trap in the main line is essential. Product is sensitive to moisture contamination.

**Brush & roll**
Use a high quality natural bristle brush and/or solvent resistant, 1/4" or 3/8" nap roller. Ensure brush or roller is well loaded to avoid air entrainment. Multiple coats may be necessary to achieve adequate film build. Amercoat 851 flow control additive can be used to for enhanced flow and leveling with brush and roll application.

**Thinner**
Amercoat 923, Amercoat 65, Amercoat 101 (recommended for > 90°F)

**Cleaning solvent**
Amercoat 12 Cleaner or thinner

**Primers**
Amercoat 235, Amercoat 240, Amercoat 66HS, Amercoat 68MSZ, Amercoat 370, Amercoat 385, Amercoat 399, Amercoat 21400, Pittguard Epoxies

**Safety precautions**
For paint end recommended thinners see safety sheet 1430, 1431 and relevant material safety data sheets.
This is a solvent borne paint and care should be taken to avoid inhalation of spray mist or vapor as well as contact between the wet paint and exposed skin or eyes.

**DRY/CURE TIMES**

<table>
<thead>
<tr>
<th>AMERCOAT 450H @ 2 mils dF</th>
<th>32°F</th>
<th>50°F</th>
<th>70°F</th>
<th>90°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry to touch</td>
<td>4 hours</td>
<td>90 minutes</td>
<td>45 minutes</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Dry through</td>
<td>72 hours</td>
<td>24 hours</td>
<td>8 hours</td>
<td>4 hours</td>
</tr>
<tr>
<td>Dry to recoat</td>
<td>24 hours</td>
<td>12 hours</td>
<td>4 hours</td>
<td>2 hours</td>
</tr>
<tr>
<td>Maximum recoat</td>
<td>Unlimited</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AMERCOAT 450H with 865M Accelerator @ 2 mils dF</th>
<th>20°F</th>
<th>32°F</th>
<th>50°F</th>
<th>70°F</th>
<th>90°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry to touch</td>
<td>8 hours</td>
<td>4 hours</td>
<td>75 minutes</td>
<td>25 minutes</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Dry through</td>
<td>72 hours</td>
<td>36 hours</td>
<td>8 hours</td>
<td>2.5 hours</td>
<td>1.75 hours</td>
</tr>
<tr>
<td>Dry to recoat</td>
<td>32 hours</td>
<td>16 hours</td>
<td>4 hours</td>
<td>1.5 hours</td>
<td>1 hour</td>
</tr>
<tr>
<td>Maximum recoat</td>
<td>Unlimited</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PRODUCT QUALIFICATIONS**
- Compliant with USDA Incidental Food Contact Requirements
- SSPC Paint 36 Level 3

**AVAILABILITY**

**Packaging**
Available in 1-gallon and 5-gallon kits
1-gallon kits have 0.8 gallons of base and 0.2 gallons of hardener
5-gallon kits have 4 gallons of base and 1 gallon of hardener

**Product codes**
AT 45H-23  Pearl Gray base
AT 45H-3   White base
AT 45H-9   Black base
AT 45H-T1  Deep tint base *
AT 45H-T2  Light tint base *
AT 45H-T3  Neutral tint base *
AT 45H-T4  Red tint base *
AT 45H-T5  High Hiding Yellow tint base *
AT 45H-T1  Safety Red base
AT 45H-81  Safety Yellow base
AT 45H-B   Hardener component

* Tintable using UCD V-Line colorants only.
Worldwide statement

While it is always the aim of PPG Protective & Marine Coatings to supply the same product on a worldwide basis, slight modification of the product is sometimes necessary to comply with local or national rules/circumstances. Under these circumstances an alternative product data sheet is used.

WARRANTY STATEMENT

PPG warrants (i) its title to the product, (ii) that the quality of the product conforms to PPG's specifications for such product in effect at the time of manufacture and (iii) that the product shall be delivered free of the rightful claim of any third person for infringement of any U.S. patent covering the product.

These are the only warranties that PPG makes and all other express or implied warranties, under statute or arising otherwise in law, from a course of dealing or usage of trade, including without limitation, any other warranty of fitness for a particular purpose or use, are disclaimed by PPG.

Any claim under this warranty must be made by Buyer to PPG in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life of the product, or one year from the date of the delivery of the product to the Buyer, whichever is earlier. Buyer's failure to notify PPG of such non-conformance as required herein shall bar Buyer from recovery under this warranty.

LIMITATION OF LIABILITY

In no event will PPG be liable under any theory of recovery (whether based on negligence of any kind, strict liability or tort) for any indirect, special, incidental, or consequential damages in any way related to, arising from, or resulting from any use made of the product.

The information in this sheet is intended for guidance only and is based upon laboratory tests that PPG believes to be reliable. PPG may modify the information contained herein at any time as a result of practical experience and continuous product development. All recommendations or suggestions relating to the use of the PPG product, whether in technical documentation, or in response to a specific inquiry, or otherwise, are based on data, which to the best of PPG's knowledge, is reliable. The product and related information is designed for users having the requisite knowledge and industrial skills in the industry and it is the end-user's responsibility to determine the suitability of the product for its own particular use and it shall be deemed that Buyer has done so, as its sole discretion and risk.

PPG has no control over either the quality or condition of the substrate, or the many factors affecting the use and application of the product. Therefore, PPG does not accept any liability arising from any loss, injury or damage resulting from such use or the contents of this information (unless there are written agreements stating otherwise). Variations in the application environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results.

This sheet supersedes all previous versions and it is the Buyer's responsibility to ensure that this information is current prior to using the product.

Current sheets for all PPG Protective & Marine Coatings Products are maintained at www.ppgpmc.com. The English text of this sheet shall prevail over any translation thereof.
DIMETCOTE® 302H

DESCRIPTION
Reinforced inorganic Zinc Primer

PRINCIPAL CHARACTERISTICS
- Provides outstanding corrosion resistance
- Fast dry times for rapid topcoating
- Low VOC
- Excellent corrosion resistance from unique formulation

COLOR AND GLOSS
Flat
Green

BASIC DATA
Volume solids: 76% ± 3%
VOC: 2.37 lbs/gal (284 g/L)
Recommended Dry film thickness (per coat)
2 - 4 mils (50 - 100 microns)
Theoretical Spread Rate
@ 1 mils dft: 1251 ft/gal
@ 3 mils dft: 417 ft²/gal
Components: 2
Dry Temperature Resistance: Continuous — 400°F
Color will drift at elevated temperatures.
Shelf Life: 1 year from date of manufacture

SURFACE PREPARATION
Steal
- Abrasive blast to SSPC SP-6 or higher with a 1.0-3.0 mil surface profile. Higher surface profiles up to 5 mils are acceptable, but the product must be applied in a thickness great enough to achieve a minimum of 2.5 mils dry film thickness.
Apply Dimetcote 302H as soon as possible to prevent the blasted surface from rusting. Keep moisture, oil, grease, or other organic matter off surface before coating.
For touch up and repair, power tool cleaning in accordance with SSPC SP-11 is acceptable.

ENVIRONMENTAL CONDITIONS
Ambient temperatures
20°F to 120°F (-6°C to 49°C)
Surface temperature must be at least 5°F above the dew point temperature.
Material temperatures
40°F to 90°F (5°C to 32°C)
Relative humidity: 85% maximum
Surface temperature
20°F to 130°F (-6°C to 54°C)
Surface temperature must be at least 5°F above the dew point temperature.
General air quality
Area should be sheltered from airborne particulates and pollutants. Ensure good ventilation during application and curing. Provide shelter to prevent wind from affecting spray patterns.

INSTRUCTIONS FOR USE
Mixing
Only mix full kits.
9 parts base : 1 part hardener by volume
Pre-mix base component with a pneumatic air mixer at moderate speeds to homogenize the container. Add hardener to base and agitate with a power mixer for 1-2 minutes until completely dispersed. Strain the mixture from one container to another through a 30 mesh filter/strainer to remove any undispersed lumps.

Pot life

<table>
<thead>
<tr>
<th>Temperature</th>
<th>50°F</th>
<th>70°F</th>
<th>90°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimetcote 302H</td>
<td>18 hours</td>
<td>8 hours</td>
<td>4 hours</td>
</tr>
</tbody>
</table>
### DIMETCOTE 302H

**Airless spray**
45:1 pump or larger, 0.017 - 0.019 fluid tip

**Air spray**
Thin up to 10%, standard conventional equipment, 0.070* fluid orifice. A moisture and oil trap in the main line is recommended. Separate regulators for air and fluid pressure are recommended.

**Brush & roll**
Use a high quality natural bristle. Brush application is only recommended for small touch up and/or repair areas. Roller application is not recommended. Ensure brush is well loaded to avoid air entrainment. Multiple coats may be necessary to achieve adequate film build.

**Thinner**
*Amercoat T-10, Amercoat 101 (recommended for > 90°F)*

**Cleaning solvent**
*Amercoat 12 Cleaner or Amercoat 65 thinner (xylene)*

**Primers**
Direct to metal, can be used to touch up inorganic zincs such as Dimetcote 9-series.

**Topcoats**
*Amershield, PSX 700, Amerlock 2400, Amercoat 385, Amercoat 370, Amercoat 240, Amercoat 235, others* For paint and recommended thinners see safety sheet 1430, 1431 and relevant material safety data sheets

**Safety precautions**
This is a solvent borne paint and care should be taken to avoid inhalation of spray mist or vapor as well as contact between the wet paint and exposed skin or eyes.

### DRY/CURE TIMES

<table>
<thead>
<tr>
<th>Dimetcote 302H @ 3 mils dt</th>
<th>40°F</th>
<th>50°F</th>
<th>70°F</th>
<th>90°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry hard</td>
<td>36 hours</td>
<td>18 hours</td>
<td>6 hours</td>
<td>3 hours</td>
</tr>
<tr>
<td>Dry overcoat</td>
<td>8 hours</td>
<td>4 hours</td>
<td>1.5 hours</td>
<td>0.75 hour</td>
</tr>
<tr>
<td>Maximum overcoat*</td>
<td>3 months</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

* Surface must be power washed as needed to remove all surface contaminants including zinc salts. Surface must be clean and dry.

### PRODUCT QUALIFICATIONS

- Zinc Dust meets ASTM D520 Type 2 standards

### AVAILABILITY

**Packaging**
Available in 1-gallon and 5-gallon kits

**Product codes**
- DI302H-5A Base
- DI302H-B Hardener (Part B)

**Worldwide statement**
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### WARRANTY STATEMENT

PPG warrants (i) its title to the product, (ii) that the quality of the product conforms to PPG’s specifications for such product in effect at the time of manufacture and (iii) that the product shall be delivered free of the rightful claim of any third person for infringement of any U.S. patent covering the product.

**THESE ARE THE ONLY WARRANTIES THAT PPG MAKES AND ALL OTHER EXPRESS OR IMPLIED WARRANTIES, UNDER STATUTE OR ARISING OTHERWISE IN LAW, FROM A COURSE OF DEALING OR USAGE OF TRADE, INCLUDING WITHOUT LIMITATION, ANY OTHER WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR USE, ARE DISCLAIMED BY PPG.**

Any claim under this warranty must be made by Buyer to PPG in writing within five (5) days of Buyer’s discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life of the product, or one year from the date of the delivery of the product to the Buyer, whichever is earlier. Buyer’s failure to notify PPG of such non-conformance as required herein shall bar Buyer from recovery under this warranty.
LIMITATION OF LIABILITY

IN NO EVENT WILL PPG BE LIABLE UNDER ANY THEORY OF RECOVERY (WHETHER BASED ON NEGLIGENCE OF ANY KIND, STRICT LIABILITY OR TORT) FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN ANY WAY RELATED TO, ARISING FROM, OR RESULTING FROM ANY USE MADE OF THE PRODUCT.

The information in this sheet is intended for guidance only and is based upon laboratory tests that PPG believes to be reliable. PPG may modify the information contained herein at any time as a result of practical experience and continuous product development. All recommendations or suggestions relating to the use of the PPG product, whether in technical documentation, or in response to a specific inquiry, or otherwise, are based on data, which to the best of PPG’s knowledge, is reliable. The product and related information is designed for users having the requisite knowledge and industrial skills in the industry and it is the end-user’s responsibility to determine the suitability of the product for its own particular use and it shall be deemed that Buyer has done so, as its sole discretion and risk.

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AMERCOAT® 237M

DESCRIPTION

Heavy Duty Non-slip Epoxy Coating

PRINCIPAL CHARACTERISTICS

- Tough, abrasion resistant epoxy coating containing hard non-skid grit
- Non-skid grit pre-dispersed in epoxy component
- Easy spray or roll on application
- Suitable for off shore decks, helicopter pads, vehicular decks, truck ramps, and walkways

COLOR AND GLOSS*

Dark Gray, Haze Gray, Oxide Red
Semi-gloss

* Epoxy coatings will characteristiclly chalk and fade upon exposure to sunlight. Light colors are prone to embering to some extent

BASIC DATA

Volume solids
76% ± 3%

VOC
1.3 lbs/gal (156 g/L)

Recommended
Dry film thickness (per coat)
Apply at approximately 80 ft² / gallon

Components
2

Shelf Life
3 years from date of manufacture

SURFACE PREPARATION

Steel

Coating performance is, in general, proportional to the degree of surface preparation.

- SSPC SP-6, SP-10, SP-11, or SP-12 WJ-2(L), than prima with suitable primer. See specific primer for further details.

Concrete

- Remove all surface contaminants such as oil, grease, and embedded chemicals.
- Abrade the surface per ASTM D 4259 to remove all chalk and surface glaze or laitance. Mechanical surface preparation should expose sub-surface voids and provide a surface profile equivalent to 60 grit sandpaper or coarser. Surface should be free from moisture in accordance with ASTM D4263. Refer to Information Sheet # 1496 ACUS for further details regarding moisture measurements. Slabs on grade should have a maximum moisture content of 3 lbs/1,000 ft²/24 hours when measured by calcium chloride test. Prime with Amerlock Sealer or Amerlock 2/400.

- Lightly abrasive blast in accordance with SSPC SP-16 to achieve a uniform and dense 1.5-4.0 mil anchor profile. Use suitable epoxy primer.

Non-ferrous metals

ENVIRONMENTAL CONDITIONS

Ambient temperatures

40°F to 120°F (5°C to 49°C)
Surface temperature must be at least 5°F above the dew point temperature.

Material temperatures

40°F to 90°F (5°C to 32°C)

Relative humidity

85% maximum

Surface temperature

40°F to 120°F (5°C to 49°C)

General air quality

Area should be sheltered from airborne particulates and pollutants. Avoid combustion gases or other sources of carbon dioxide that may promote amine blush. Ensure good ventilation during application and curing. Provide shelter to prevent wind from affecting spray patterns.

INSTRUCTIONS FOR USE

Mixing ratio by volume

4 parts base to 1 part hardener

Pre-mix pigmented components with a pneumatic air mixing at moderate speeds to homogenize the container. Add hardener to base and agitate with a power mixer for 1-2 minutes until completely dispersed.
AMERCOAT 237M

<table>
<thead>
<tr>
<th>Pot life</th>
<th>50°F</th>
<th>70°F</th>
<th>90°F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 hours</td>
<td>4 hours</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

Induction time

15 minutes at 75°F or lower

Airless spray

Not recommended

Air spray

Use an agitated, bottom fluid outlet spray pot equipped 3/4" fluid outlet connection such as a Binks 5-gallon Model 83-5462 with a 3/4" fluid hose. A Binks Model 7E-2 hand gun or 125 pole gun, with 45 or 48 tip sizes and 160-191 hardened nozzles is suitable. The maximum length of the fluid hose should be 15 feet. Flush out all equipment with T-10 thinner and ensure it is in good working order.

Apply about 25 psi fluid pressure to the spray pot and start the agitator at low speed. The air pressure should be turned on, ensuring it is adjusted to 5 psi higher than the fluid pressure. Next, hold the gun nozzle over the empty 5 gallon pail. Open the valve on the gun, then open the bottom outlet valve on the spray pot. This sequence is important to prevent clogging of the fluid line. If the fluid line becomes clogged, relieve the fluid pressure and open the vent valve on the spray pot. Blow the paint in the fluid line back into the pot by covering the spray gun head with a rag. This should clear the fluid hose. After closing the spray pot outlet valve, proceed again as indicated above. After the proper spray pattern is obtained by adjustments in the fluid and air pressures, begin applying the non-skid coating. Spray the coating in overlapping passes to hide the primer. Optimum spray techniques should result in a spreading rate of about 20 lb/gallon.

Roller

Use a short nap roller with a long handle and roll evenly. Mixed material can be poured in a ribbon and rolled in one direction.

Thinner

Thin up to 5% with Amercoat T-10 thinner

Cleaning solvent

Amercoat 12 Cleaner or Amercoat T-10

Primers

Amercoat 137, Amercoat 235, Amercoat 240, Amerlock 2/400, Dimelcote 302H, Amerlock Sealer, Amercoat 385PA

Topcoats

Amercoat 450-Series Polyurethanes, Amershield, PSX 700, Amercoat 229T, PSX One

Safety precautions

For paint and recommended thinners see safety sheet 1430, 1431 and relevant material safety data sheets. This is a solvent borne paint and care should be taken to avoid inhalation of spray mist or vapor as well as contact between the wet paint and exposed skin or eyes.

**DURY/CURE TIMES**

<table>
<thead>
<tr>
<th>Amercoat 237M @ 80 lb/gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry through</td>
</tr>
<tr>
<td>Dry to topcoat</td>
</tr>
<tr>
<td>Max topcoat</td>
</tr>
</tbody>
</table>

* Dry times are dependent on air and surface temperatures as well as film thickness, ventilation, and relative humidity. Maximum recoating time is highly dependent upon actual surface temperatures – not simply air temperatures. Surface temperatures should be monitored, especially with sun-exposed or otherwise heated surfaces. Higher surface temperatures shorten the maximum recoat window.

Surfaces must be clean and dry. Any contamination must be identified and removed. Particular attention must be paid to surfaces exposed to sunlight where chalking may be present. In those situations, a further degree of cleaning may be required. PPG Technical Service can advise on suitable cleaning methods. If maximum recoat/topcoat time Is exceeded, then roughen surface.

---

*Amercoat*
AVAILABILITY

Packaging
Available in 5-gallon kits
6-gallon kits have 4 gallons of base and 1 gallon of hardener

Product codes
AT237-23 Pearl Gray base component
AT237-28 Dark Grey base component
AT237-72 Oxide Red base component
AT 237-B Hardener Component

WARRANTY STATEMENT

PPG warrants (i) its title to the product, (ii) that the quality of the product conforms to PPG’s specifications for such product in effect at the time of manufacture and (iii) that the product shall be delivered free of the rightful claim of any third person for infringement of any U.S. patent covering the product.

These are the only warranties that PPG makes and all other express or implied warranties, under statute or arising otherwise in law, from a course of dealing or usage of trade, including without limitation, any other warranty of fitness for a particular purpose or use, are disclaimed by PPG.

Any claim under this warranty must be made by Buyer to PPG in writing within five (5) days of Buyer’s discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life of the product, or one year from the date of the delivery of the product to the Buyer, whichever is earlier. Buyer’s failure to notify PPG of such non-conformance as required herein shall bar Buyer from recovery under this warranty.

LIMITATION OF LIABILITY

In no event will PPG be liable under any theory of recovery (whether based on negligence of any kind, strict liability or tort) for any indirect, special, incidental, or consequential damages in any way related to, arising from, or resulting from any use made of the product.

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PPG has no control over either the quality or condition of the substrate, or the many factors affecting the use and application of the product. Therefore, PPG does not accept any liability arising from any loss, injury or damage resulting from such use or the contents of this information (unless there are written agreements stating otherwise). Variations in the application environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results.

This sheet supersedes all previous versions and it is the Buyer’s responsibility to ensure that this information is current prior to using the product.

Current sheets for all PPG Protective & Marine Coatings Products are maintained at www.ppgpmc.com. The English text of this sheet shall prevail over any translation thereof.
EXHIBIT D. CATHODIC PROTECTION REFERENCE DOCUMENTS

<table>
<thead>
<tr>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galvotec Specification Sheets</td>
</tr>
<tr>
<td>Zinc Anodes - Mil-Spec MIL-18001</td>
</tr>
<tr>
<td>Zinc Hull Anodes by Galvotec Alloys</td>
</tr>
</tbody>
</table>

Other Acceptable Anode Manufacturers:

<table>
<thead>
<tr>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farwest Corrosion Specification Sheets</td>
</tr>
<tr>
<td>Zinc Hull Anodes # M-24 by Farwest Corrosion Control Company</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GaUS Specification Sheets</td>
</tr>
<tr>
<td>Zinc Hull Anodes # TH_22.5_2S by GaUS Anodes</td>
</tr>
</tbody>
</table>
Zinc Anodes
Mil-Spec MIL-18001

Composition:

<table>
<thead>
<tr>
<th>Composition</th>
<th>ASTM-B-418 TYPE I</th>
<th>ASTM-B-418 TYPE II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe</td>
<td>0.005% Max.</td>
<td>Fe</td>
</tr>
<tr>
<td>Pb</td>
<td>0.006% Max.</td>
<td>Pb</td>
</tr>
<tr>
<td>Cu</td>
<td>0.005% Max.</td>
<td>Cu</td>
</tr>
<tr>
<td>Al</td>
<td>0.1 - 0.5%</td>
<td>Al</td>
</tr>
<tr>
<td>Cd</td>
<td>0.025 - 0.07%</td>
<td>Cd</td>
</tr>
<tr>
<td>Zn</td>
<td>Remainder</td>
<td>Zn</td>
</tr>
</tbody>
</table>

Galvotec’s Mil-Spec zinc anode meet the latest Mil-Spec revision. This alloy is also covered by ASTM-418-95 Type I. Galvotec’s Mil-Spec zinc anodes are effective, economical corrosion fighters in applications where temperature exposures are limited up to 120 degrees F. (50° C) Galvotec’s Mil-Spec zinc typical uses in seawater or saline mud:

- Hulls of ships, barges, boats and tugs
- Ballast tanks of tankers, ore carriers and freighters
- Bulkheads
- Piers and Pilings
- Pipelines
- Heat Exchangers

Galvotec Alloys, Inc. is an approved manufacturer for the US Government in addition to all of the major shipyards.

Galvanic Efficiency:

Galvotec’s Mil-Spec anodes operate at a nominal 95% efficiency in seawater.

Galvanic efficiency relates directly to the anode’s service life. Some commercial anodes develop dense corrosion products with high electrical resistance on their surface that restrict the current flow. In some cases, the anode’s productive life ends before all of the available anode is consumed.

Galvotec’s Mil-Spec anodes, however, resist the formation of hard, dense corrosion products and continue producing protective current until they are completely consumed. This longer life means fewer replacements and reduced overall operating costs.
**Zinc Hull Anodes**

**GA-26**
Contains single galvanized steel longitudinal strap. Can be bolted or welded to hull. Particularly suited for smaller ships, coastal vessels, harbor tugs, etc.

<table>
<thead>
<tr>
<th>Weight</th>
<th>26 lbs</th>
<th>11.8 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>4 1/2&quot;</td>
<td>114 mm</td>
</tr>
<tr>
<td>Height</td>
<td>2 1/4&quot;</td>
<td>57 mm</td>
</tr>
<tr>
<td>Length</td>
<td>14&quot;</td>
<td>356 mm</td>
</tr>
<tr>
<td>Current Rating</td>
<td>1 (amp-yrs)</td>
<td></td>
</tr>
</tbody>
</table>

**GA-48**
Contains single longitudinal galvanized steel strap for welding to hull. Particularly suited for major ships, 10,000 DWT and upward.

<table>
<thead>
<tr>
<th>Weight</th>
<th>48 lbs</th>
<th>21.8 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>4 1/2&quot;</td>
<td>114 mm</td>
</tr>
<tr>
<td>Height</td>
<td>2 1/4&quot;</td>
<td>57 mm</td>
</tr>
<tr>
<td>Length</td>
<td>24&quot;</td>
<td>61 mm</td>
</tr>
<tr>
<td>Current Rating</td>
<td>2 (amp-yrs)</td>
<td></td>
</tr>
</tbody>
</table>

**Tapered GA-23T**
Contains two cast-in galvanized steel mounting straps.

<table>
<thead>
<tr>
<th>Weight</th>
<th>22.5 lbs</th>
<th>10.2 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>6 1/2&quot;</td>
<td>165 mm</td>
</tr>
<tr>
<td>Height</td>
<td>1 1/4&quot;</td>
<td>32 mm</td>
</tr>
<tr>
<td>Length</td>
<td>14&quot;</td>
<td>356 mm</td>
</tr>
<tr>
<td>Current Rating</td>
<td>1 (amp-yrs)</td>
<td></td>
</tr>
</tbody>
</table>
Zinc Hull Anodes

Military Anodes

The anodes shown here conform to the latest modification of MIL-A-18001.

Anodes in this series contain two cast-in galvanized steel mounting straps (brass mounting straps are also available) or two cast-in cored holes on 6" centers. (GA-23C & GA-42C)

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Mil. Spec.</th>
<th>Wt. Lbs</th>
<th>W in mm</th>
<th>H in mm</th>
<th>L in mm</th>
<th>Current Rating (amp-yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA-23</td>
<td>ZHS-23</td>
<td>22</td>
<td>6</td>
<td>1 3/4</td>
<td>32</td>
<td>12 30 1</td>
</tr>
<tr>
<td>GA-23C</td>
<td>ZHC-23</td>
<td>22</td>
<td>6</td>
<td>1 3/4</td>
<td>32</td>
<td>12 30 1</td>
</tr>
<tr>
<td>GA-42</td>
<td>ZHS-47</td>
<td>42</td>
<td>6</td>
<td>2 1/2</td>
<td>64</td>
<td>12 30 1</td>
</tr>
<tr>
<td>GA-42C</td>
<td>ZHC-47</td>
<td>40</td>
<td>6</td>
<td>2 1/2</td>
<td>64</td>
<td>12 30 1</td>
</tr>
</tbody>
</table>

These anodes contain a single cast-in galvanized steel mounting strap measuring 3/16" x 1 1/4" x 16".

Option: Holes in straps

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Mil. Spec.</th>
<th>Wt. Lbs</th>
<th>W in mm</th>
<th>H in mm</th>
<th>L in mm</th>
<th>Current Rating (amp-yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA-12</td>
<td>ZSS-12</td>
<td>11</td>
<td>3</td>
<td>1 3/4</td>
<td>3</td>
<td>12 30 0.5</td>
</tr>
<tr>
<td>GA-24</td>
<td>ZSS-24</td>
<td>22</td>
<td>3</td>
<td>2 1/2</td>
<td>6</td>
<td>12 30 1.0</td>
</tr>
</tbody>
</table>

A teardrop-shaped anode containing a single, cast-in galvanized steel strap.

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Mil. Spec.</th>
<th>Wt. Lbs</th>
<th>W in mm</th>
<th>H in mm</th>
<th>L in mm</th>
<th>Current Rating (amp-yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA-TD6</td>
<td>ZTS</td>
<td>5</td>
<td>3</td>
<td>1 3/4</td>
<td>32</td>
<td>9 41 0.25</td>
</tr>
</tbody>
</table>
Zinc Anodes for Marine & Underwater Applications by Farwest Corrosion - Zinc Anodes... Page 1 of 3

Zinc Anodes for Marine & Underwater Applications by Farwest Corrosion - Zinc Anodes... Page 1 of 3

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Certificate of Eligibility

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Tapered M-24 Hull Anode
Contains two cast-in galvanized steel mounting straps. Farwest can add a mounting hole to each mounting strap.

<table>
<thead>
<tr>
<th>Anode</th>
<th>Lbs</th>
<th>W</th>
<th>H</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-24</td>
<td>22.5</td>
<td>6</td>
<td>1/2</td>
<td>14</td>
</tr>
</tbody>
</table>

Military Anodes
The military anodes shown here conform to the latest modification of mil spec MIL-A-18001.
Anodes in this series contain two cast-in galvanized steel mounting straps (brass mounting straps are also available) or two cast-in cold holes on 6" centers.
Farwest can add a mounting hole to each mounting strap.

<table>
<thead>
<tr>
<th>Anode</th>
<th>Lbs</th>
<th>W</th>
<th>L</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZHS-23</td>
<td>22</td>
<td>6&quot;</td>
<td>12&quot;</td>
<td>1 1/4&quot;</td>
</tr>
<tr>
<td>ZHC-23</td>
<td>22</td>
<td>6&quot;</td>
<td>12&quot;</td>
<td>1 1/4&quot;</td>
</tr>
<tr>
<td>ZHS-42</td>
<td>42</td>
<td>6&quot;</td>
<td>12&quot;</td>
<td>2 1/2&quot;</td>
</tr>
<tr>
<td>ZHC-42</td>
<td>33</td>
<td>6&quot;</td>
<td>12&quot;</td>
<td>2 1/2&quot;</td>
</tr>
</tbody>
</table>

The military anodes below contain a single cast-in galvanized steel mounting strap measuring 3/16" x 1 1/4" x 15". Farwest can add a mounting hole to each mounting strap.
<table>
<thead>
<tr>
<th>NAME</th>
<th>L (in)</th>
<th>W (in)</th>
<th>H</th>
<th>NET WEIGHT (lbs)</th>
<th>GROSS WEIGHT (lbs)</th>
<th>CORE TYPE (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH_22.5_2S</td>
<td>14</td>
<td>6½</td>
<td>1¼</td>
<td>22.5</td>
<td>23.5</td>
<td>1¼ x 3/16</td>
</tr>
</tbody>
</table>

**Hull-Tapered**

GaUS Anodes International, LLC
Manufacturer of High Quality Anodes

Cunningham Business Park
6425 Cunningham Rd, Houston TX 77041
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Website: www.gausanodes.com/ Email: anodes@gausanodes.com