PPG Protective and Marine Coatings

Amercoat 235, Phenylalkylamine Epoxy Anti-corrosive / Tank Lining

PRODUCT DESIGNATIONS

Amercoat 235

MIL-PRF-23236
MIL-PRF-24647

If this product is to be applied as part of a coating system, all components of the system must be as listed on the QPL.

This NAVSEA-REVIEWED ASTM F-718 data sheet is the only data sheet approved for use when utilizing this coating for U.S. Navy preservation projects. NAVSEA's review covers only the application process for the material. The review does not denote the material as a qualified product, nor does it constitute an approval for purchase/procurement of the material. For products on the Qualified Products List (QPL) for this MILSPEC, please refer to https://qpldocs.dla.mil/search/default.aspx.

Questions regarding modifications or updates of this ASTM F-718 shall be directed toward: NSWCPD at NavseaReviewedf718@us.navy.mil.

SHIPBUILDERS AND MARINE PAINTS AND COATINGS PRODUCT/PROCEDURE DATA SHEET

I. GENERIC TYPE AND DESCRIPTION: Phenylalkylamine Epoxy Anti-corrosive / Tank Lining Date: 17 OCT 2024
Specification Number: MIL-PRF-23236D, MIL-PRF-24647E
NOTE: For Type/Grade/Class/Application information see QPD-23236, 24647

II. MANUFACTURERS DATA:

(a) MANUFACTURER: PPG Protective and Marine Coatings

(b) PRODUCT DESIGNATION: Amercoat 235

(c) COLOR(S): Oxide Red, Black, Haze Gray, Light Gray, Dark Gray, Buff, Off White

(d) USES: Underwater hull and topside shipboard surfaces, ballast tanks

(e) TECHNICAL SERVICE REPRESENTATIVE: James McCarthy (404) 580-8046 James.McCarthy@ppg.com

III. PROPERTIES:

(a) PERCENT VOLUME SOLIDS (ASTM D2697): 68% ± 3.4 %

(b) PERCENT WEIGHT SOLIDS (ASTM D2369): 79% ± 3 %

(c) FLASH POINT (ASTM Method D93 orD56 or D3278):

Mixed : 100 °F (38 °C)

Component A: 98 °F (37 °C)

Component B: 104 °F (40 °C)

(d) WEIGHT PER VOLUME (ASTM D1475):

Component A: 10.87-12.74 lb/gal (1302 - 1526 g/L)

Component B: 7.08 - 8.68 lb/gal (848 - 1040 g/L)

Mixed: 10.1 - 11.9lb/gal (1210 - 1426 g/L)

(e) PERCENT EDGE RETENTION, IF REQUIRED BY APPLICABLE SPECIFICATION ( ): NA %

(f) SHELF LIFE: 36 Months

(g) VISCOSITY (ASTM D562):

Component A : 100 - 140 KU (Regular Paddle) @ 25 °C (77 °F)

Component B : 30 - 80 KU (Regular Paddle) @ 25 °C (77 °F)

Mixed : 80 - 130 KU (Regular Paddle) @ 25 °C (77 °F)

(h) PACKAGING: 1 gallon kits (0.8 gal of component A + 0.2 gal of component B) and 5-gallon kits (4 gal component A + 1 gal component B)

(i) NUMBER OF COMPONENTS: 2

(j) GLOSS (ASTM D523): 35-65 GU

(k) STORAGE REQUIREMENTS: TEMPERATURE: 40 °F (5 °C) MIN. 100 °F (32 °C) MAX.

ADDITIONAL PAINT STORAGE REQUIREMENTS: Product temperatures must be 50°F (10°C) - 90 °F (32°C) during mixing and application.

(l) VOLATILE ORGANIC COMPOUNDS (VOCS- EPA TEST METHOD 24): 2.44 lb/gal (292 g/L)

(m) WEIGHT PER AREA OF DRY FILM AT 1 MIL THICKNESS: 0.0079 ± 3% lb/sq. ft. (38.57 ± 3% g/m²)

(n) SPECIAL PROPERTIES:NA

IV. SURFACE PREPARATION MINIMUM REQUIREMENTS:

(a) INITIAL CLEANLINESS: Abrasive Blast to SSPC-SP 10/NACE 2 or SSPC-SP WJ-2/NACE WJ-2 (L).

(b) TOUCH-UP CLEANLINESS: Power tool clean to bare metal in accordance with SSPC-SP 11

(c) PROFILE (ASTM D 4417): 2.0 mils MIN. 4.0 mils MAX.

(d) SPECIAL INSTRUCTIONS: NA

(e) PRIMER REQUIREMENTS: NA

(f) MAXIMUM ALLOWABLE CONDUCTIVITY (ISO 8502-6 THE BRESLE PATCH METHOD):

30 µS/cm for immersed areas; 70 µS/cm for non-immersed areas in accordance with NAVSEA Standard Item 009-32

(g) MAXIMUM DEGREE OF FLASH RUSTING ALLOWED: SSPC-SP WJ-2 (L) for immersed areas and SSPC-SP WJ-2 (M) for non-immersed areas as allowed by specification. Refer to NAVSEA Standard Item 009-32.

SPECIAL SAFETY PRECAUTIONS:
Refer to Material Safety Data Sheets for Each Component

V. MIXING PROCEDURES

(a) MIXING RATIOS BY WEIGHT: 5.87 : 1
BY VOLUME: 4:1

(b) INDUCTION TIME: 50°F-59°F (10°C-15°C) = 30 Minutes; 60°F-79°F (16°C-26°C) = 15 Minutes; ≥ 80°F (27°C) = 0 Minutes

(c) RECOMMENDED CLEANING SOLVENT (NO THINNING ALLOWED): T-10 solvent or Amercoat 12 Cleaner

(d) POT LIFE:

6 Hr(s) @ 50 °F (10 °C)
4.5 Hr(s) @ 70 °F (21 °C)
2 Hr(s) @ 90 °F (32 °C)

Graphs included on page: 9

(e) SPECIAL INSTRUCTIONS: : The component A (epoxy) can have a false body which can be broken down with mechanical agitation. Thoroughly mix the component A with a jiffy-type mixer for at least 1 minute prior to adding and mixing the Component B. Thoroughly combine the mixture using mechanical mixing equipment.

VI. APPLICATION:

(a) ENVIRONMENTAL LIMITATIONS:
SUBSTRATE TEMPERATURE: 20°F (-7°C) MIN. 120°F (49°C) MAX.
AMBIENT TEMPERATURE: 20°F (-7°C) MIN. 120°F (49°C) MAX.
DIFFERENCE ABOVE THE DEW POINT: 5 °F (3 °C)

MAXIMUM PERCENT RELATIVE HUMIDITY: 85 %

(b) FILM THICKNESS (SSPC PA2-73T): PER COAT:

7 mils WET MIN.	12 mils WET MAX.
4 mils DRY MIN.	8 mils DRY MAX.

TOTAL SYSTEM:

8 mils DRY MIN.	16 mils DRY MAX.

(c) DRY TIMES (ASTM D1640):

Minimum Overcoat Window:

16 Hr(s) @ 32 °F (0 °C)
4 Hr(s) @ 70 °F (21 °C)
2 Hr(s) @ 90 °F (32 °C)

Maximum Overcoat Window:

2160 Hr(s) @ 32 °F (0 °C)
720 Hr(s) @ 70 °F (21 °C)
720 Hr(s) @ 90 °F (32 °C)

Dry to Handle:

45 Hr(s) @ 32 °F (0 °C)
10 Hr(s) @ 70 °F (21 °C)
4 Hr(s) @ 95 °F (35 °C)

Dry to Service:

288 Hr(s) @ 32 °F (0 °C)
120 Hr(s) @ 70 °F (21 °C)
60 Hr(s) @ 95 °F (35 °C)

Graphs included on page 5-8 or additional information included on page 8-10.

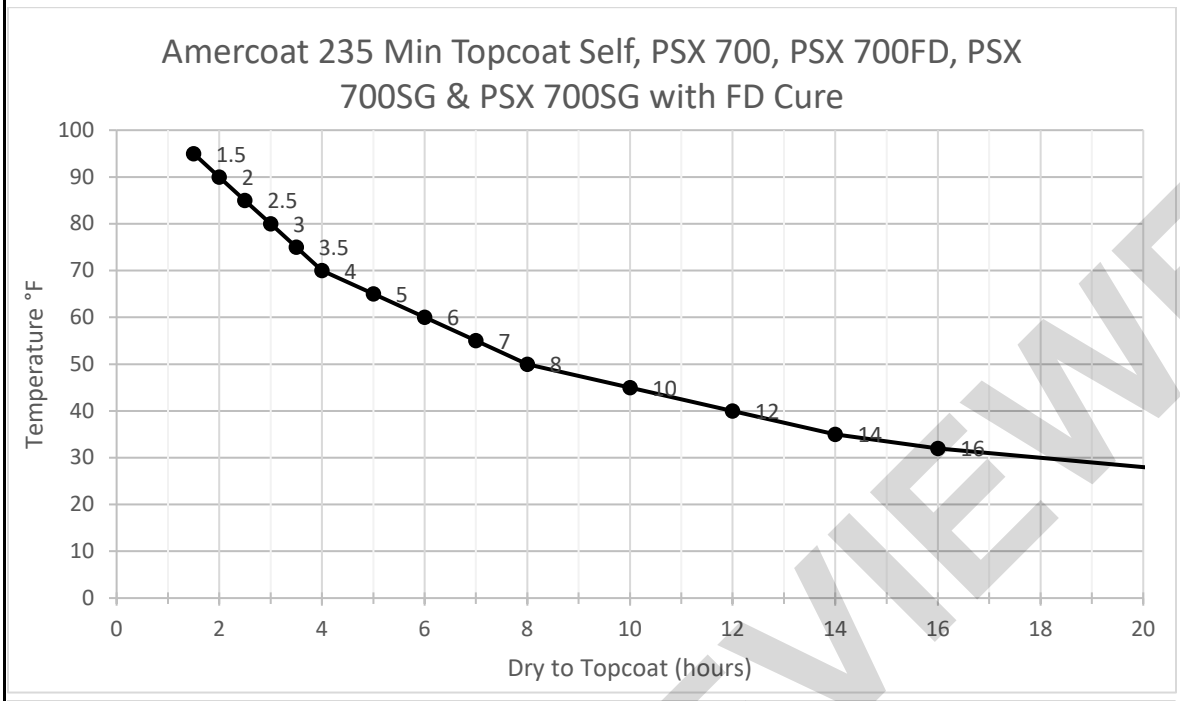
(d) EQUIPMENT REQUIREMENTS: Airless Spray - Heavy duty 64 :1 airless pump producing 2,400 to 3,000 psi fluid pressure, per paint line being used. Spray tip Orifice: 0.019" to 0.025" (reversible spray tip suggested). Conventional Air Spray: Binks 2100 gun (or equal), Air Cap: 68 PBs (or equal), Fluid Nozzle: 67ss 2.2 mm matched with a 67ss needle (or equal), Fluid Pressure: 35-40 psi, Air Pressure 50-60 psi. Solvent resistant brush and roller (3/8" nap). Plural Application - see ADDITIONAL DATA/INSTRUCTIONS VI APPLICATION REQUIREMENTS.

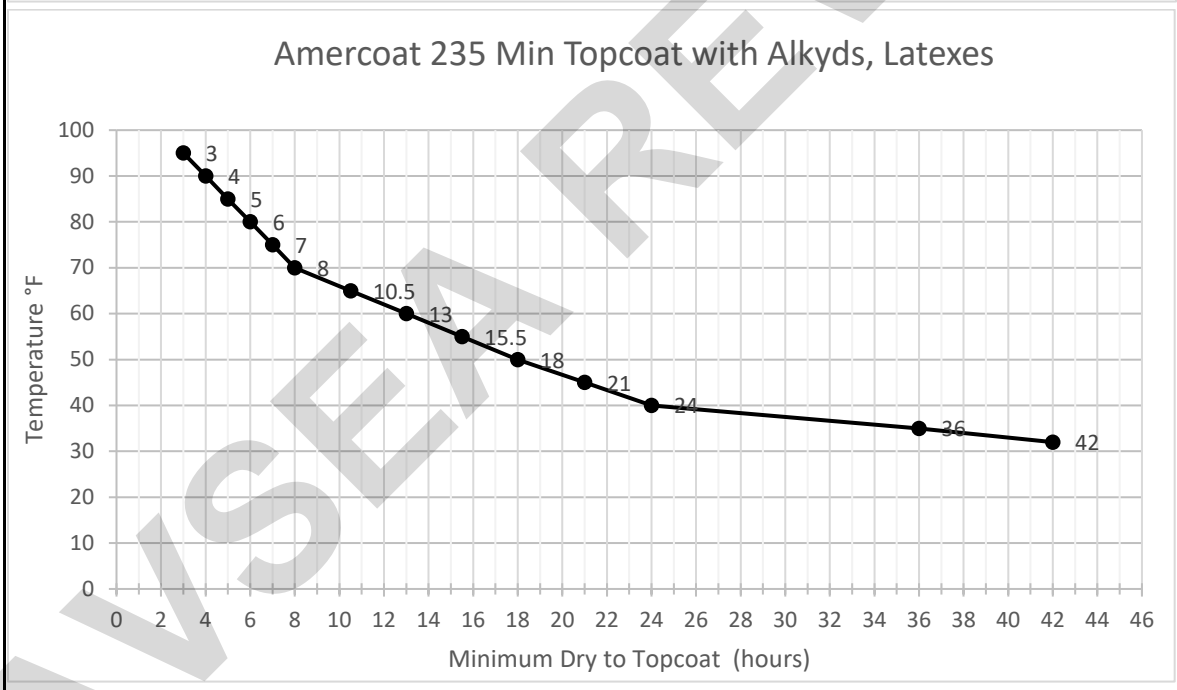
(e) SPECIAL INSTRUCTIONS: Surface must be clean and dry prior to recoating. Any contamination must be identified and particular attention must be paid to surfaces that have been exposed to sunlight where chalking may be present. A detergent wash with Prep 88 or equivalent is required to remove chalking prior to applicaton of topcoats. In certain cases, a further degree of cleaning may be required. PPG Protective and Marine Coating Technical Service can advise on suitable cleaning methods.
Surface temperatures should be considered when determining maximum recoat periods. Dry times are guidelines. Excessive film thickness, poor ventilation, and excessive humidity can cause deviation.
See the Safety Data Sheet and product label for complete safety and precaution requirements.
Antifouling should be applied before Amercoat 235 has cured hard. The film must be tack free, but still soft to fingertip pressure (epoxy can be touched lightly with no coating sticking to fingertips). If the Amercoat 235 has cured beyond the tacky state (no longer soft to fingertip pressure), apply another 2 wet-mils of the Amercoat 235 (as per listed recoat intervals) and then begin the application of the anti-foulant as above. For underwater hull applications, it is acceptable to launch based on the dry time-to-launch of the anti-foulant topcoat.
Amercoat 235 may be applied at air and surface temperatures down to 20°F for atmospheric service conditions, but curing may be very slow. Consult with PPG Technical Service regarding applications where temperatures are expected to be below 32°F.
Plural equipment guidelines listed on page 9.

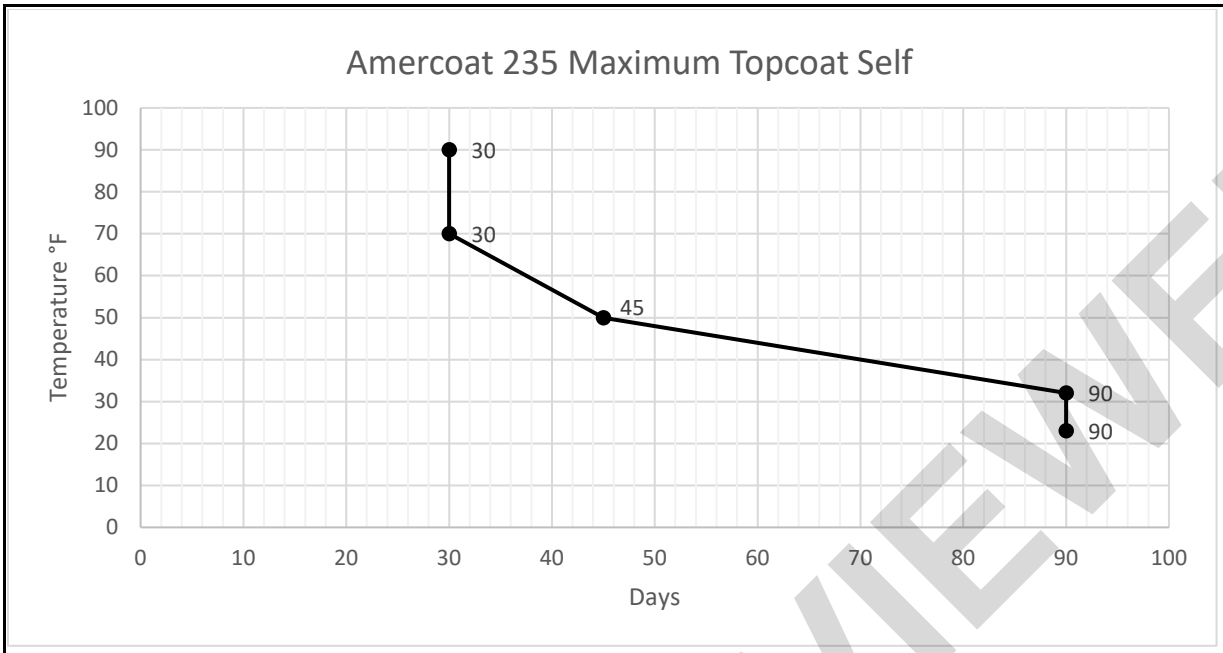
IF OVERCOAT WINDOW HAS BEEN EXCEEDED FOR CRITICAL APPLICATIONS: For critical areas where the product has cured past the maximum recoat limit, the surface should be cleaned per SSPC-SP 1 then mechanically abraded to remove any chalking and to produce a uniform and dense profile pattern in the film. Power or hand sand with medium grit sandpaper or sweep blast using an extra fine abrasive per SSPC-SP 7 guidelines. Clean the surface in accordance with SSPC-SP 1 to remove any ambient contamination and particulates from abrading.

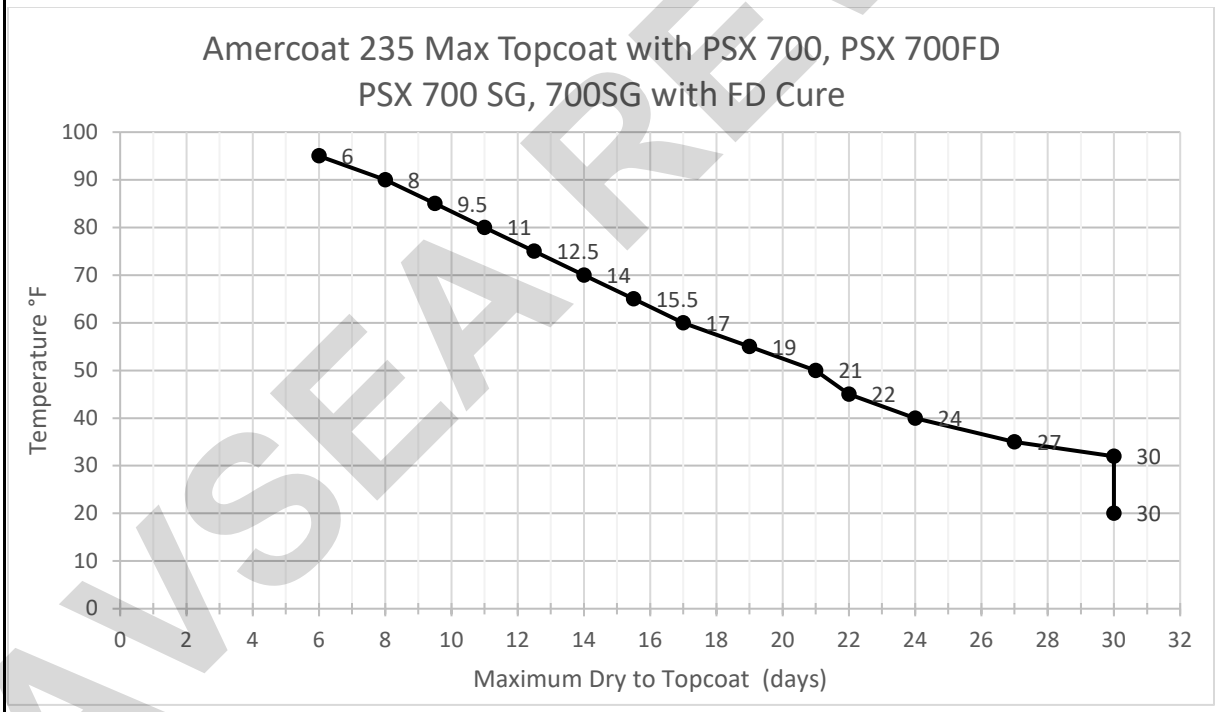
IF OVERCOAT WINDOW HAS BEEN EXCEEDED FOR NON-CRITICAL APPLICATIONS: For non-critical areas where the product has cured past the maximum recoat limit, the surface should be cleaned per SSPC-SP 1 then mechanically abraded to remove any chalking and to produce a uniform and dense profile pattern in the film. Power or hand sand with medium grit sandpaper or sweep blast using an extra fine abrasive per SSPC-SP 7 guidelines. Clean the surface in accordance with SSPC-SP 1 to remove any ambient contamination and particulates from abrading.

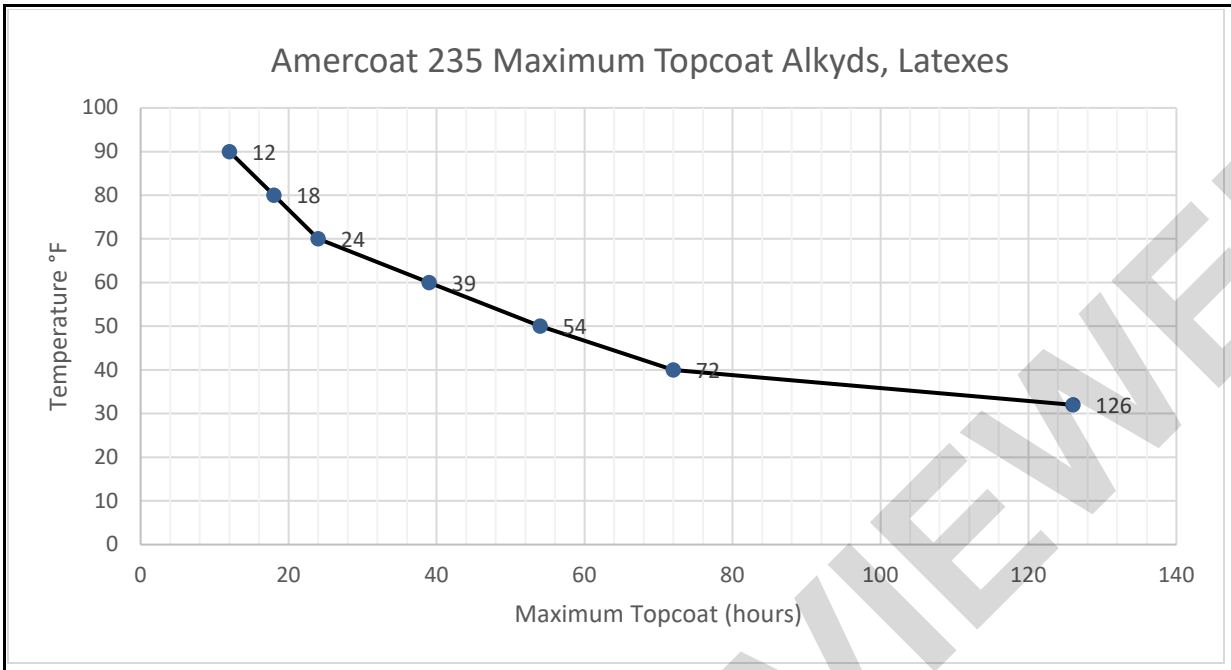
GRAPHS FOR POT LIFE AND CURE TIMES:

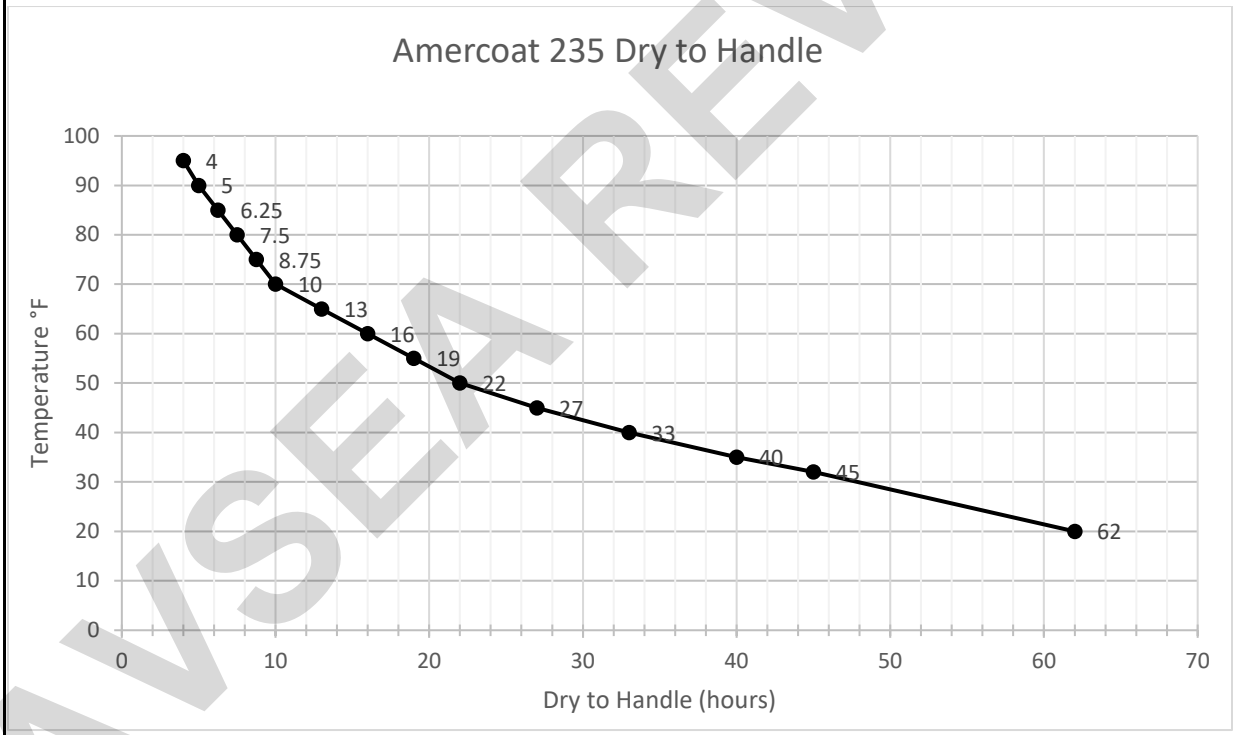


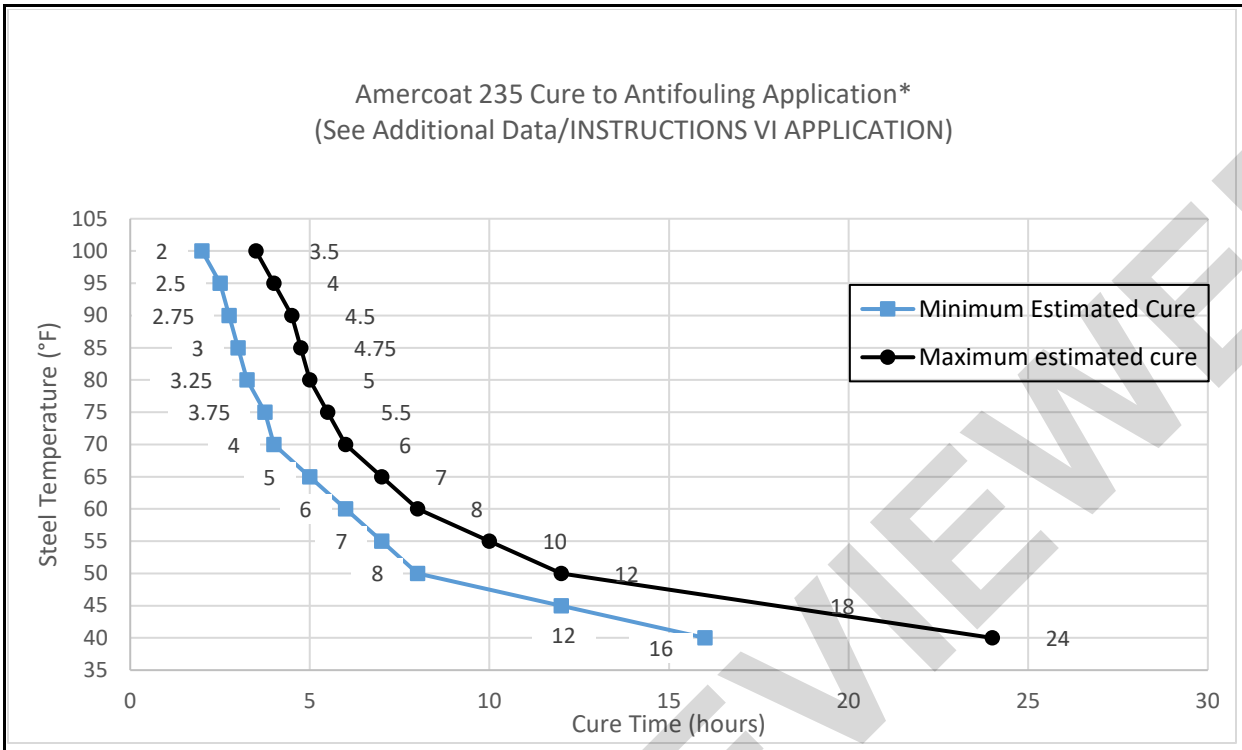




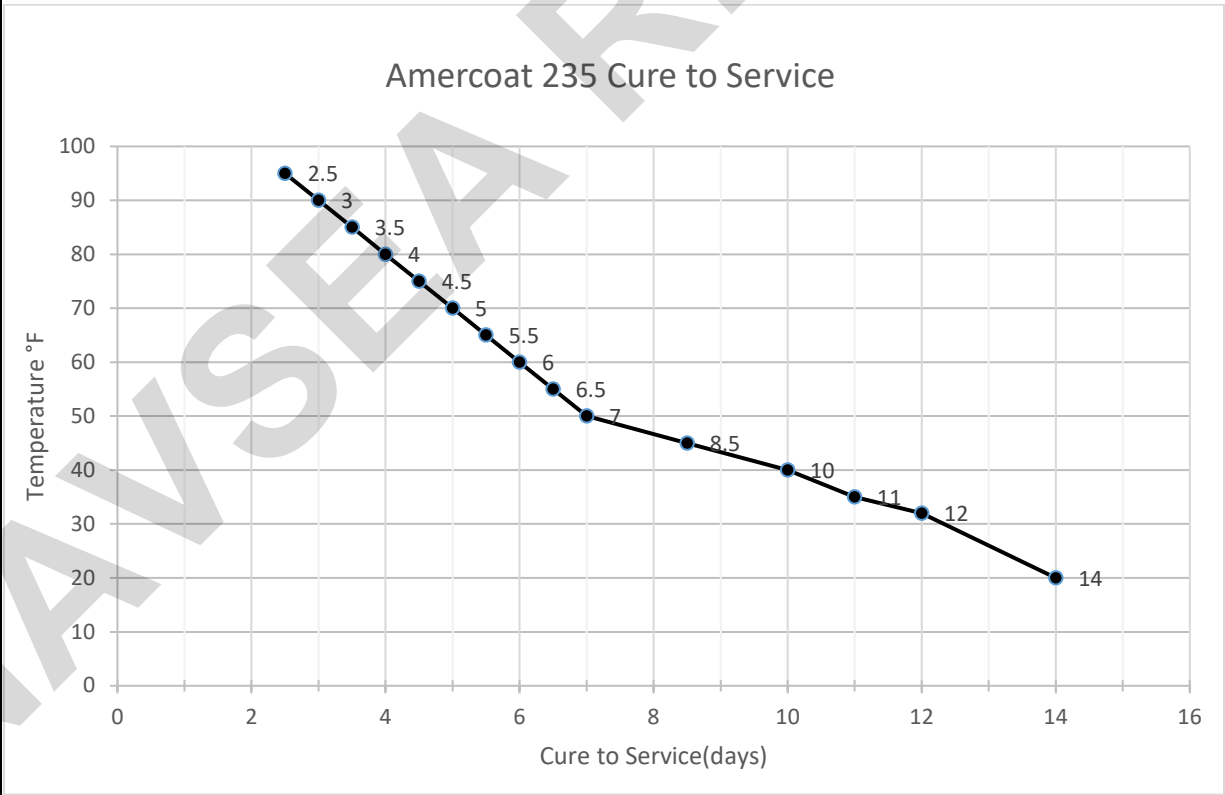


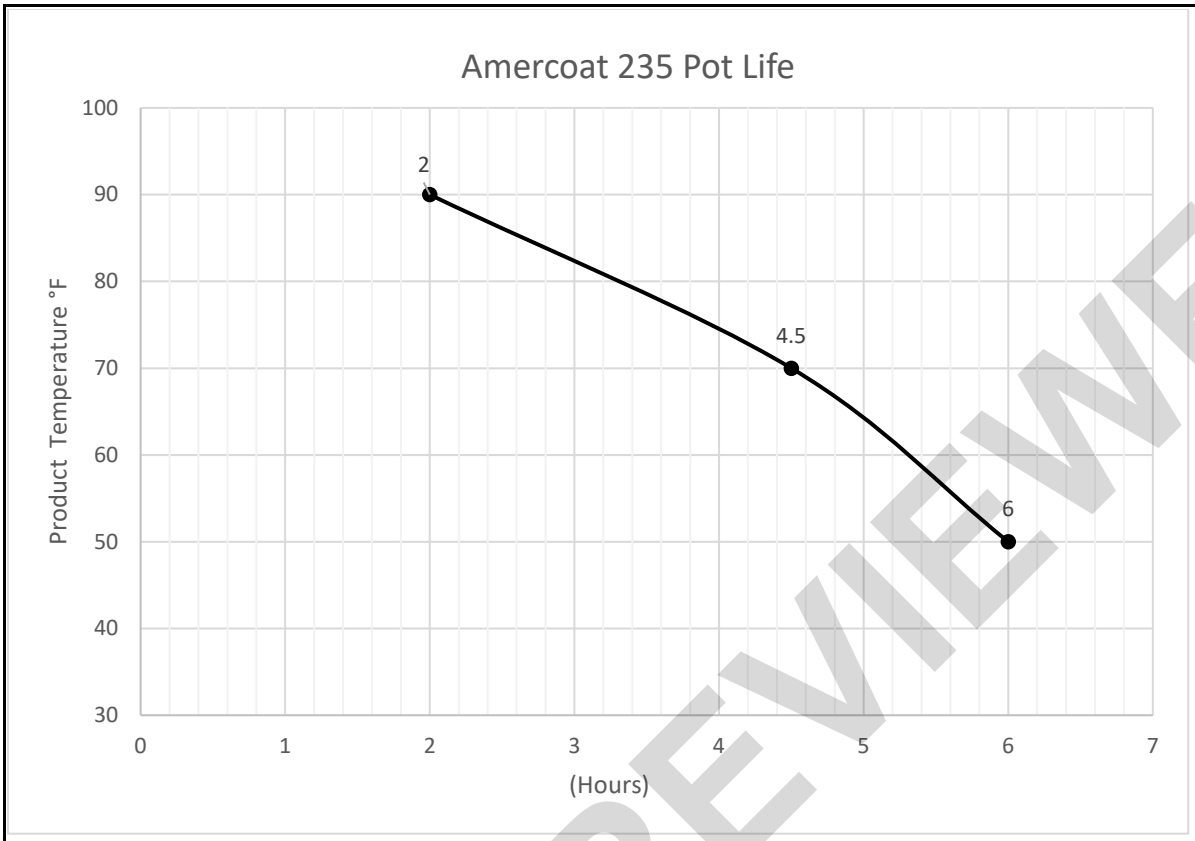






*Note that the final coat of Amercoat 235 should be tack free, but still impressionable with moderate fingertip pressure when applying the first coat of antifouling. This chart is presented as a guideline, but the coating should be inspected to ensure the dry state is sufficient for application of the antifouling according to these instructions.





ADDITIONAL DATA/INSTRUCTIONS:

I. GENERIC TYPE AND DESCRIPTION:

II. MANUFACTURERS DATA:

III. PROPERTIES:

IV. SURFACE PREPARATION MINIMUM REQUIREMENTS:

V. MIXING PROCEDURES: Procedure for preparing samples for Amercoat 235 for mixed viscosity testing.
1. Ensure resin component is thoroughly mixed. Mix 8-10 minutes using an air-driven impeller blade such as a jiffy mixer to break any “false body”.
2. Retrieve a sample of each component unless using the whole unit.
3. Adjust temperature of each component to 77˚ ± 2˚F.
4. Combine 4 parts resin (component A) to 1 part cure (component B) by volume. Mix well using an air-driven impeller blade.
5. Measure viscosity using Stormer viscometer per ASTM D 562.

VI. APPLICATION: PLURAL EQUIPMENT APPLICATION: Plural component application is possible by using a heated plural component spray setup. The temperature of the mixed material at the static mixer shall be ≥ 77°F (25°C). One minimum 8 element static mixer should be installed between the end of the paint line and the whip. The fluid pressure at the end of each spray hose should be between 2,400 to 3,000 psi. Spray tip Orifice of 0.019” to 0.025” is recommended. (reversible spray tip suggested). PPG Protective and Marine Coating Technical Service can advise on additional equipment recommendations.
FOR ANTIFOULING APPLICATION: The final coat of Amercoat 235 should be tack free, but still impressionable with moderate fingertip pressure when applying the first coat of antifouling. This Antifouling Application Graph is presented as a guideline, but the coating should be inspected to ensure the dry state is sufficient for application of the antifouling according to these instructions.
**** For topcoating with PSX 700 / 700SG: Surface must be clean and dry prior to recoating. Any contamination must be identified and removed utilizing either Amercoat 911 solvent or a mild detergent followed by a thorough fresh water rinse. A detergent wash

with Prep 88 or equivalent is required prior to application of topcoats after 30 days of exposure. Particular attention must be paid to surfaces that have been exposed to sunlight where chalking may be present. In those cases, a further degree of cleaning may be required. PPG Protective and Marine Coating Technical Service can advise on suitable cleaning methods.
Surface temperatures must be considered when determining maximum recoat periods. Dry times are guidelines. Excessive film thickness, poor ventilation, higher surface temperatures than ambient temperatures, and excessive humidity can cause deviation.
See the Safety Data Sheet and product label for complete safety and precaution requirements.
When used in accordance with the manufacturer's and the following instructions, PPG approves the use of CHLOR*RID, in conjunction with this Amercoat 235:
1. CHLOR*RID is added to wash water at appropriate level per product recommendation.
2. After water washing with CHLOR*RID, allow substrate to fully dry. All treated substrate surfaces must be abrasive blasted to an SSPC-SP10/NACE 2 Near White Metal condition post CHLOR*RID application.
3. Failure to reblast all treated surfaces, regardless of their condition post CHLOR*RID application, voids these instructions and subsequent implied or direct warranties.
4. Accomplish surface conductivity checks as required by contract after SSPC-SP10/NACE 2 Near White Metal re-blast. Follow pass/fail criteria established by contract including additional remedial steps as necessary.
FOR NON-CRITICAL SURFACES: Amercoat 235 is a surface tolerant epoxy. Where allowed by specification, Commercial blast to SSPC SP-6/NACE 3, Power-Tool Clean to SSPC SP-3, or Hand Tool Clean to SSPC-SP-2